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State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

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DIGITAL DECADE 2025 COUNTRY REPORTS

Austria

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Executive summary

Austria continues to demonstrate strong momentum in AI adoption and to make progress on connectivity deployment, although the country still lags behind in the roll-out of Very High-Capacity Networks (VHCN) and Fibre to the Premises (FTTP), while the start-up ecosystem remains constrained by declining venture capital and limited unicorn growth. In 2024, Austria maintained solid performance in digital public services and has strengthened its role in strategic technologies, such as semiconductors and quantum technologies.

Austria shows a high level of ambition in its contribution to the Digital Decade having set 12 national targets, 92% of which are aligned with the EU 2030 targets. The country is following its trajectories well with 75% of them being on track (on the basis of the 2024 trajectories defined for 8 KPIs out of 8 analysed). Austria addressed 59% of the 12 recommendations issued by the Commission in 2024, either by implementing significant policy changes (17%) or making some changes (42%) through new measures.

Despite high levels of digital skills, persistent gaps across age and education exist. Sustainability is reflected in selective initiatives, but a coherent green-digital strategy is still lacking in the national Digital Decade roadmap. Overall, the level of commitment to digital transformation has remained consistent over time, as demonstrated by the adjusted national strategic roadmap, which reinforces the ambition across most areas of the Digital Decade framework. AI remains a strategic focus, with Austria's National AI Strategy representing the cornerstone of the country's efforts, supported by the adjusted roadmap's new initiatives.

Digital Decade KPI ⁽¹⁾	Austria				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	AT	EU
Fixed Very High Capacity Network (VHCN) coverage	67.6%	72.2%	6.7%	73.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	41.0%	44.8%	9.4%	45.0%	69.2%	8.4%	72.0%	-
Overall 5G coverage	96.0%	99.5%	3.7%	99.5%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	18	33	83.3%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	72.2%	3.6%	-	72.9%	2.8%	90.0%	90%
Cloud	35.6%	-	-	-	-	-	-	75%
Artificial Intelligence	10.8%	20.3%	87.9%	20.0%	13.5%	67.2%	75.0%	75%
Data analytics	23.9%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	47.0%	-	-	-	-	-	-	75%
Unicorns	5	5	0.0%	4	286	4.4%	10	500
At least basic digital skills	64.7%	-	-	-	-	-	80.0%	80%
ICT specialists	5.3%	5.3%	0.0%	5.6%	5.0%	4.2%	10.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	80.7	80.8	0.1%	82.0	82.3	3.6%	100.0	100
Digital public services for businesses	82.9	87.7	5.8%	84.0	86.2	0.9%	100.0	100
Access to e-Health records	88.2	87.0	-1.4%	97.5	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the 2025 special Eurobarometer on the Digital Decade, 68% of Austrian citizens consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 87% consider it important to counter and mitigate the issue of fake news and disinformation online, and on competitiveness, 82% consider it important to ensure that European companies can grow and become 'European Champions' capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Austria demonstrates strong 5G leadership, ongoing progress in AI adoption, and growing investment in strategic technologies such as semiconductors and quantum computing. With 99.55% 5G coverage and near-complete spectrum assignment, the country ranks among the EU's top performers in mobile connectivity. AI adoption by enterprises is accelerating and reached 20.3%, surpassing the EU average and supported by clear strategic direction and targeted funding. Austria's commitment to technological sovereignty is further reflected in its investments in strategic sectors: it continues to support quantum technologies through the Quantum Austria initiative and is advancing in semiconductors via targeted investments and participation in the Chips Joint Undertaking.

However, challenges remain in ensuring broader diffusion of advanced digital technologies. While Austria's digital intensity among SMEs is aligned with EU levels, the integration of data-driven solutions and next-generation technologies into business operations remains uneven. This is compounded by structural bottlenecks in the scale-up and start-up ecosystem, despite notable policy support. Venture capital investment has declined for the third consecutive year, as investor caution and delayed startup exits have slowed reinvestment cycles.

Protecting and empowering EU people and society

Austria has a strong performance in digital skills and continues to expand targeted measures to bridge structural gaps. However, persistent disparities, particularly across gender, education, and age affect digital inclusion. Flagship initiatives such as Digital Everywhere+ and the Future Skills programme demonstrate Austria's commitment to reaching disadvantaged groups and improving the digital capacity of its workforce. **Austria also took steps to expand its ICT workforce**, with new measures aimed at reskilling, increasing female participation, and strengthening STEM pathways.

Austria performs well in e-Health and digital public services, with new national targets, a dedicated strategy, and substantial funding.

Leveraging digital transformation for a smart greening

Austria recognises the importance of integrating environmental sustainability into its digital transition but lacks a coherent strategy explicitly twinning the green and digital dimensions. While AI for Green and SME-DIGITAL 4.0 initiatives support climate goals, no new measures have been adopted to monitor the environmental footprint of digital technologies or improve energy efficiency in infrastructures such as data centres.

National Digital Decade strategic roadmap

Austria submitted a fully updated roadmap in January 2025, including 26 new measures and revised trajectories for key KPIs such as 5G, AI, and digital public services. While it addresses most 2024

recommendations and sets clearer targets, the roadmap still lacks new dedicated support for SMEs and a strategic framework for the green-digital nexus. The overall ambition remains high, particularly in skills, AI, and connectivity, though progress will depend on sustained investment and cross-sector coordination. A total of 85 measures are now part of Austria's national strategic roadmap with a total budget of EUR 4.07 billion (equivalent to 0.84% of Austria's GDP in 2024).

Funding & projects for digital

Austria allocates 36% of its total recovery and resilience plan to digital (EUR 1.3 billion)¹. In addition, under cohesion policy, EUR 76 million, representing 7% of the country's total cohesion policy funding, is dedicated to advancing Austria's digital transformation².

Austria is directly involved in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Austria is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Austria has contributed to the Best Practice Accelerator³ by sharing one best practice in the framework of the Digital Skills cluster (Digital Competence Initiative Austria).

Digital rights and principles

According to a support study, Austria has been one of the most active Member States in implementing the [European Declaration on Digital Rights and Principles](#), with over 100 initiatives overall and 21 new initiatives launched in 2024. Austria is most active in the area of digital education, training and skills. Less activity has been identified with regards to Protection and empowerment of children and young people in the digital environment, and Sustainability. Measures in the area of Sustainability appear to have most impact on the ground, in contrast to those addressing safety, security and empowerment.

Recommendations:

- **FTTP roll-out:** Sustain and further accelerate the pace of fibre rollout (FTTP), particularly in rural areas, by maintaining strong investment and encouraging new deployment commitments.
- **Cloud and data analytics:** Introduce targeted support to accelerate the adoption of cloud and data analytics solutions, particularly among SMEs, to boost enterprise competitiveness.
- **ICT specialists:** Accelerate the overall growth of ICT specialists by strengthening reskilling and upskilling initiatives and promoting ICT training across enterprises, while continuing efforts to close gender gaps.
- **Key digital public services:** focus on accelerating growth in digital public services for citizens, particularly in cross-border services. Sustained efforts in digital public services for businesses are needed to maintain this positive momentum.
- **Unicorns:** scaling it further will be essential for Austria to fully realise its competitiveness and sovereignty goals within the Digital Decade.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

A competitive, sovereign and resilient EU based on technological leadership

Austria's digital competitiveness is increasingly recognised as a key driver of economic growth, with policies actively supporting the expansion of the country's digital ecosystem. In recent years, Austria has made notable progress in fostering innovation, particularly in the start-up landscape and in artificial intelligence (AI), with targeted investments in research, development, and innovation (R&D&I). However, while the government's commitment to digital transformation remains strong, the broader investment environment faces challenges due to declining venture capital flows and investor hesitancy.

The start-up ecosystem continues to face headwinds. As at the end of 2024, Austria had five unicorns, unchanged from 2023. This underlines the need for greater momentum to meet Austria's 2030 target of 10 unicorns. The adjusted roadmap outlines 17 measures contributing to this goal, supported by EUR 1.234 billion in public investment and EUR 628 million in private investment – an increase compared to the previous year. Among the newly introduced tools is the AWS Spin-off Initiative an EUR 8.5 million programme supporting VC access for university spin-offs.

Despite this support, Austria's VC environment remains strained: VC financing declined for the third consecutive year. Private investors remain cautious, with many focusing on existing portfolios, while delayed exits reduce reinvestment flows, weakening the scale-up ecosystem.

Austria's digital infrastructure shows a mixed performance. It lags behind the EU average in fibre to the premises (FTTP) and very high-capacity networks (VHCN) coverage despite robust growth rates, especially in rural areas. Conversely, Austria performs strongly in 5G deployment, with near-complete coverage (99.55%) and significantly higher spectrum assignment (99.17%) than the EU average. The country is generally on track to meet its national connectivity targets.

Deeper integration of data-driven and advanced digital technologies remains a key challenge for Austria's digital economy. Its cloud uptake and data analytics rates are growing but remain below the EU average, while AI adoption by companies is above average and accelerating rapidly. The digital intensity of SMEs is in line with the EU, with efforts underway to bridge structural gaps.

From a macroeconomic perspective, Austria's ICT sector contributes less to national value added than the EU average — 3.83% in 2022 versus the EU's 5.46% — indicating underutilised potential.⁴ The sector accounts for 16.41% of business R&D expenditure (2021) and 18.42% of R&D personnel (2021), highlighting that while the innovation ecosystem is active, it remains relatively small in scale.

According to the **Special Eurobarometer on 'the Digital Decade' 2025⁵**, **82% of respondents in Austria** consider building efficient and secure digital infrastructures, including connectivity and data processing facilities, **an important priority for public authorities**. This is slightly below the EU average of 86%. Meanwhile, **11% of Austrians** viewed it as not important (compared to 9% at EU level).

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Building technological leadership: digital infrastructure and technologies

Austria's digital infrastructure continues to advance steadily, with notable progress in 5G deployment and rural coverage expansion. While FTTP and VHCNs still lag behind EU averages, Austria's growth rates in these areas remain among the highest in the EU. The country's 5G roll-out is nearing full coverage, supported by effective spectrum management and regulatory incentives. Continued public and private investment will be essential to closing the remaining infrastructure gaps by 2030.

Connectivity infrastructure

Overall, Austria's performance closely aligns with its national trajectory for FTTP and VHCN coverage, showing strong growth rates but requiring further progress to close the gap with EU-level coverage.

Austria's total VHCN coverage for all households stood at 72.16% in 2024, still below the EU's 82.49%. However, Austria's growth rate of 6.7% outpaced the EU's 4.9%. For households in sparsely populated areas, Austria's VHCN coverage was 35.79% in 2023 and 42.17% in 2024, both lower than the EU's 55.59% and 61.89%, respectively. Austria's growth rate of 17.8% exceeded the EU's 11.3%.

Austria's total FTTP coverage stood at 44.82% in 2024, below the EU's 69.24%. However, Austria's growth rate of 9.4% was higher than the EU's 8.4%. For households in sparsely populated areas, Austria's FTTP coverage was 33.89% in 2024, lower than the EU's 58.78%. Austria's growth rate of 18.0% was higher than the EU's 11.9%.

Austria boasts an overall 5G coverage of 99.55% in 2024, higher than the EU's 94.35%, with a growth rate of 3.7% compared to the EU's 6.0%. For households in sparsely populated areas, Austria's 5G coverage was 82.03% in 2023 and 97.85% in 2024, both higher than the EU's 71.1% and 79.57%, respectively. Austria's growth rate of 19.3% was higher than the EU's 11.9%.

Regarding high-quality 5G, Austria's coverage in the 3.4-3.8 GHz band is better than the EU average with 83.97% achieved in 2024 (against 67.72% for the EU). However, Austria's growth rate of 6.2% was lower than the EU's 32.6%. For households in sparsely populated areas, Austria's 5G coverage in the 3.4-3.8 GHz band was 41.52% in 2023 and 51.85% in 2024, both higher than the EU's 15.86% and 26.19%, respectively. Austria's growth rate of 24.9% was lower than the EU's 65.1%.

Austria's 5G pioneer bands spectrum assignment was 99.17% in both 2024 and 2025, higher than the EU's 73.4% and 74.63%, respectively. Austria had no growth between 2024 and 2025, while the EU's growth was 1.7%. The country is on track according to its national trajectory for 5G.

Austria should focus on improving total VHCN and FTTP coverage to match EU averages. However, the country's strong performance in 5G coverage and spectrum assignment, along with positive growth rates in several areas, indicates a promising trajectory for digital infrastructure development.

VHCN and FTTP

Austria is at 72.16% of VHCN coverage (2030 national target 100%) after an increase of 6.7% in 2024 and stands below the EU average. In rural and sparsely populated areas, coverage remained limited, compared to the EU average. Despite this gap, Austria has shown strong momentum, with VHCN coverage growth outpacing the EU average.

Despite positive momentum, Austria still faces challenges. A slowdown in VHCN roll-out has become evident recently, mainly due to completion of upgrades from DOCSIS 3.0 and the limited existing

commitments to extend coverage to new households. Under the Broadband Austria initiatives (BBA2020 and BBA2030), however, Austria plans to deploy VHCN connectivity to an additional 160 000 households, reaching a total of at least 76% household coverage. Further opportunities to expand coverage have been identified by Austrian authorities, even though specific commitments remain lacking for approximately 440 000 households currently served by xDSL technology. Additionally, the implementation of the Gigabit Infrastructure Act (GIA) into national law is currently underway and is expected to contribute to accelerating fibre deployment.

Austria also needs to accelerate the pace of fibre roll-out. Despite recording a solid growth rate of 9.4% in 2024 – above the EU average – Austria’s total FTTP coverage still lags significantly behind. The gap is even more pronounced in sparsely populated areas, where Austria’s FTTP coverage (33.89%) remains far below the EU average (58.78%).

Regarding specific measures, the adjusted roadmap for 2024 did not introduce new measures for the Broadband Austria initiative. The primary funding instrument remains the Broadband Austria 2030 initiative (BBA2030), which will channel EUR 1.4 billion into deploying fibre infrastructure in rural areas.

In conclusion, Austria’s unchanged targets for both fibre and VHCN remain realistic. However, while the country demonstrates robust growth, particularly in rural areas, further acceleration of fibre deployment is needed to close the coverage gap with the EU average. Achieving this will require sustained political commitment, continued investment, and targeted efforts in currently underserved regions.

5G

Austria is at 99.55% of 5G coverage (2030 national target 100%) after an increase of 3.7% in 2024 and stands above the EU average. Austria continues to aim for 100% 5G coverage by 2030, as established in its 2023 roadmap. Given Austria’s current performance this goal aligns well with the EU Digital Decade targets.

The absence of public funding dedicated specifically to 5G deployment means that this target depends entirely on private-sector investment. Considering the already high coverage levels, achieving 100% coverage by 2030 appears realistic, though particular attention must be given to rural areas, where gaps are more challenging to close.

In the adjusted roadmap, Austria introduced only one new measure related to 5G, dedicated to anchoring the 5G Broadcast in the digitalisation concept. This measure aims to secure terrestrial television broadcasting coverage for approximately 98% of the Austrian population by reallocating multiplex platforms (‘MUX A/B’) by 2025. While the measure underscores the importance of 5G technology in broadcasting, it does not directly address mobile connectivity or improve rural broadband access. Thus, this measure is complementary but does not explicitly address recommendations from the 2024 country report concerning 5G standalone networks.

Deployment of 5G infrastructure remains robust due to regulatory obligations linked to spectrum auctions. Operators were required to deploy frequencies in the 3.4-3.8 GHz band at 1 000 mobile stations by the end of 2022, a target that was successfully met. Moreover, the multi-band auction for 700/1500/2100 MHz introduced by Austria’s regulatory authority includes an innovative bonus system providing financial incentives for operators to extend coverage into rural areas. This has enabled 5G expansion in 1 702 cadastral communities, i.e. in approximately 80% of rural areas historically underserved by high-speed mobile connectivity.

Austria has shown exceptional progress in spectrum assignment for 5G, achieving a 99.2% assignment rate of 5G pioneer bands in 2023, positioning Austria among the EU's top performers. The 2022-2026 Spectrum Release Plan, published jointly by the regulatory authority and the Federal Ministry for Housing, Arts, Culture, Media and Sport, offers clear timelines for future spectrum assignments. Furthermore, the assignment of the 26 GHz band is expected to significantly improve capabilities, enabling innovative use-cases and supporting the development of edge computing applications.

2024 recommendation on connectivity infrastructure: Take appropriate actions to maintain the current sustained FTTP rollout pace and carefully monitor the metrics including rural coverage in order to reach full coverage by 2030; Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

Austria made some efforts to address the recommendation through new policy actions in 2024. While Austria maintained a strong FTTP roll-out pace – especially in rural areas – and continued to make progress under the Broadband Austria 2030 initiative, no new measures were introduced beyond adjusted funding allocations. On 5G, Austria sustained strong deployment levels and spectrum assignment, but no new policies were adopted to accelerate standalone 5G networks or broaden spectrum access for new players, with efforts remaining anchored in the existing regulatory framework.

Semiconductors

Austria has positioned itself as an important player in the European semiconductor value chain, with a well-defined national strategy to support the sector. In the first version of the national roadmap, semiconductors received significant focus, with four key measures allocating approximately EUR 327 million, accounting for 9% of the strategic roadmap's total budget. Austria's approach aligns closely with the European Chips Act, which aims to enhance Europe's semiconductor production capacity, strengthen supply chain resilience, and reduce reliance on non-European manufacturers.

Since the last report, Austria has made notable progress in semiconductor manufacturing, particularly in wafer production for automotive, industrial, and medical applications. The country is home to key industry actors, including ams Osram, Infineon Austria, and AT&S, which contribute to both design and manufacturing capabilities. Austria's strength lies in specialised semiconductor production, particularly in power electronics, sensor technologies, and automotive applications.

The European Commission's approval of Austria's first Chips Act Pillar 2 project in February 2025 marked a significant milestone. The approved EUR 227 million State aid measure will support ams Osram AG in establishing a first-of-its-kind integrated wafer manufacturing facility in Premstätten. This plant will use Complementary Metal Oxide Semiconductors (CMOS) technology combined with Through Silicon Via (TSV) and optical filter techniques, offering Europe a high-reliability, automotive-grade semiconductor production capability.

This investment aligns with Austria's broader strategy to enhance supply chain security, improve technological sovereignty, and contribute to the EU's semiconductor ecosystem. The facility will be partially open to other semiconductor companies, increasing collaboration and ensuring a broader impact on the European semiconductor value chain.

Austria's strategic focus remains strong, and its commitments under the European Chips Act are being implemented effectively. Given the high level of ongoing investment, the lack of new national measures is justified.

Austria's semiconductor sector continues to expand, driven by strong public-private investment and a supportive regulatory framework. The ams Osram facility in Premstätten, expected to reach full operational capacity by 2030, will be the first of its kind in Europe to produce automotive-grade, highly integrated semiconductor chips. This development is key for Europe's strategic autonomy, reducing reliance on external suppliers and enhancing domestic semiconductor capabilities.

Edge nodes

Austria hosted 33 edge nodes in 2024, up from 30 in 2023, representing a growth of three units and accounting for 1.46% of the 2 257 edge nodes deployed across the EU. This share remains slightly below Austria's share of EU GDP, indicating underrepresentation in edge node deployment relative to its economic weight.

Progress remains slow due to insufficient attention to this aspect of digital infrastructure development. Similar to last year, Austria's adjusted national strategic roadmap for 2025 does not provide a defined national trajectory towards the EU Digital Decade goal of deploying 10 000 climate-neutral and secure edge nodes by 2030. Austria has also not introduced new dedicated measures specifically targeting edge nodes deployment or further incentivising private-sector investment in this field.

The Austrian authorities continue to rely on private-sector investors and, in particular, communications networks operators for the deployment of edge nodes. Public-sector intervention remains indirect, concentrating on creating favourable network conditions, facilitating the allocation of necessary spectrum resources – particularly through setting up the 26 GHz band – and implementing security and technical regulatory frameworks aligned with EU requirements such as the NIS2 Directive and related European standardisation efforts.

2024 recommendation on Edge nodes: Propose dedicated measures to support the deployment of edge nodes.

No information available on measures taken to address the recommendation. Austria has not communicated any measure to support the deployment of edge nodes across the country.

Quantum technologies

Austria continues to strategically position itself as a key European player in quantum technologies, particularly in quantum computing, simulation, communication infrastructure, and advanced quantum applications. Building on the foundations laid out in previous years, Austria maintains strong alignment with the EU-funded 'Quantum Austria' initiative, which remains the central pillar of its national strategy. Supported by EUR 107 million from the Recovery and Resilience Facility (RRF), the initiative has already funded 43 projects with EUR 78 million, reflecting Austria's sustained commitment to advancing research infrastructures, collaborative R&D, and the commercialisation of quantum-enabled solutions. These projects cover a wide range of areas including quantum computing, simulation, metrology, and communication.

Despite this continued momentum, the adjusted 2025 roadmap reflects a cautious approach, with no new quantum-specific measures introduced. Quantum Austria remains the sole dedicated initiative in this domain, and no further expansions or strategic amendments have been made since last year. Nonetheless, Austria continues to leverage broader support frameworks for deep-tech innovation. Programmes such as the aws First Incubator for KPI unicorns and aws PreSeed – Deep Tech contribute indirectly to Austria’s quantum ecosystem by supporting start-ups and SMEs active in cutting-edge technology development.

At EU level, Austria remains actively involved in key initiatives underpinning the EU’s technological sovereignty. It participates in three of the six pilot lines under the Chips Joint Undertaking – focusing on photonics, trapped ions, and diamonds – and continues to make progress in the development of a quantum communication infrastructure (QCI) as part of the EU’s EuroQCI initiative, backed by the Digital Europe programme. These engagements underscore Austria’s broader commitment to contributing meaningfully to Europe’s quantum ambitions.

In parallel, Austria’s selection as one of six new host countries for an AI Factory under the European High Performance Computing Joint Undertaking (EuroHPC JU) further enhances its innovation landscape. Austria’s participation will support high-performance computing needs that are also crucial for developing and integrating quantum computing applications, reinforcing Austria’s digital and scientific capabilities across interlinked domains.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Austria’s digitalisation of enterprises has steadily progressed, with 72.22% of SMEs reaching at least a basic level of digital intensity in 2024 – closely aligned with the EU average. While this marks a positive trajectory, sustained growth will be necessary to meet the 2030 Digital Decade target of 90%, particularly given the persistent digital gaps between SMEs and large firms in areas like cloud computing, data analytics, and AI adoption. In contrast to previous years, Austria’s updated roadmap now includes a clear national target for SME digitalisation, reflecting stronger strategic alignment. However, implementation continues to rely largely on existing programmes such as SME.DIGITAL, with few new initiatives introduced. The start-up ecosystem, despite strong public support and ambitious policy targets, faces mounting investment headwinds, underscoring the need to maintain momentum and unlock scale-up potential.

SMEs with at least basic digital intensity

Austria is at 72.22% of SMEs with at least basic digital intensity (2030 national target: 90%) after a progression of **+4.86 percentage points since 2022** and stands close to the EU average. In 2024, 72.22% of Austrian SMEs exhibited at least basic digital intensity, compared to the EU average of 72.91%. **Looking at higher levels, 34.47% of Austrian SMEs achieved high or very high digital intensity, slightly above the EU average of 32.66%.** The adjusted roadmap introduced for the first time a national target in this domain, signalling Austria’s increased commitment to the Digital Decade.

The main measure underpinning Austria’s SME digitalisation remains the SME.DIGITAL programme, now relaunched and expanded. Although the adjusted roadmap introduces no new measures explicitly targeting SMEs, Austrian authorities confirmed substantial investment and expectations for existing programmes (SME.DIGITAL and the European Digital Innovation Hubs) to significantly impact SME digital intensity. However, economic operators have indicated that the current financial allocation under SME.DIGITAL is insufficient and that increased awareness, higher investment volumes, and

enhanced training efforts – particularly in the areas of AI, data analytics, and green digital skills – are urgently needed.

While the fact that Austria has set a new national trajectory is a positive development, gaps persist regarding specific initiatives for data analytics uptake, which remains relatively low among Austrian SMEs.

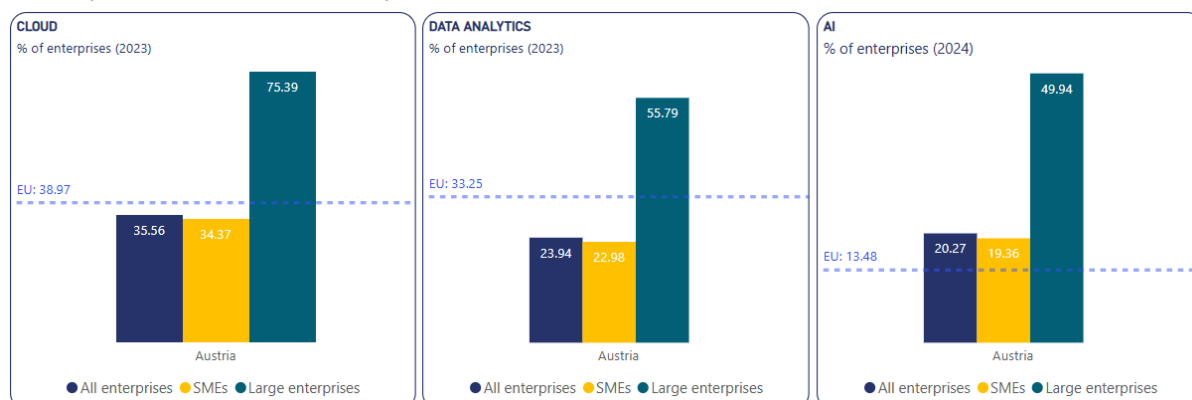
In 2024, Austria could rely on 11 European Digital Innovation Hubs, four of which receive support from the Digital Europe Programme. These hubs play an essential role in the digital transformation ecosystem, offering targeted local support to SMEs across various sectors. The following hubs deserve a special mention:

- AI5production: Promotes Industry 5.0 transitions, particularly through AI and cybersecurity.
- EDIH InnovATE: Accelerates digital transformation in agriculture, food, and energy sectors, focusing on rural competitiveness.
- Crowd in Motion: Supports and drives the digital transformation of organisations, with a focus on the tourism, sports and leisure industry, as well as the public sector.
- Applied CPS: Supports SMEs adopting Cyber-Physical Systems (CPS) for real-time operational management.

2024 recommendation on digitalisation of SMEs: Provide a clear strategy targeted at SMEs, proposing more ambitious dedicated support schemes to impulse new dynamics in their digitalisation.

In 2024, Austria continued the implementation of existing measures but did not take any new measure. The adjusted roadmap introduced a clearly defined national target for SME digital intensity and confirmed continued investment in SME.DIGITAL and the European Digital Innovation Hubs. However, no new initiatives were launched to expand subsidy schemes, and stakeholders noted current funding levels remain insufficient to meet evolving digital needs, particularly in areas like AI, data analytics, and green digital skills.

Take-up of cloud/AI/data analytics



The adoption of cloud computing, data analytics, and AI technologies in Austria fell behind the EU averages, particularly in data analytics, though AI adoption exceeded the EU level. A significant

disparity was observed between SMEs and large enterprises, with large enterprises showing considerably higher uptake across all technologies. Despite SMEs constituting the vast majority of enterprises with 10 or more employees and contributing a substantial share of the economy's value added, their lower adoption rates highlight a need for targeted support to foster broader digital transformation. Addressing this gap is crucial for enhancing the digital capabilities of Austrian SMEs and strengthening their competitive position in the economy.

The latest available data shows that cloud uptake in Austria reached 35.56% in 2023, falling short of the EU average of 38.97%. However, SMEs had an adoption rate of 34.37%, while 75.39% of large enterprises utilised cloud services. This resulted in a gap of 41.02 pp. in uptake between SMEs and large enterprises in Austria, which was higher than the EU gap of 31.68 pps.

In 2023, 23.94% of enterprises in Austria adopted data analytics, which is considerably lower than the EU average of 33.25%. Among SMEs, 22.98% used data analytics, compared to 55.79% of large enterprises. This indicates a gap of 32.81 pps between SMEs and large enterprises, which is lower than the EU gap of 39.72 pps.

Austria is at 20.27% of enterprises adopting AI (2030 national target in place) after a strong progression of +9.48 percentage points in 2024 and stands well above the EU average which stands at 13.48%. This represents a sharp increase from 10.79% in 2023, with an annual growth rate of 87.86%. AI uptake among SMEs reached 19.36%, while 49.94% of large enterprises reported adoption. The gap between SMEs and large enterprises (30.58 pps) is close to the EU average, indicating balanced adoption trends. Austria is on track with its national AI trajectory.

According to the latest available data (2023), **47.03% of enterprises in Austria engaged with AI technologies**, sophisticated or intermediate cloud computing services, or data analytics, trailing behind the EU average of 54.7%. More specifically, the uptake among SMEs was slightly lower at 45.9%, while large enterprises exhibited a notably higher rate of 84.77%. This indicates a percentage point difference of 38.87 in uptake between SMEs and large enterprises in Austria, which is higher than the EU gap of 32.97.

In 2022, Austrian SMEs produced 38.6% of the total value added in the economy, while large enterprises contributed 44.3%. Notably, SMEs made up about 97% of the enterprises with more than 10 employees, while large enterprises accounted for 3%.

- **Cloud**

Despite the growth opportunities identified, the adjusted roadmap for 2025 still does **not define a specific national target or trajectory** for cloud uptake by Austrian companies. Furthermore, no new measures explicitly dedicated to increasing cloud adoption have been introduced. Instead, Austria continues to rely primarily on existing initiatives, notably the establishment of the **Gaia-X Hub Austria**, to enhance interoperability and the dissemination, promotion and application of Gaia X concepts in specific use-cases. However, given the relatively limited scope and funding of the Gaia-X Hub, this measure alone remains insufficient to significantly accelerate cloud adoption and align with the ambitious EU target of **75% cloud uptake by 2030**.

The **SME.DIGITAL programme (KMU.DIGITAL)** represents an indirect yet important driver of cloud adoption. While the adjusted roadmap explicitly links KMU.DIGITAL to improving SME digital intensity, the initiatives also contribute significantly to enhancing cloud uptake through advisory services, digital skills training, and investment support tailored specifically for SMEs. To achieve notable increases in

cloud computing among SMEs, however, Austrian authorities would need to substantially expand this programme or introduce complementary initiatives specifically targeting cloud computing adoption.

Beyond the roadmap, Austrian authorities have not undertaken further measures contributing directly to the KPI of cloud uptake. Economic operators suggest the need for broader awareness-raising and targeted skills-building initiatives around cloud technology – this is considered critical given the significant gap between SMEs and large enterprises. Given the persistent challenges related to digital and technical skills shortages across Austria, investment in dedicated training programmes for SMEs could enhance cloud adoption rates.

Austria continues to exhibit growth potential in cloud adoption, but without additional targeted measures, clearly defined national targets, or expanded funding, achieving the EU's ambitious cloud uptake objectives by 2030 remains challenging.

2024 recommendation on Cloud uptake: Design specific measures to increase the take-up of advanced technologies by enterprises, especially for data analytics techniques and cloud; Stimulate the adoption of next generation cloud infrastructure and services by companies of all sizes, including by liaising with the Cloud IPCEI Exploitation office and/or the coordinators and the Member States participating in the IPCEI-CIS

In 2024 Austria continued the implementation of existing measures but did not take any new measure. The 2024 Digital Decade report emphasised Austria's strong growth dynamics but recommended setting explicit national targets and providing adequate financial support for cloud uptake, particularly among SMEs. Although the SME.DIGITAL programme contributes indirectly, the absence of targeted new measures or increased funding represents a missed opportunity. The unchanged approach signals that these recommendations have been only partially addressed.

- [Data Analytics](#)

In line with the recommendations of the 2024 Digital Decade report, the adjusted Austrian roadmap sets a **national trajectory and target for the uptake of data analytics uptake**, which is in line with the EU target.

The new [Data Strategy for Austria](#), adopted in October 2024 through an extensive multi-stakeholder process, outlines a holistic vision for Austria's data economy. This strategy aims to develop sustainable data infrastructures, promote responsible data sharing, and establish an innovative data culture through **45 actionable measures**. Notably, the strategy includes improving public-sector dataset accessibility, promoting trusted data infrastructure investments, and creating a Data Stakeholder Forum to strengthen collaboration among data ecosystem actors. No dedicated funding has yet been allocated explicitly to this strategy, relying instead on existing ministerial resources and broader coordination efforts across federal ministries.

As part of the Austrian Data Strategy, the adjusted roadmap introduces a new measure dedicated to **data-driven innovation** aiming at promoting the national data economy and achieving sustainable development goals.

The adjusted roadmap also emphasises **the initiative on 'COMET centres and projects'**, funded with approximately **EUR 157 million** for 2024-2026. The 'COMET centres and projects' initiative aims to foster collaboration between enterprises and academia to drive product, process, and service innovation across sectors, with a particular emphasis on AI and data analytics. Notable centres under this initiative, such as the Hagenberg Software Competence Center and VRVis, Austria's leading visual computing organisation, play a vital role in fostering research and application of advanced digital technologies. Although COMET supports broad technological innovation rather than specifically targeting data analytics, its contribution to enhancing enterprise capabilities in advanced technologies, including data analytics, is substantial.

Moreover, the **SME.DIGITAL programme** has recently been explicitly linked to increasing data analytics uptake, providing SMEs with advisory services and support to integrate advanced data analytics solutions into their operations. However, given the persistently low adoption levels, further targeted initiatives or increased funding specifically focused on data analytics are recommended to accelerate progress.

The implementation of the Austrian Data Strategy is currently underway, focusing on enhancing public-sector data availability and promoting private-sector engagement through structured dialogue platforms. Its broad, adaptive approach positions Austria to react flexibly to market and technology developments.

Discussions with Austrian stakeholders indicate ongoing consultations with private-sector actors and the gradual ramp-up of data economy initiatives. In particular, the authorities have highlighted efforts to modernise data infrastructure within public administration, implement the Data Governance Act (DGA), and engage stakeholders through structured dialogue. Clearer prioritisation, dedicated funding, and specialised programmes focusing explicitly on enterprise-level analytics capabilities remain nonetheless necessary.

The 2024 report highlighted Austria's low adoption levels for data analytics and recommended targeted measures to significantly improve uptake among SMEs. While the Austrian authorities have set a national trajectory within the adjusted roadmap and established a comprehensive Data Strategy, dedicated measures explicitly targeting enterprise adoption of data analytics remain limited. The

COMET programme and SME.DIGITAL are valuable initiatives, yet additional targeted support and explicit investment would further reinforce the recommendations made in the previous year.

- [Artificial Intelligence](#)

The adjusted national roadmap now includes a clearly defined target and trajectory for AI uptake, fully aligned with the EU's Digital Decade ambition. Given Austria's current robust growth trajectory and substantial policy support, this national target appears realistic and achievable. The country is on track according to its national trajectory.

The adjusted roadmap introduces important organisational and structural innovations for measures related to AI uptake. Measures related to the promotion of digital technologies in the field of artificial intelligence and the promotion of digital technologies in the field of data-driven innovations, in particular, together account for a total budget of approximately EUR 170 million for the 2023-2026 period. This envelop also includes EUR 3.8 million of funding dedicated to the AI for Green initiative and EUR 4.8 million for AI for Tech, signalling Austria's commitment to deploying AI in support of environmental sustainability and tech development.

The AI for Green initiative specifically targets the use of AI to support climate and environmental objectives. Launched in 2021, it has supported 40 projects to date, with a total budget of around EUR 22.5 million. A fourth call for proposals was successfully conducted in 2024.

The previously mentioned COMET programme, presented in the adjusted national roadmap, is set to significantly contribute to Austria's AI capabilities with its budget of approximately EUR 157 million (2024-2026) by funding long-term research collaborations between businesses and academic institutions, thereby supporting innovation across sectors such as industry, health, mobility, and life sciences. **Around EUR 25 million of this funding is explicitly expected to be allocated to AI and other advanced digital technologies.**

Austria continues to actively promote a vibrant AI ecosystem beyond direct funding measures. The established AI Marketplace, supported by the Austrian promotional bank awfs, connects AI solution providers with enterprises, encouraging collaboration and digital transformation. Initiatives like Digital Humanism further emphasise the ethical dimension of AI deployment, reflecting a comprehensive approach aligned with European values.

Additionally, Austria's participation in European initiatives, such as the recent selection by the EuroHPC JU to host an AI Factory, further strengthens national capabilities, providing critical infrastructure and expertise for scaling AI adoption, especially among SMEs.

[Unicorns, scale-ups and start-ups](#)

At the end of 2024, Austria had a total of five unicorns, showing no change compared to 2023. While this stable figure reflects a consistent level of high-performing start-ups, it also underscores the **need for further momentum in the scale-up of innovative companies to meet Austria's national target of reaching 10 unicorns by 2030, as set out in the adjusted roadmap.**

The adjusted roadmap mentions **17 measures contributing to this target**, backed by EUR 1.234 billion in public investment and EUR 628 million in private investment – a notable increase in private contributions compared to the previous roadmap. Among the newly introduced measures is the **awfs Spin-off Initiative**, a EUR 8.5 million programme aimed at enhancing VC access for spin-offs through two components: support for building spin-off structures within universities, and direct financing for venture capitalists investing in spin-offs.



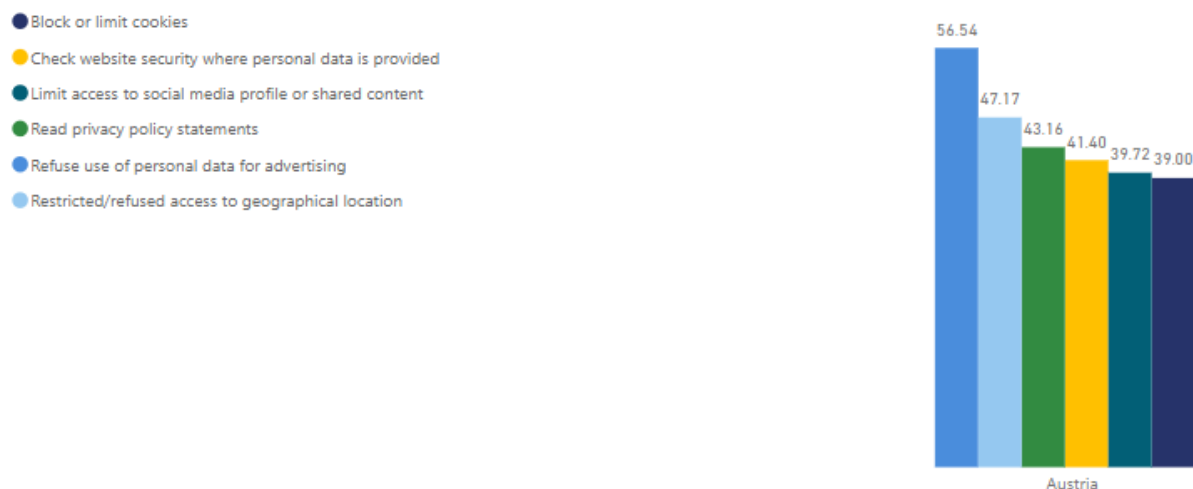
Despite these efforts, Austria's venture capital environment remains challenging. VC investments **continued to decline for the third consecutive year, with total VC financing reaching EUR 578 million in 2024**, down from EUR 695 million in 2023. The number of start-up financing rounds also fell from 184 to 149 over the same period. In 2023, VC investment in Austria amounted to just 0.022% of GDP, among the lowest in Europe. Investors, including business angels, have adopted a cautious approach, often focusing on supporting their existing portfolios rather than making new investments. Meanwhile, many start-ups are delaying exits in the hope of better valuations in the future, reducing reinvestment flows and contributing to stagnation in growth-stage financing.

Austria's business environment remains robust thanks to strong institutional support and a high level of public investment in entrepreneurship. However, challenges persist in attracting international investors and improving the overall competitiveness of the ecosystem. Continued progress on these fronts will be essential to unlocking Austria's unicorn potential and fulfilling its 2030 target.

Strengthening Cybersecurity & Resilience

In 2023, Austria continued to demonstrate strong individual cybersecurity awareness, **with 77.67% of individuals reporting that they took at least one step to protect their personal data online** – higher than the EU average of 69.55%. Notably, more than half (51.94%) of Austrians adopted three or more protective measures, indicating above-basic digital safety skills. Among specific measures, refusing the use of personal data for advertising purposes was most prevalent (56.54%), whereas changing browser settings to limit cookies remained less common (39%).

Type of activities to protect personal data online (% of individuals)



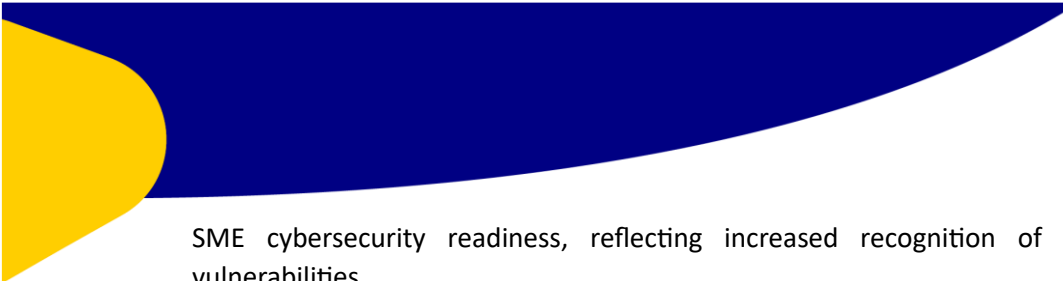
Based on the latest data (2024), **95.38% of Austrian enterprises had implemented some form of ICT security measure**, and **61.07% explicitly informed employees about cybersecurity obligations**.

In terms of technical standards deployment, **Austria remains below EU averages for IPv6 deployment**, with just **34.0% of end users** (EU average 36.0%) and 10.0% of servers (EU average 17.0%) adopting the standard since Q3 2024. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out as it introduces security features to DNS. In Austria, the DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology) is 23% (Q3 2024), below the EU average of 47%.

The policy landscape experienced mixed developments during the past year. Austria has yet to implement the NIS2 Directive formally, after a legislative proposal was rejected by the Austrian Parliament in July 2024.

The adjusted national strategic roadmap introduces important refinements in Austria's cybersecurity policy. In particular, the measure on **Austria's Cybersecurity Research Funding Programme 'K-PASS'** represents an important policy innovation. K-PASS has already allocated approximately EUR 4.9 million to fund 10 research projects in its initial call, with an annual budget of EUR 5 million planned. The programme has no fixed end date but includes an assessment planned for 2027 to ensure alignment with EU cybersecurity research funding initiatives under the next Multiannual Financial Framework (MFF). Overall, **a total of EUR 35 million is planned for K-PASS by 2027**.

Austria also continues to address cybersecurity among SMEs through the Cybersecurity cheque 2023 measure. Originally more broadly defined, this initiative has now been specifically adapted to support



SME cybersecurity readiness, reflecting increased recognition of SME-specific cybersecurity vulnerabilities.

Austria has made considerable efforts to address cybersecurity specifically in the healthcare sector: **Austria established the Austrian Health CERT (AHC), which is a dedicated Computer Security Incident Response Team (CSIRT) for the healthcare sector.** Austrian authorities emphasise that the stringent liability rules under NIS2 will inherently boost compliance and cybersecurity standards across healthcare providers.

Austria has also fully implemented the EU 5G Cybersecurity Toolbox through legislative provisions within the national telecoms law.

The national cybersecurity strategy, originally introduced in 2021, is also expected to undergo a major update in line with the transposition of the NIS2 Directive. Comprehensive guidance on achieving national cybersecurity objectives, complementing EU regulatory frameworks, is expected in the near future.

According to the **2025 Eurobarometer**, **78% of Austrians** believe that improved cybersecurity, better protection of online data, and the safety of digital technologies would significantly facilitate their daily use of digital tools. This is slightly **below the EU average of 81%**. Meanwhile, **19% of respondents in Austria** did not consider it significant, compared to **16% at EU level**.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Austria's digital transformation strategy continues to place increasing emphasis on inclusiveness, with a growing number of targeted policy measures aiming to reduce socio-demographic divides in digital skills and access. While the country performs well overall, gender gaps remain substantial, particularly in both basic digital skills and ICT professions. Similarly, educational background continues to have a considerable influence on digital proficiency, with lower-skilled individuals significantly lagging behind. Austria addresses these disparities through a mix of national and regional initiatives, such as 'Digital Everywhere+', aimed at reaching rural populations and vulnerable groups, and the MINT Action Plan, designed to promote STEM education and participation among youth and women.

Austria has also begun integrating digital tools more strategically into public services, with a strong focus on usability and citizen trust. Measures in areas such as e-health and digital justice reflect an intention to make digital services more responsive to user needs. However, efforts to promote the uptake of secure digital identity solutions (eID) remain limited and will require additional focus. On the democracy and information front, Austria continues to enhance its response to disinformation through interministerial coordination, awareness-raising campaigns, and international cooperation. While digital safety for vulnerable groups such as children is not yet a central policy pillar, ongoing initiatives in schools and public campaigns aim to strengthen digital awareness from an early age.

According to the **2025 Eurobarometer**, **78% of Austrians** consider accessing public services online to be important for their daily life by 2030. This is **below the EU average of 84%**. At the same time, **21% of Austrian respondents** did not view it as important, compared to **14% at EU level**. When it comes to human support, **73% of Austrians believe that receiving human support to help access and use digital technologies and services would significantly facilitate their daily digital experience**, slightly below the EU average of 77%, while **87% of Austrians consider it important that public authorities ensure proper human support to accompany the transformation brought by digital technologies and services**, slightly below the EU average of 89%.

Equipping people with digital skills

Basic Digital Skills

Austria maintains a strong position in digital skills, with 64.68% of its population possessing at least basic digital skills in 2023, well above the EU average of 55.56%. While new overall data is not available for 2024, detailed demographic insights highlight both strengths and areas requiring attention:

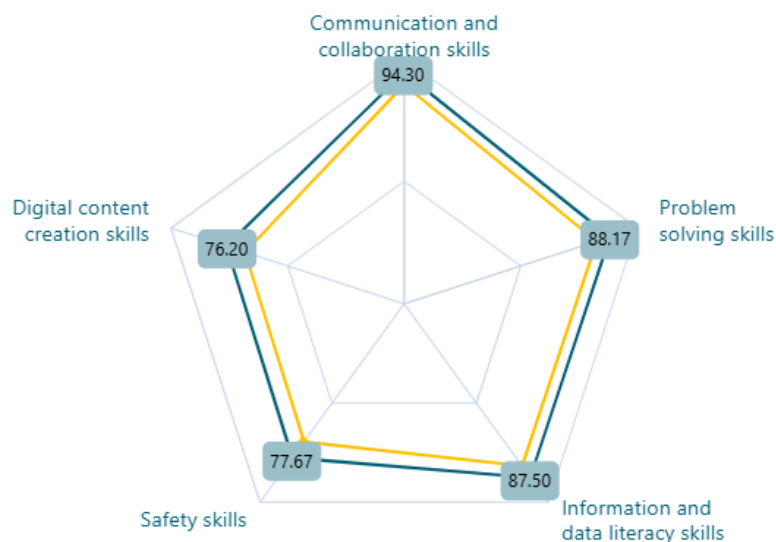
- **Gender Gap:** Austria faces the largest gender gap in the EU, with 68.71% of men and 60.67% of women proficient in digital skills – a disparity of 8.04 pps, significantly higher than the EU average (2.23 pps). Bridging this gender divide remains a key challenge.
- **Educational Attainment:** Highly educated Austrians exhibit high digital proficiency (83.06%), exceeding the EU average (79.83%). However, those with lower education levels remain

substantially behind at 37.17%, highlighting a considerable skills gap (27.51 pps below the national average), larger than the EU average (21.95 pps).

- **Urban-Rural Divide:** Rural residents have a lower rate (59.24%) compared to the national average but still surpass the EU rural average (47.50%). The digital divide between rural and national averages (5.44 pps) is smaller than the EU average (8.06 pps).

Digital Skills Index components

% of individuals



Legend

MS EU

- **Age Group Analysis:**

Individuals aged 35-44 have the highest proficiency (76.10%, significantly above the EU average of 65.26%).

Although the 65-74 age group is the least proficient (37.68%), they are notably above their EU counterparts (28.19%).

- **Digital Skills Components:** Austria exceeds the EU average across all Digital Skills Index areas, notably excelling in communication and collaboration (94.30%). Digital content creation remains comparatively the weakest area (76.20%), yet still above the EU average.

Overall, Austria demonstrates robust digital skills performance but needs targeted measures to reduce disparities, especially regarding gender and educational background.

Austria initially set an ambitious national target to reach 100% basic digital skills coverage by 2030. However, **in 2024, following extensive stakeholder consultations, the authorities adjusted this goal to align with the EU target (80%).** This revision acknowledges realistic constraints such as structural challenges and certain demographic groups' resistance to full digitalisation.

The adjusted Austrian **roadmap introduced targeted measures designed to strengthen the country's progress towards achieving widespread basic digital skills**, reflecting both lessons learned from earlier initiatives and new priorities identified through extensive stakeholder consultation. These measures specifically address critical areas such as the use generative AI, vocational education, and public administration digitalisation:

- **Inter-University Project 'Academic AI Services' (EUR 6 million, 2025-2027):** This initiative aims to establish a secure, controlled environment within universities to explore and integrate

generative AI technologies. By providing students and academic staff with direct exposure to advanced digital tools, the project supports not only the development of specialised digital skills but also contributes significantly to overall digital literacy within higher education.

- **Digi-Cheque for Trainees (2023-2024):** Targeting vocational apprentices, this programme was designed to boost digital skills by fully funding participation in relevant training measures (up to EUR 500 per training course, for up to three training courses annually). Although this specific initiative has formally concluded, evaluation is currently underway, which will determine its future renewal and potential adjustments to better serve the changing needs of apprentices.
- **Future Skills initiative (EUR 900 000, 2025-2030):** Recognising the urgent need for digital transformation within public services, this initiative identifies and develops essential digital competencies among employees in the Austrian federal administration. It aims to equip civil servants with the skills necessary to navigate and support ongoing digitalisation efforts effectively.

These new initiatives complement longstanding measures, such as the **Digital Skills Initiative**, which provides digital devices to approximately 80 000 students annually, and the systematic integration of digital education modules into primary and secondary curricula. Together, these coordinated efforts form the backbone of Austria's strategy to sustainably improve digital proficiency across all segments of society.

The 2024 report recommended targeted support for lower-skilled workers, disadvantaged groups, and rural populations, emphasising sustained financial backing and scaling up successful initiatives. The Austrian authorities responded by refining their strategy:

'Digital Everywhere+', an interministerial initiative, has proven particularly successful. Initially aimed at disadvantaged adult learners, rural residents, and those with a low level of education, it has shown promising results. This programme combines face-to-face workshops and online sessions, reaching digitally excluded groups effectively through partnerships with municipalities. About 50% of municipalities involved are in infrastructure-poor rural regions.

2024 recommendation on basic digital skills: Explore measures to boost the digital skills of the population that is far from digitalisation (such as low-skilled jobseekers) in order to achieve the very ambitious national target.

Austria addressed fully the recommendation by putting significant policy actions into place in 2024. Initiatives like "'Digital Everywhere+', combined with the continued implementation of existing measures such as "Digital Everywhere'" – both developed and implemented under the auspices of the cross-ministerial Digital Skills Initiative –Offensive', go in the direction of addressing the remaining challenges in the area of basic digital skills.

ICT specialists

In terms of ICT specialists, Austria outperforms the EU in the total percentage of ICT specialists as a share of total employment. In 2023, 5.3% of Austria's total employment were ICT specialists, compared to the EU's 4.8%. This figure remained steady at 5.3% in 2024, while the EU's share increased to 5.0%. Austria's growth rate is thus of 0.0% in this area is lower than the EU's 4.2%.

Regarding female ICT specialists, Austria shows a positive trend. In 2023, 19.5% of ICT specialists in Austria were female, slightly above the EU's 19.4%. This figure increased to 21.1% in 2024, while the EU's share increased to 19.5%. Austria's growth rate of 8.2% in this area is higher than the EU's 0.5%.

In 2022, 20.14% of Austrian enterprises with 10 or more employees provided ICT training, slightly below the EU's 22.37%. By 2024, this figure decreased to 19.92% in Austria, while the EU saw a marginal decrease to 22.29%. Austria's annual growth rate of -0.5% in this area is lower than the EU's -0.2%.

In summary, while Austria lags behind the EU in the proportion of enterprises providing ICT training and the growth rate of total ICT specialists, it shows a promising trend in increasing the share of female ICT specialists. The country's annual growth rate in this area is significantly higher than the EU's, indicating a positive trajectory towards gender balance in the ICT sector. However, Austria's overall ICT specialist growth rate is lower than the EU's, suggesting a need for strategies to boost the growth of ICT specialists in general. The country is lagging behind compared to its national trajectory.

To align with the EU's Digital Decade target of 10% ICT employment by 2030, Austria has now explicitly defined a national trajectory towards this objective in its adjusted roadmap.

The roadmap introduces **seven new measures specifically aimed at expanding the ICT workforce and addressing gender imbalances.** The IT Experts funding programme (EUR 1.2 million, 2025-2026) promotes innovative approaches to expand the ICT talent pool, with a particular emphasis on training, career orientation, and increasing the participation of women. A complementary initiative is the study on the labour market situation in the field of cybersecurity, funded through the K-PASS cybersecurity research programme, which will inform future policy through in-depth analysis of skills gaps, demand forecasts, and existing training offers.

To tackle gender-based barriers more directly, Austria has launched **multiple awareness and outreach campaigns, including the initiative on dismantling gender stereotypes in educational and career choices** (EUR 2.8 million, 2024-2026), **the MINT-Girls Challenge, and the Girl's Day in the federal public service.** These initiatives aim to make ICT and STEM careers more accessible and appealing to girls and young women. More broadly, the **MINT Action Plan** serves as a strategic umbrella for promoting STEM education across the entire training chain. It includes programmes such as MINT Regionen, which supports regional networking among educational institutions to promote STEM careers, with an emphasis on raising awareness and improving visibility for female students in technical fields.

Austrian authorities acknowledge that reaching the 10% target will require substantial efforts, particularly in closing the gap between current ICT workforce supply and the strong demand from industry. **Stakeholder feedback highlighted the need to go beyond attracting new entrants and focus on reskilling and upskilling existing professionals,** particularly for experienced roles.

2024 recommendation on ICT specialists: Based on the conclusion of the study on professionals in the Digital Skills Initiative, design new targeted measures to increase drastically the number of ICT specialists, including by upskilling/reskilling the labour force and bridging the gender gap.

Austria made some efforts to address the recommendation through new policy actions in 2024. Overall, the adjusted roadmap builds on previous foundations by providing a more complete framework, defining specific focus areas, and outlining a broader ambition to expand Austria's ICT

workforce through more inclusive measures. Continued monitoring of the effectiveness of these programmes, especially their gender impact, will be key to achieving the Digital Decade goals.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

Austria reached a score of 80.82 in total digital public services for citizens in 2024 (2030 national target set), slightly below the EU average of 82.32. The annual growth rate was 0.1%, significantly lower than the EU's 3.6%. For cross-border digital public services for citizens, Austria's score fell from 68.22 in 2023 to 66.67 in 2024, remaining below the EU average of 71.28. The growth rate of -2.3% contrasts with the EU's +4.3%, signalling a need for renewed efforts to boost service availability and accessibility. The country is on track according to its national trajectory

In the realm of digital public services for businesses, Austria is on a more positive trajectory with a score of 87.69 exceeding the EU average of 86.23. Austria's growth rate of 5.8% outpaced the EU's 0.9%. For cross-border digital public services for businesses, Austria's score was 76.94 in 2024, above the EU's 73.76. Austria's growth rate of 12.2% was significantly higher than the EU's 0.9%. The country is on track according to its national trajectory.

Regarding access to e-health records, Austria's total score was 88.17 in 2023 and 86.98 in 2024, both higher than the EU's 79.12 and 82.70, respectively. However, Austria's growth rate of -1.4% was considerably lower than the EU's 4.5%. The country is lagging behind compared to its national trajectory.

Austria's digital public services and access to e-health records present a nuanced picture. While Austria leads in certain areas such as total digital public services for citizens in 2023 and access to e-health records in both years, it lags behind in others, particularly in cross-border services and growth rates. The country's performance in digital public services for businesses shows a promising development, with higher growth rates than the EU in both total and cross-border services.

eID

Austria continues to provide universal access to a secure digital identity (eID), which is fully notified under eIDAS. Consequently, the country has already met the Digital Decade's 2030 target, with 100% of its population having access to a secure, privacy-protecting digital identity solution.

The adjusted roadmap does not introduce new measures specifically targeting increased eID usage. However, Austrian authorities have indicated ongoing efforts to promote broader uptake through practical incentives and integration into daily life. Initiatives include linking the new eID Austria with passport issuance processes and offering fee reductions for public services when users identify themselves digitally. Such initiatives are expected to enhance the convenience and appeal of digital identities, ultimately encouraging more widespread adoption. Overall, the share of e-Government users within the population has only increased slightly, from 78.46% in 2022 to 78.71% in 2024.

Sustained promotional campaigns and integration of eID into essential public services will be crucial to increasing its everyday use, thus fully capitalising on Austria's strong foundation in digital identity infrastructure.

Digitalisation of public services for citizens and businesses

Following recommendations from the 2024 report, Austrian authorities addressed critical gaps in their strategic roadmap by setting explicit national targets and trajectories aligned with the EU's Digital Decade goals for both citizens and businesses. The adjusted roadmap streamlined previous

initiatives, narrowing its focus onto fewer, more impactful measures to accelerate overall progress in digital public service delivery.

The establishment of a jointly defined publicly accessible health portal, for instance, aims to create a comprehensive digital platform providing streamlined access to health-related services and information. At the same time, the digitalisation of case management in the judiciary constituted a step forward in fully digitalising Austria's judicial system: by transitioning to digital case management, the initiative seeks to significantly boost administrative efficiency, reduce processing times, and enhance transparency, thus providing citizens and businesses with easier and more accessible judicial services.

These targeted initiatives directly respond to previously identified challenges, notably by reinforcing coordination across government levels and improving the user experience in essential public sectors such as healthcare and judiciary services.

In the area of key digital public services for businesses, the topic of structured e-invoicing and Peppol integration has gained attention among economic operators in Austria. Peppol (Pan-European Public Procurement On-Line) is a set of technical specifications and a secure network infrastructure that facilitates the cross-border exchange of electronic procurement documents – most notably, structured electronic invoices – between public administrations and businesses across the EU. While e-invoicing to the federal government has been mandatory since 2014 – with the Peppol transport infrastructure accepted as a valid method for submission – Austria still lacks a designated national Peppol Authority, which places it behind most other EU Member States in this area. The Peppol system, operated by the non-profit organisation OpenPeppol, enables cross-border interoperability in electronic procurement and invoicing, and its effective implementation typically relies on coordination through a national authority. In Austria, although the Austrian Federal Computing Centre (BRZ) operates a centralised Service Metadata Publisher and supports approximately 5 000 Peppol receivers, it does not hold official Peppol Authority status. Economic stakeholders have voiced concern over this gap.

Authorities have notably prioritised overarching projects, emphasising coordinated implementation at federal and regional levels. The strategic reduction in the number of individual measures reflects a deliberate effort to focus resources effectively, thereby enhancing implementation and achieving clearer, measurable outcomes.

2024 recommendation on key digital public services: Promote the use of eID and digital public services by the citizens. Make use of the conclusions of the 'Study on appropriate channels for digitalisation with maximum benefits' to further digitalise public services in an efficient manner.

Austria made some efforts to address the recommendation through new policy actions in 2024. The adjusted roadmap introduced clear national targets and prioritised impactful flagship projects to improve service delivery. New measures in healthcare and justice aim to enhance user experience and accessibility. However, further action is needed to promote wider eID use.

e-Health

In 2024, Austria made significant progress to contribute to e-health Digital Decade commitments. While the key challenges identified in the 2024 country report persist, Austria adopted a dedicated e-Health Strategy in June 2024, reflected clearly in the adjusted national roadmap. The new strategy aims to address the challenges related to the **lack of integration for specific data categories** – such as

medical devices, implants, and medical imagery – **and incomplete connections within the ELGA system** (standing for ‘Elektronische Gesundheitsakte’, which means electronic health records), as it currently includes public hospitals and pharmacies, but excludes many private healthcare providers.

For the first time, **a defined national trajectory and explicit targets for e-health have been established, aligning closely with EU Digital Decade objectives**. In support of these goals, Austria has committed to an annual budget of approximately **EUR 51 million for e-health initiatives**, distributed through a yearly programme designed to implement specific projects prioritised under the new strategy.

By the same token, the new measures introduced in the adjusted roadmap significantly enhance Austria’s e-health framework. The measure ‘Access for citizens to all ELGA health records’ expands both the accessibility and completeness of the existing ELGA platform, allowing citizens comprehensive digital access to their personal health records. This measure aligns closely with the establishment of the new publicly accessible health portal, which integrates various digital health services into a unified, user-friendly interface. The measure on ‘**Access for all healthcare providers (GDA)**’ ensures comprehensive connectivity to Austria’s public telematics infrastructure for healthcare professionals – including private providers. By addressing previously identified gaps in ELGA connectivity, particularly for private healthcare providers, and introducing mobile connectivity options, it significantly strengthens interoperability and communication within the healthcare ecosystem.

Finally, the introduction of the measure ‘**Data on medical devices and implants**’ addresses a notable gap from previous years by integrating these critical data categories into the ELGA infrastructure. This addition substantially enhances the completeness of patient information available on the platform, thereby improving data availability, patient safety, and overall care coordination.

2024 recommendation on e-Health: (i) Make all data types available to citizens through the online access service; (ii) Offer a mobile application for citizens to access their electronic health records; (iii) Increase the supply of health data by onboarding more categories of healthcare providers.

Austria addressed fully the recommendation by putting significant policy actions into place in 2024. The majority of data categories, including medical devices and implants, are now being integrated into ELGA. A new publicly accessible health portal, including mobile access, is under development. Connectivity for private healthcare providers is being expanded. These measures are backed by a dedicated eHealth strategy and EUR 51 million in annual funding.

Building a safe and human centric digital environment and preserving our democracy

In recent years, Austria’s digital civic and political participation rates have shown a moderate decline, yet generally remain aligned with or above EU averages. **In 2024, 11.30% of Austrians participated in online consultations or digital voting to define civic or political issues (down from 12.67% in 2023), still above the EU average of 10.05%.**

Similarly, **the percentage of individuals expressing opinions on civic or political matters through websites or social media decreased notably from 15.79% in 2023 to 12.39% in 2024**, now falling below the EU average of 16.48%. Overall civic or political participation dropped to 19.79% in 2024 (from 22.88% in 2023), slightly below the current EU average of 20.45%. These trends indicate a

weakening engagement that calls for renewed attention from policymakers, especially given Austria's traditionally strong digital infrastructure.

In 2023, in Austria, 31.4% of individuals encountered online messages considered hostile or degrading towards groups based on factors such as ethnicity or disability, slightly below the EU average of 33.5%. Young people (aged 16-24) (45.50%) reported much higher exposure than adults (aged between 25-64) (31.84%), showing a substantial age-related difference. Males (32.27%) and females (30.55%) reported similar rates, reflecting balanced exposure across genders.

In 2023, 42.57% of individuals in Austria reported having come across information or content on internet news sites or social media that they considered untrue or doubtful, below the EU average of 49.25%. Of those who encountered such content, 28.26% verified its truthfulness, indicating that a notable share of individuals assessed the reliability of the material. Youth (16-24) (48.70%) reported slightly more exposure than adults (25-64) (44.29%), with verification rates also being higher for youth (37.33%) compared to adults (28.93%). Similarly, males (47.25%) reported notably higher exposure than females (37.94%), with verification rates also being considerably higher among males (33.94%) than females (22.63%).

Compared to EU averages, a lower proportion of individuals in Austria encountered perceived hostile and degrading online messages and potentially misleading information online. At the same time, a higher proportion of individuals reported verifying the accuracy of information compared to the EU average, though notable differences in exposure and verification rates existed between males and females, as well as between young people (16-24) and adults (25-64). Overall, while the data shows a relatively more positive picture for Austria than broader EU trends, efforts are still needed to ensure the safety and inclusiveness of online spaces, with a focus on countering misinformation.

Austrian authorities have taken targeted and comprehensive measures to address rising concerns about disinformation, particularly around major electoral events. Austria employs a robust interministerial approach, exemplified by **the Interministerial Working Group on Hybrid Threats, established in 2019**, aimed at coordinating national strategies to counter disinformation effectively and enhancing resilience through regular assessment and inter-agency communication.

Strategically, Austria's approach involves both preventive and responsive measures. Prior to the 2024 elections, authorities implemented dedicated initiatives such as the social media campaign 'Combating disinformation' to raise public awareness and resilience. Furthermore, the government launched targeted awareness campaigns for municipalities to enhance vigilance against misinformation in local elections. Regular training and information sessions, including online and classroom-based courses for public administration staff, contribute to broader societal awareness.

On an operational level, Austrian authorities utilise the Federal Criminal Police Information Service on Disinformation, which provides daily analyses and operational measures through interministerial platforms, significantly enhancing preparedness against coordinated disinformation campaigns. The strategic communication response to Foreign Information Manipulation and Interference (FIMI) is bolstered by continuous research, notably via the national security research programmes (KIRAS and K-PASS).

Austria has demonstrated successful pragmatic cooperation among ministries and institutions, particularly evident during cyber threats. Nonetheless, authorities highlight that sustained long-term investment in resilience-building measures, digital literacy, and public trust is indispensable to effectively counter the evolving landscape of disinformation.

Overall, Austria maintains a relatively favourable digital environment, exhibiting slightly lower rates of hostile and misleading content exposure compared to broader EU trends. Yet, declining civic participation online signals the need for renewed policy focus on digital civic engagement. The authorities' comprehensive, interministerial approach to combating disinformation provides a robust framework, but sustained efforts remain crucial to further strengthen resilience, build digital awareness across demographics, and maintain Austria's democratic integrity in the digital age.

According to the **2025 Eurobarometer**, **Austrian respondents express a very high sense of urgency** for public authorities to act in protecting children online, mirroring the EU average. Specifically, **93%** of Austrians consider urgent action necessary to address **the negative impact of social media on children's mental health**, identical to the EU average, while **92%** find it urgent to tackle **cyberbullying and online harassment**, and **92%** support urgent action on **age assurance mechanisms to restrict access to age-inappropriate content**, again equal to the EU average.

At the same time, **79% of Austrians consider it important that public authorities take action to shape the development of Artificial Intelligence and other digital technologies to ensure they respect fundamental rights and values**, slightly below the EU average of 83%.

Leveraging digital transformation for a smart greening

Austrian authorities recognise the importance of the green transition and consistently prioritises sustainability in their broader political and economic agenda. However, **the integration of environmental objectives within the country's digital strategic roadmap remains limited.** While certain initiatives – such as those promoting AI for environmental purposes – contribute indirectly to climate goals, the roadmap lacks a comprehensive approach to harness digital tools for sustainability. As a result, the green-digital nexus is not yet fully embedded in Austria's digital transformation strategy, suggesting scope for a more strategic alignment moving forward.

The environmental footprint of Austria's ICT sector reveals a positive trend. Austria's recycling rates for outdated ICT devices consistently exceed EU averages, indicating higher device turnover. Specifically, for older desktop computers (18.05%), mobile phones (14.69%), and laptops or tablets (14.50%), Austria surpasses EU average disposal rates (14.66%, 10.93%, and 11.31% respectively).

Austrians notably prioritise sustainability when purchasing ICT devices. Only 1.80% of Austrian consumers report that they consider none of the sustainability characteristics important, substantially below the EU average (3.65%). Moreover, Austrian consumers exhibit strong environmental awareness regarding product lifecycle management: 20.88% consider the availability of a manufacturer or seller take-back scheme as important, markedly higher than the EU average (6.85%). Price remains a decisive factor for most consumers (71.43%), slightly higher than the EU average (69.12%).

The adjusted Austrian roadmap continues to lack a dedicated, explicit green digital transition section, although several initiatives indirectly support sustainability objectives. Existing measures, such as 'AI for Green', continue to drive progress by funding AI applications explicitly designed to achieve environmental and climate goals. The programme emphasises assessing the climate-related costs versus the environmental benefits of new AI applications, thus embedding sustainability directly within digital innovation processes.

Furthermore, the **SME-DIGITAL 4.0 & GREEN support initiative remains active, promoting the digital transformation of SMEs with a sustainability focus.** However, no significant new measures or innovations specifically addressing the environmental footprint of the ICT sector have been introduced.

Austrian authorities highlighted proactive steps towards greater sustainability awareness in digital technologies. In particular, the recent call 'AI Ökosysteme 2024' includes a funded research study on Green AI, with a budget of up to EUR 100 000 for 18 months. This study systematically evaluates current research on sustainable AI systems and aims to provide practical guidelines for developers and policymakers, facilitating broader adoption of less resource-intensive AI technologies, such as renewable-powered infrastructure and computationally efficient algorithms.

Additionally, sustainability and climate neutrality form core cross-cutting themes within the 2024-2026 AI Implementation Plan of the national AI strategy (AIM AT 2030), underlining Austria's intent to embed environmental considerations deep into its broader AI and digital strategies.

According to the 2025 Eurobarometer, **69% of Austrians believe that digital technologies will be important in helping to fight climate change by 2030**, such as through apps that track emissions or enable car-sharing and online meetings. This figure is slightly below the EU average of 74%. Similarly, **76% of Austrians consider it important that public authorities ensure digital technologies serve the green transition**, compared to an EU average of 80%.

2024 recommendation on Leveraging digital transformation for a smart greening: (i) Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. (ii) Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs. (iii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing

In 2024, Austria continued the implementation of existing measures but did not take any new measuremeasures. Austria recognises the importance of aligning digital transformation with environmental objectives, but progress remains fragmented. The adjusted roadmap continues to lack a dedicated section or coherent strategy linking the green and digital transitions. While initiatives such as AI for Green and SME-DIGITAL 4.0 & GREEN support sustainability goals indirectly - by promoting resource-efficient AI solutions and green SME transformation - no new or comprehensive measures have been taken to improve the energy or material efficiency of digital infrastructures, particularly data centres.

Austria has also not yet introduced mechanisms to monitor or quantify the environmental impact of digital technologies. However, ongoing initiatives, such as the Green AI study under the "AI Ökosysteme 2024" 2024' call and cross-cutting sustainability themes in the 2024-2026 AI Implementation Plan 2024–2026, reflect growing awareness and could lay the groundwork for future policy alignment.

Annex I – National roadmap analysis

Austria's national Digital Decade strategic roadmap

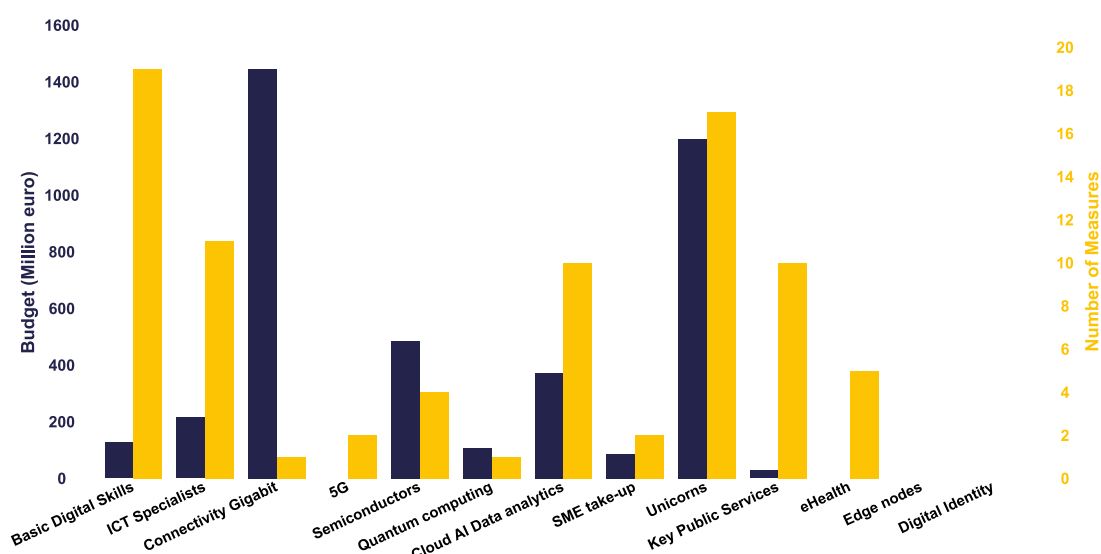
Austria provided a fully updated national Digital Decade roadmap on 31 January 2025, **containing 26 additional measures** and revising the trajectory for 5G. The update aligns with the new Commission's priorities on AI, cybersecurity and green ICT.

The new roadmap addresses a substantial number of roadmap recommendations issued in 2024, providing a trajectory for Basic Digital Skills, ICT Specialists, FTTP, Take-up of Data Analytics, Take-up of AI, Digital Intensity Index, Number of Unicorns, Digital Public Services for Citizens, Digital Public Services for Businesses, and the e-Health Index.

Notably, the roadmap also integrates strategic initiatives including Austria's national Data Strategy and e-Health Strategy, and links to cross-cutting goals such as accessibility and administrative digitalisation.

Several existing measures have been revised or expanded: most notably in the areas of semiconductors, cloud computing and AI, unicorns, and basic digital skills, to ensure more accurate budgetary allocations and stronger policy coherence. The update also includes specific adjustments in line with the EU digital rights and principles and the broader Digital Decade objectives.

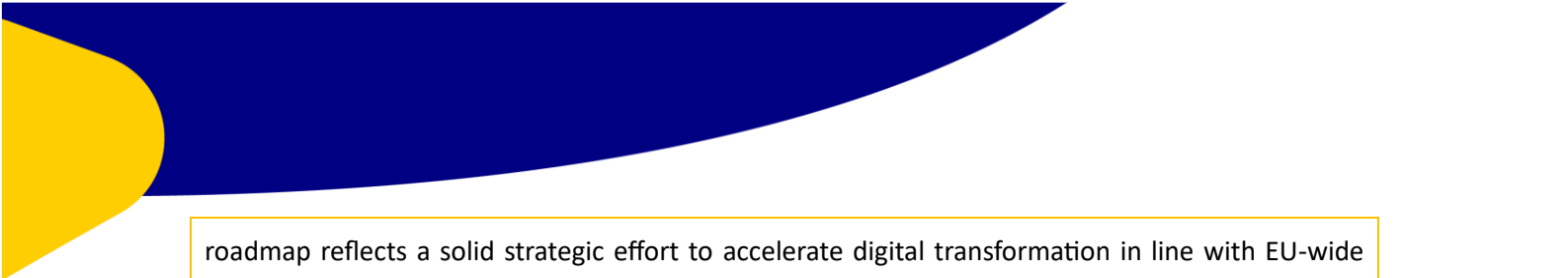
Measures and budget in national roadmap⁶



A total of 85 measures are now part of Austria's national strategic roadmap, backed by EUR 4.07 billion in combined public and private investment (0.84% of Austria's GDP in 2024).

Overall, Austria's adjusted roadmap represents a comprehensive and ambitious update setting more precise national targets and introducing targeted new measures in critical areas such as AI, digital skills, and public service delivery. While implementation and coherence across some areas (e.g. green-digital nexus, uptake of advanced technologies by enterprises) could be further improved, the

⁶ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.



roadmap reflects a solid strategic effort to accelerate digital transformation in line with EU-wide goals.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Austria participates as an observer in the Alliance for Language Technologies EDIC, and is supporting the setting up of some EDICs in the making, e.g. in the area of cybersecurity skills. It participates directly in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Austria is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Austria has contributed to the Best Practice Accelerator by sharing one best practice in the framework of the Digital Skills cluster (Digital Skills Initiative Austria).

EU funding for digital policies in Austria

Austria allocates 36% of its total recovery and resilience plan to digital (EUR 1.3 billion)⁷. In addition, under cohesion policy, EUR 76 million (representing 7% of the country's total cohesion policy funding), is dedicated to advancing Austria's digital transformation⁸. According to JRC estimates, EUR 1.4 billion directly contribute to achieving Digital Decade targets (of which EUR 1.3 billion comes from the RRF and EUR 68 million from cohesion policy funding)⁹. Investments are strongly concentrated in a few key areas. Gigabit capable network deployment receives the highest allocation, underlining Austria's focus on improving its digital infrastructure. Basic digital skills and the training of ICT specialists are also well-funded, reflecting the country's efforts to enhance human capital in the digital domain.

Significant resources are dedicated to emerging technologies, with over EUR 100 million each for semiconductors and quantum computing, aligning with the strong priority given to these areas in the Country's national strategic roadmap.

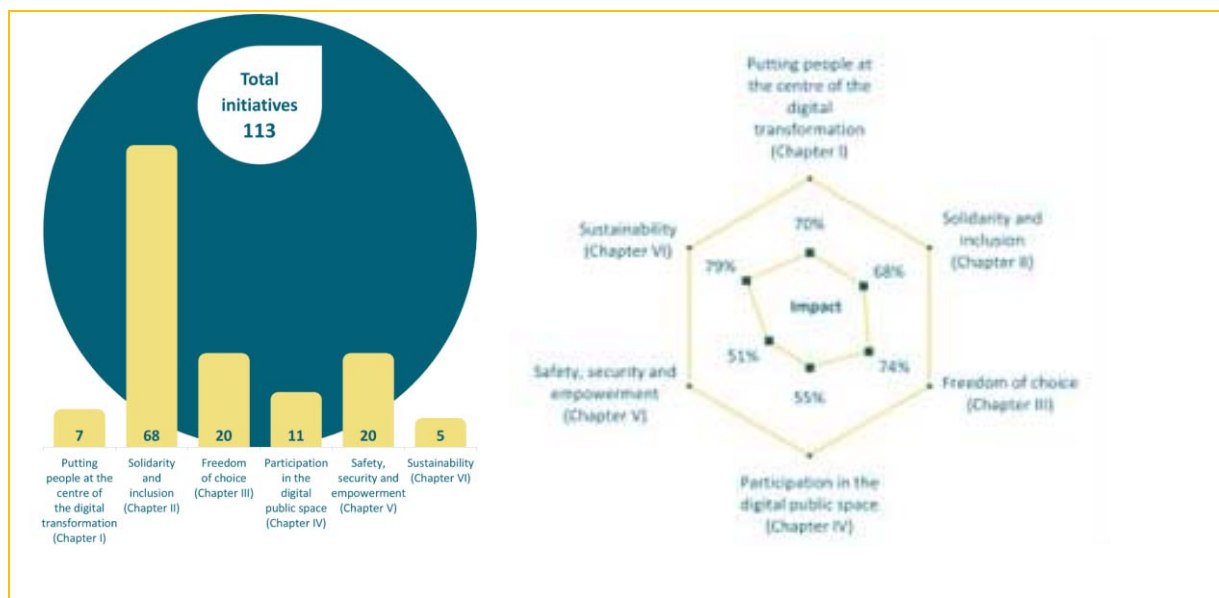
Overall, Austria's funding approach highlights a strategic emphasis on connectivity, digital skills, and technological innovation.

⁷ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

⁸ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

⁹ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹⁰



Activity on Digital Rights and Principles (figure 1)

Austria has been one of the most active Member States in implementing digital rights and principles, with over 100 initiatives overall and 21 new initiatives in 2024, showing significant progress towards its commitments. **Austria is most active in the area of Digital education, training and skills (II)**. There is room for improvement, especially with regards to Protection and empowerment of children and young people in the digital environment (V) and Sustainability (VI) where less activity has been identified.

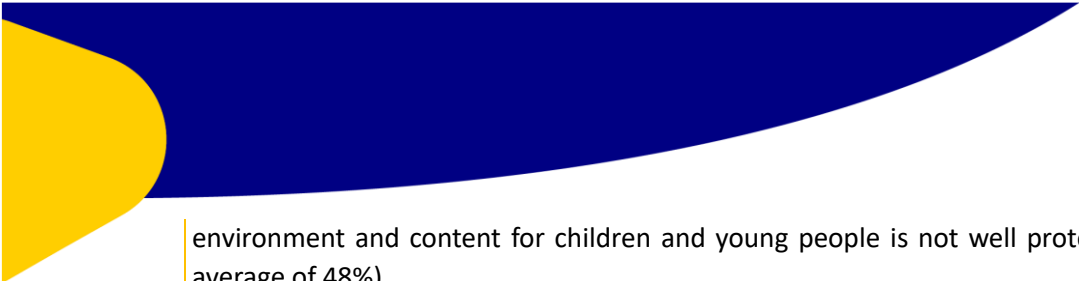
Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators developed by the support study illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Austria (mainly national government) and how these are perceived by citizens.

The indicators suggest that **Austria is most successful in implementing commitments related to Sustainability (VI)**. Austria should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Safety, security and empowerment (V).

According to the Special Eurobarometer 'Digital Decade 2025', **53% of citizens in Austria think that the EU protects their digital rights well** (a 2% decrease since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting easy online access to all key public services in the EU (65%, above the EU average of 58%). They are most worried that their right to a safe digital

¹⁰ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



environment and content for children and young people is not well protected (49%, below the EU average of 48%).



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COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
{SWD(2025) 292 final} - {SWD(2025) 293 final} - {SWD(2025) 295 final}

DIGITAL DECADE 2025 COUNTRY REPORTS

Belgium

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Executive summary

Belgium benefits from a dynamic tech ecosystem and rapid technology adoption among enterprises. It holds a leading position in VHCN (gigabit) coverage, although there remains room to expand FTTP coverage and address persistent gaps in digital skills. The country has positioned itself as a leader in cybersecurity, strategic technology development and online service provision.

Belgium shows a high level of ambition in its contribution to the Digital Decade, having set 14 national targets, 93% of which are aligned with the EU 2030 targets. The country is following its trajectories, with 86% of them on track (on the basis of the 2024 trajectories defined for 7 KPIs out of 8 analysed). Belgium addressed 75% of the 8 recommendations issued by the Commission in 2024, either by implementing significant policy changes (50%) or making some changes (25%) through new measures.

Belgium stands out for its performance in gigabit coverage and rapid progress in 5G deployment. While fibre coverage still has room to grow, efforts to expand its deployment are accelerating. Business digitalisation is improving, with a focus on AI adoption and support to SME and start-up innovation. In cybersecurity, Belgium leads by engaging SMEs and committing to resilience-building initiatives. Digital skills development remains an area that needs to be prioritised, with programmes addressing ICT and STEM shortages and promoting gender inclusion. Belgium excels in online public services. Aligning with EU priorities, Belgium embeds sustainability in its strategies, and enhances the EU's sovereignty and competitiveness, such as in R&D for semiconductors.

Digital Decade KPI ⁽¹⁾	Belgium				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	BE	EU
Fixed Very High Capacity Network (VHCN) coverage	91.2%	93.8%	2.8%	82.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	25.0%	30.7%	22.8%	30.0%	69.2%	8.4%	82.0%	-
Overall 5G coverage	40.4%	96.9%	140.0%	99.5%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	15	30	100.0%	18	2257	90.5%	164	10000
SMEs with at least a basic level of digital intensity (2)	-	83.7%	4.1%	-80.3%	72.9%	2.8%	90.0%	90%
Cloud	47.7%	-	-	62%	-	-	75.0%	75%
Artificial Intelligence	13.8%	24.7%	78.9%	15.0%	13.5%	67.2%	75.0%	75%
Data analytics	44.5%	-	-	-44%	-	-	75.0%	75%
AI or Cloud or Data analytics	64.2%	-	-	-	-	-	-	75%
Unicorns	7	7	0.0%	-	286	4.4%	14	500
At least basic digital skills	59.4%	-	-	63%	-	-	80.0%	80%
ICT specialists	5.4%	5.7%	5.6%	7.1%	5.0%	4.2%	10.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	83.2	81.4	-1.1%	87.0	82.3	3.6%	100.0	100
Digital public services for businesses	91.6	95.4	4.1%	94.0	86.2	0.9%	100.0	100
Access to e-Health records	100	100	0.0%	100.0	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics.
(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024).

According to the 2025 special Eurobarometer on the Digital Decade, 72% of Belgian citizens consider that the digitalisation of daily public and private services is making their lives easier. Concerning the action of the public authorities, 87% consider it important to counter and mitigate the issue of fake news and disinformation online, and regarding competitiveness, 84% consider it important to ensure that European companies can grow and become 'European Champions' able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

In recent years, Belgium has made significant **progress with its connectivity infrastructure's coverage**. Belgium is now in the leading position on **VHCN (gigabit) coverage**. By now, Belgium has recovered the lag in 5G spectrum assignment and has scope to improve its **FTTP coverage**, which is below the EU average, but deployment is gaining pace on that front. Moreover, the country's **5G coverage** now surpasses the EU average as it has rapidly improved since 2023. This firmly puts Belgium on track to achieve its 2030 targets. While Belgium has made progress in increasing the share of high-speed broadband subscriptions and 5G SIM card usage, it still lags behind the EU average in 5G coverage for households in sparsely populated areas and in the 3.4-3.8 GHz band. The country's strong growth rates in these areas indicate a positive trajectory, but there is still room for improvement to catch up with the EU average.

Belgium and its regions prioritise advances in **AI take-up by companies and the digitalisation of online public services, which shows a strong dynamic in particular for businesses**. It is also home to strategic assets such as R&D in semiconductors, and actively promotes quantum computing and quantum ecosystem. The Centre for Cybersecurity Belgium (CCB) and its activities position Belgium as a leader in cybersecurity, but also strengthens its capacity for technological innovation and resilience by narrowing the cybersecurity skills gap. Regarding cybersecurity, Belgium continues to lead by example through a range of initiatives. Looking ahead, the continued implementation of the current National Cybersecurity Strategy, the development of its successor, and efforts to enhance SME participation in cybersecurity measures will be key to ensuring long-term resilience and success.

Protecting and empowering EU people and society

Belgium's digital transformation is under pressure due to **persistent gaps in digital skills, ICT talent shortages, and gender imbalance among ICT specialists**. The low performance in advanced digital skills hampers labour market outcomes and competitiveness. However, Belgium excels in delivering **digital public services**, especially for businesses (above the EU average), and in the uptake of **e-ID** by citizens. Belgium leads the EU in terms of **access to e-Health records** in 2023 with a maximum score of 100. **Authorities focus on closing skills gaps** through lifelong learning and targeted reskilling, with **special attention given to women** in digital roles. Efforts also target combating disinformation and promoting digital literacy to protect citizens online, fostering a safer and more inclusive digital environment.

Leveraging digital transformation for a smart greening

Regarding progress in its **twin transition**, Belgium is actively engaged in both greening its digital infrastructure and supporting digital solutions for carbon reduction in other sectors. While several initiatives show promise, a comprehensive strategy that links the digital and green transitions would likely accelerate these efforts.

National Digital Decade strategic roadmap

Belgium submitted an addendum to its national Digital Decade roadmap on 11 December 2024, **addressing all the roadmap recommendations issued in 2024**. The country pledged to improve coordination across governance levels and to transition to an annual roadmap update cycle starting in 2025. The roadmap includes **13 updated and 5 new measures added to last year's 161 measures**. The new measures focus on people, digital skills, accessibility and inclusion. Most trajectories remain unchanged, with updates limited to missing KPIs for edge nodes and FTTP. The revised roadmap is composed of 166 measures with a budget of EUR 913.71 million (equivalent to 0.15% of GDP), up from EUR 892 million. It still covers all objectives of the Digital Decade such as a human-centred digital space, resilience and security, sovereignty, sustainability, and protection of society. Stakeholder engagement is planned for 2025, with Belgium committing to a more coordinated national strategy to close identified gaps and align with the EU's 2030 digital objectives. The country also decided to deliver a yearly roadmap, starting in 2025, instead of one every two years as the DDPP requires.

Funding & projects for digital

Belgium allocates 26% of its total recovery and resilience plan to digital (EUR 1.2 billion)¹. In addition, under cohesion policy, EUR 329 million, representing 13% of the country's total cohesion policy funding, is dedicated to advancing Belgium's digital transformation².

Belgium hosts the EUROPEUM EDIC. It is also a member of the Local Digital Twins towards the CitiVERSE EDIC and participates as an observer in the Alliance for Language Technologies EDIC, for which the region of Flanders is a member. Belgian entities are indirect and/or associated partners in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Belgium is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Within the Digital Decade's **Best Practice Accelerator**³, Belgium leads the 'Technology Uptake' Cluster, organising workshops on AI adoption for SMEs and other key topics, with active participation across Europe and plans for ongoing collaboration and knowledge sharing.

Digital rights and principles

According to a support study, Belgium has been one of the most active Member States in implementing the [European Declaration on Digital Rights and Principles](#), with over 100 initiatives overall and 12 new initiatives launched in 2024. Belgium is most active in the areas of digital education, training and skills and fair and just working conditions. Less activity has been identified with regards to sustainability. Measures in the area of freedom of choice appear to have most impact on the ground, in contrast to those addressing safety, security and empowerment and sustainability.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Recommendations

- **Basic digital skills:** Address the gender gap in digital skills, provide support for the less educated, assist older adults in becoming digitally savvy, and improve online safety skills to ensure comprehensive digital inclusion.
- **ICT specialists:** Sustain efforts to boost the number of female ICT specialists and female ICT graduates.
- **Digitalisation of SMEs and advanced technologies take-up – Cloud:** Expand efforts to advance cloud infrastructure and promote cloud adoption among SMEs through broader national coordination across all regions and more concrete actions.
- **Artificial intelligence:** Continue to support innovation in AI to reinforce leadership in the sector and create future global leader companies.
- **Fixed and mobile connectivity:** To enhance digital infrastructure, (i) focus on accelerating FTTP deployment, particularly in sparsely populated areas; and (ii) direct efforts towards increasing the assignment of harmonized spectrum in the 5G pioneer bands.
- **Green and digital transition:** Continue to coordinate efforts and develop more structured monitoring mechanisms for emission reductions, linking environmental sustainability with digital innovation.
- **Cybersecurity:** Continue efforts in cybersecurity to address evolving threats, particularly maintaining vigilance for enterprises and administration.

A competitive, sovereign and resilient EU based on technological leadership

Belgium's digital has been a key focus for policymakers, who aim to position the country as a forerunner in several areas of Europe's tech landscape. While Belgium's competitiveness in ICT faces hurdles overall, there is potential for further growth.

Government initiatives at both federal and regional levels, such as participation in the European Startup Nations Alliance and the establishment of an AI Campus hub, reflect strong support for start-ups and innovation. Additionally, significant public support for business R&D and a stable ICT sector contribution to gross value added indicate progress in research and innovation (R&I) performance. However, these improvements are tempered by decreasing venture capital (VC) intensity, inconsistent VC investments, and relatively low R&D spending and low numbers of ICT specialists. Furthermore, the need for small firms to better grow and commercialize innovations, along with limited employment in high-growth and innovative businesses compared to EU averages, highlights ongoing challenges.

Belgium's ICT sector represented **4.08%** of the gross value added in 2022, which is its lowest performance since 2019 and below the EU average of 5.46%, pointing to an overall under-performance of the country⁴. **R&D spending** in Belgium's ICT sector is not among the highest, at **16.91%** of the total R&D business expenditure in 2021. R&D personnel in the ICT sector made up **23.5%** of the total R&D workforce, which is below the average compared to other EU countries for which data was available.

High-growth businesses account for only 4.53% of employment, vs an EU average of 12.23%, according to Eurostat. In innovative sectors, despite the good performance of Belgium in R&I, employment in fast-growing enterprises in 50% of the most innovative sectors is low (2.2% in 2019 vs 5.5% EU average).

Public support to business R&D is one of the highest in the from EU (0.31% of GDP compared with the EU average of 0.24% of GDP), with two-thirds of it provided through tax incentives. However, the share of R&D tax support that small firms benefit from is low by OECD standards. Furthermore, evidence indicates that the impact of these R&D tax incentives diminishes as firm size increases.

Belgium remains a strong performer in R&I, although this does not fully translate into business dynamism. The 2024 European Innovation Scoreboard ranks Belgium as a 'strong innovator', with performance well above the EU average and nearly on a par with the 'innovation leader' countries. Belgium's innovation performance relative to the EU average (2.22% in 2023) has steadily increased over the last decade alongside its overall R&D intensity, which reached 3.35% of GDP in 2023 (compared to 2.06% in 2010). This growth has been achieved thanks to a very substantial increase in business R&D intensity (2.47% in 2022), now the second highest in the EU.

On connectivity, Belgium is in the leading position on VHCN (gigabit) coverage, rapidly caught up on its 5G backlog. Although it has scope to expand its FTTP coverage, deployment is gaining pace on that

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

front as well. However, the country needs to further monitor 5G coverage for households in sparsely populated areas and in the 3.4-3.8 GHz band, and fibre coverage.

Regarding critical technologies, Belgium remains a European leader in chip R&D with Flanders' Imec research lab. The country also plays a key role in advancing semiconductor innovation and production through public and private sector commitments (such as through the Semicon Coalition and a Chips Act's pilot line). Belgium continues to promote quantum computing and is likely to meet its edge nodes target.

The tech ecosystem for SMEs and start-ups growth in Belgium keep developing with a rather encouraging dynamic, thanks to ongoing support measures. The digital landscape for businesses in Belgium is positive overall.

On the state of enterprise digitalisation, in 2023 and 2024, Belgium made significant and consistent progress in the uptake of digital technologies by businesses, particularly in accelerating the uptake of AI in 2024. Of note, **Belgium is the host and lead Member of the 'Technology Uptake' Cluster of the Digital Decade's Best Practice Accelerator (BPA)**. Belgium leads or participates in six European Digital Innovation Hubs (EDIHs) and is engaging discussions to potentially participate in an AI factories project at EU level.

Belgium continues to lead in **cybersecurity** by example through a host of initiatives. Moving forward, the continued implementation of the National Cybersecurity Strategy and efforts to boost SME participation in cybersecurity initiatives will be crucial for sustained success.

According to the 2025 Eurobarometer⁵, 83% of Belgian people think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

Building technological leadership: digital infrastructure and technologies

Belgium excels in Fixed Very High-Capacity Network (VHCN) coverage, semiconductor R&D, and digitalisation, with strong growth in AI adoption by enterprises and cybersecurity leadership. However, the country needs to further monitor 5G for households in sparsely populated areas and in the 3.4-3.8 GHz band, and fibre coverage. Belgium also needs to increase SMEs' participation in cybersecurity initiatives.

Connectivity infrastructure

Belgium's digital infrastructure exhibits a complex landscape and mixed performance. While it leads the EU in total VHCN coverage and shows impressive growth in 5G coverage, **it lags in Fibre-to-the-premises (FTTP) coverage. The lag in 5G spectrum assignment has been solved in 2022.** The country's performance in expanding to sparsely populated areas varies, with strong growth in some areas but low coverage in others. Belgium's broadband take-up indicators show a mixed performance compared to the EU average. The country leads in the share of fixed broadband subscriptions at speeds of 100 Mbps or higher but lags behind in subscriptions at speeds of 1 Gbps or higher and in the share of the population using 5G SIM cards. However, Belgium's growth rates in these areas are generally positive and, in some cases, outpace the EU. Some of the measures in place include regulatory interventions to facilitate network deployment, spectrum management, promotion of VHCN and 5G take-up through awareness campaigns, the establishment of the Broadband Competence Office (BCO), and project fundings for 5G pilots, VHCN in white areas and 6G research.

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Regarding consumers, Belgium remains **expensive** for **small mobile plans, fixed internet, and premium bundles**, but competition is improving with **DIGI's entry as a fourth mobile operator**. In addition, changes to the **universal service rule** that took effect on 1 March 2024 redefined the affordable adequate Internet access service by introducing a new social internet offer. This new version of the social tariff system was adopted by 20 123 beneficiaries as of January 2025, while the old system still covered **162 701** users by the end of 2024. The number of beneficiaries of the **new system is expected to grow** as awareness increases.

Belgium's broadband take-up indicators show a mixed performance compared to the EU average. In 2023, 72.25% of fixed broadband subscriptions in Belgium were at speeds of 100 Mbps or higher, surpassing the EU's 65.9%. This figure rose to 75.87% in 2024, still ahead of the EU's 71.88%. However, the growth rate for this indicator in Belgium was 6.3%, which is lower than the EU's 9.1%.

For fixed broadband subscriptions at speeds of 1 Gbps or higher, Belgium lagged behind the EU. In 2023, only 4.57% of Belgian fixed broadband subscriptions were at this speed, compared to the EU's 18.47%. This rose to 5.53% in 2024, still below the EU's 22.25%. However, Belgium's growth rate of 22.4% outpaced the EU's 20.5%.

The share of the population using 5G SIM cards in Belgium was 13.26% in 2023, lower than the EU's 21.7%. This figure rose to 31.19% in 2024, still below the EU's 35.56%. Belgium's growth rate of 135.2% for this indicator was significantly higher than the EU's 63.9%.

VHCN and FTTP

Belgium's VHCN coverage is at 93.8% (2030 national target 100%), after a progression of +2.9% in 2024 and stands far above the EU average of 82.49%. The country is on track according to its national trajectory. However, the 2.9% growth rate between 2023 and 2024 was lower than the EU's 4.9%. **For households in rural areas**, Belgium's VHCN coverage was 80.83% in 2024, above the EU's 61.89%. The VHCN growth rate was 12.2%, outperforming the EU's 11.3%.

On regional disparities, Wallonia historically had the lowest VHCN coverage, but this changed with Orange's Docsis 3.1 network upgrade. However, while Belgium reported that near-full VHCN coverage will be achieved by 2030, **white areas persist**.

Belgium's FTTP coverage is at 30.7% (2030 national target 82%), after a progression of +22.8% in 2024 and stands far below the EU average of 69.24%. The country is on track according to its national trajectory. The growth rate of 22.8% between 2023 and 2024 significantly outpaced the EU's 8.4%. **For households in rural areas**, Belgium's FTTP coverage was 2.05% in 2024, far below the EU's 58.78%. The FTTP growth rate was 6.8%, lower than the EU's 11.9%. However, by 2024, FTTH made up 10.8% of broadband lines (555 000 lines), with Proximus seeing a 23.6% increase in FTTH retail sales.

The entire German-speaking region will be fully covered by an FTTH network by 2026 as GO Fiber, in the framework of a public-private partnership, is reducing white areas. For Belgium as a whole, Proximus and its joint-venture subsidiaries (Fiberklaar and Unifiber) are expanding coverage independently. Wyre (a joint venture between Telenet and Fluviu – a utility company) and DIGI have also started deploying fibre. Wyre's ambition is to cover 78% of their footprint in the northern part of Belgium with fibre by 2038 and is aiming at 70% by 2029.

Potential cooperation between Proximus/Fiberklaar and Telenet/Wyre may have a positive impact on the FTTH roll-out trajectory in **Flanders**: a Memorandum of Understanding aims to deploy FTTH in 2 million medium-density homes and allow reciprocal network access, pending review by competition

authorities. The possibility of a similar agreement with Orange is under discussion for **Wallonia**. If approved, such partnerships could boost rollout speed and service quality.

2024 recommendation on fixed connectivity: Accelerate efforts to ensure full FTTP coverage, addressing the remaining issues such as limited speed and service in rural areas

Belgium made some efforts to address the recommendation through new policy actions in 2024. The country is making **moderate progress** with some promising initiatives to reduce disparities in Flanders and a commitment to FTTP expansion. There is a **lack of specific new measures to tackle rural connectivity issues**, which are however limited given the wide availability of VHCN. Pursuing the Digital Decade's FTTP roll-out targets is considered to be a major point of attention. Given that many measures from the 2023 roadmap were rolled out to encourage deployments and are still ongoing, Belgium did not introduce new measures in 2024. As deployment continues, inflation, labour shortages, and infrastructure challenges could impact investment capacity and rollout efficiency.

Take-up of high-speed broadband is low, with the share of fixed broadband subscriptions reported at 5.53% for speeds greater than 1 Gbps (vs EU average of 22.25%), despite Belgium being above the EU average (72.25% vs 65.9%) for subscriptions to services of speeds greater than 100 Mbps.

Looking at the **market status of Belgium's operators**, **Proximus continues to hold its position as the dominant mobile operator** in the market, followed by **Orange and Telenet**.

Regarding copper switch-off, a gradual shutdown was initiated in 2023, with a full switch-off expected by 2035. Fibre replacement takes approximately five years per area. The Belgian Institute for Postal Services and Telecommunications (BIPT) continues to monitor the transition, ensuring transparency and improvements to communication.

5G

Belgium's 5G coverage is at 96.87% (2030 national target 100%), after a progression of +140.1% in 2024 and stands just above the EU average of 94.35%. The country is on track according to its national trajectory. The growth rate of 140.1% between 2023 and 2024 vastly outperformed the EU's 6.0%. **For households in rural areas**, Belgium's 5G coverage was 69.77% in 2024, below the EU's 79.57%. The 5G growth rate was 141.1%, far surpassing the EU's 11.9%.

In the 3.4–3.8 GHz band for 5G coverage, Belgium showed remarkable growth, with a growth rate of 246.5% between 2023 and 2024 compared to the EU's 32.6%. However, Belgium's coverage was lower than the EU's in both years, at 14.24% in 2023 and 49.34% in 2024, compared to the EU's 51.06% and 67.72%, respectively. For households in sparsely populated areas, Belgium's coverage was 3.76% in 2023 and 39.64% in 2024, compared to the EU's 15.86% and 26.19%, respectively. Their growth rate was 954.3%, significantly outperforming the EU's 65.1%. Belgium started from very low initial coverage, and was late to auction its 3.5 GHz spectrum (mid-2022), compared to many other EU countries. These high growth rates are in part a **reflection of the country's efforts to catch up from a low base**, driven by **delayed spectrum deployment, policy incentives, and strategic investments** made after 2022.

On 5G spectrum, Belgium's assignment of harmonized spectrum in the 5G pioneer bands was 65.83% in both 2024 and 2025, lagging behind the EU's 73.4% and 74.63% respectively. Belgium showed no

growth in this area between both years, while the EU's growth was 1.7%, owing to a lack of market demand.

2024 recommendations on mobile connectivity: (i) Accelerate efforts to ensure full 5G coverage, addressing the remaining issues such as limited speed and service in rural areas; (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment.

In 2024, Belgium made some efforts to address the recommendation through new policy actions. Regarding the progress on 5G coverage expansion (B2C and rural areas), Belgium acknowledges the **financial and market challenges** but, in part due to 2024 being an election year, does not introduce concrete **new incentives** or regulatory interventions to accelerate nationwide 5G standalone (SA) deployment or improve rural connectivity.

Regarding access to spectrum and the promotion of 5G SA for B2B and B2C, the market in Belgium has **focused its efforts on B2B**, with private networks benefiting from **dedicated spectrum and funding**. However, the **B2C market lacks strong incentives** for SA deployment, since the regulation in Belgium is technology-dependent.

There have been some noteworthy developments in Belgium:

- Belgium strengthened competition by allowing a fourth mobile operator with a full spectrum portfolio to enter the market. Citymesh/DIGI, became active in the retail market in December 2024 after acquiring reserved 5G spectrum for newcomers.
- In 2024, NRB sold its spectrum to Proximus.
- A Royal Decree and the BIPT decision with technical conditions of 2023 allows BIPT to issue private 5G licences, but there have been some applications for private 5G spectrum up to now.
- A Royal decree was published in 2024 to allow 5G deployment in the North Sea. Multiple 5G networks are in operation there.
- The remaining 20 MHz spectrum at 3.6 GHz was offered to the market in April 2024, but there were no bidders.
- No significant industrial demand for 26 GHz band has been identified, but a new consultation on the Royal decree is expected in 2025.

On 5G coverage, challenges include operators' preference for **5G Non-Standalone (NSA)** by reusing existing LTE sites, which slows down the deployment of full 5G SA. In addition, financial constraints and concerns about return on investment are limiting large-scale 5G SA roll-out. Many customers **do not perceive a clear benefit** of SA over NSA, reducing demand pressure. A significant portion of users still rely on **4G devices**, and rapid replacement is not seen as ecologically desirable.

Belgium has not pushed for SA deployment. While 5G networks are expanding, there is no targeted intervention to **improve speed and service in underserved areas**.

There is progress on B2B: Belgium has allocated **3800-4200 MHz spectrum** for private 5G networks. Federal funding is **exclusively awarded to B2B projects**, supporting **private 5G SA networks**. Some private networks are using **SA structures**, indicating progress in adoption by industry.

On B2C and spectrum access challenges, there is **limited demand** for private spectrum: Few parties are requesting 3800-4200 MHz spectrum, as **MNOs already offer private 5G solutions** within their licensed bands. There is **no major push for consumer (B2C) 5G SA adoption**: Belgium notes that no "crucial" B2C 5G SA application exists yet. Finally, there is a **lack of regulatory leverage**: Belgium states

Belgium

that, due to technology neutrality, it cannot force operators to **speed up SA deployment**, limiting its role in actively driving the transition.

Semiconductors

Belgium remains a European leader in chip R&D with its Imec research lab, and plays a key role in advancing semiconductor innovation and production through public and private sector commitments.

In March 2025, [Imec and Dutch chip printing machine supplier ASML struck a five-year partnership](#), that will bring some of ASML's machines to the new pilot line funded under the EU Chips Act by the EU and the Belgian region of Flanders. The pilot line aims to make microchips even smaller (to below 2 nanometres); it has started its activities and will focus on the procurement of tools in the early stage. The ASML investment in the partnership is complemented with **funding made available by the Chips Joint Undertaking (JU) and the Flemish government** (which invested EUR 1.4 million through the EU Chips Act for the realisation of the EU Chips Act NanoIC pilot line), and by the Dutch government (as an Important Project of Common European Interest). Bringing together ASML and Imec's respective knowledge and expertise will foster EU competitiveness by developing solutions that advance the semiconductor industry and initiatives focused on sustainable innovation.

Wallonia is involved in the FAMES pilot line, one of the three main pilot lines of the Chips Act. UCLouvain (ICTEAM) is a member of the consortium responsible for setting up and providing services for FAMES, and this initiative is co-financed by Wallonia. The Chips JU will fund the initiative through the chips competence call, and the required 50% co-financing the JU will make will be covered by the funding possibilities in the Walloon decree on R&I. Dedicated funding is planned for several European partnerships, including the Chips JU.

In March 2025, Belgium joined eight other EU countries to establish the [IPCEI on Next Generation Cloud Infrastructure and Services \(IPCEI-CIS\)](#), committing to strengthening Europe's semiconductor industry. The coalition aims to: (i) Expand semiconductor production capacity within the EU; (ii) Enhance Europe's leadership in key areas of the global semiconductor value chain; and (iii) Respond to increasing global public investment in the semiconductor sector. In collaboration with the European Commission, the Semicon Coalition will explore additional long-term support mechanisms to maintain and strengthen Europe's competitive position in the global semiconductor industry.

Also in March 2025, the Commission selected two Belgian projects led by advanced materials company Umicore, as part of its efforts to secure strategic resources. Both projects target **germanium, a critical semiconductor metal used in the defence and space sectors**: 'GePETO' focuses on refining the metal and 'Re-looks' explores substitutions for it.

Edge nodes

According to the Edge Node Observatory, Belgium is estimated to have deployed a total of 30 edge nodes by 2024, a progression of +100% since 2023. This is doubling (+15 edge nodes) the amount estimated for 2023 (15, number revised since the 2024 Digital Decade Report).

Quantum technologies

Belgium is steadily developing its capabilities in high-performance computing and quantum technologies, through initiatives at both regional and federal levels. While efforts are primarily focused on research, education, and ecosystem-building, they are laying important groundwork for future strategic developments.

Belgium

Flanders invested EUR 8.6 million in the purchase of a [new Flemish supercomputer](#). It will be installed at the VUB Green Energy Park in Zellik. The computer will be operational from November 2025. Japanese high-tech company NEC Deutschland GmbH (NEC) will supply this new Flemish Tier-1 supercomputer. This supercomputer is part of a platform of systems providing computing power, data storage, and cloud applications offered by the Flemish Supercomputer Centre (VSC) to researchers in knowledge institutions and companies across Flanders.

In September 2024, the **Belgian Ministry of Economy (FPS Economy)** hosted ‘**Guiding the Quantum Technology Landscape**’, a **workshop for government officials** at all levels together with high-level executives from the private sector (IBM) on quantum, in order to raise awareness of and explain more about this technology. The Ministry also drafted a paper to assess quantum technologies’ economic impact, and to map the ecosystem at national and EU levels. The Ministry also **launched an ad-hoc quantum working group in 2024** to share all relevant developments on the country’s different levels and organise strategic discussions about Belgium’s next steps. As quantum computing (which the Digital Decade indicator is linked to) will be in a research phase for several years to come, for now, Belgium prioritises research, education and attracting/retaining quantum skilled researchers, rather than rolling out a national strategy.

The Centre for Cybersecurity Belgium (CCB) is engaged in the Quantum Technologies Cooperation Group at EU level, as well as participating to the NIS Cooperation Group Work Stream on PQC to work on a European roadmap. In addition, the BeQCI initiative signed a MoU with Luxembourg in 2024. Belgium held discussions with France, but assessed it too expensive up to that point to connect both infrastructures. Furthermore, the BeQCI initiative is considering organizing a hackathon in 2025, to further promote quantum.

Wallonia is currently building its own quantum ecosystem, and plans to take part in the next DEP calls for projects.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Belgium is making strong progress in digitalisation, with 2024 marking an acceleration in technology adoption among businesses. AI has become a priority in new government strategies following the 2024 elections, though concrete plans and budgets were still pending at the time of reporting.

The country benefits from high business R&D investment (2.47% of GDP, well above the EU average) and strong science-business linkages. In 2024, Belgian companies filed 741 ICT patent applications—a 59.35% increase from 2023—making it a record year over the past five years⁶. Belgium excels in patents related to agri-food, health, and electronics.

Despite public support, business dynamism remains moderate, and SMEs struggle to scale up. While Belgium offers tax incentives for start-ups and scale-ups, their impact remains unclear.

Regulatory challenges persist, particularly for SMEs. Belgium lags behind OECD top performers in easing the administrative burden, market entry, and regulatory efficiency. Further reforms are needed to foster innovation and business growth.

Of note, Belgium is the host and lead Member of the Cluster ‘Technology Uptake’ of the Digital Decade’s Best Practice Accelerator (BPA). It has presented two of its initiatives as part of the BPA

⁶ Source: Ministry of Economy, SPF Economie, Direction générale de la Réglementation Economique (2025)

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workshops: Start IA by DigitalWallonia4.AI; and Athumi, a data utility company working with the Flemish government that streamlines processes in smart societies by putting citizens in control of their personal data.

SMEs with at least basic digital intensity

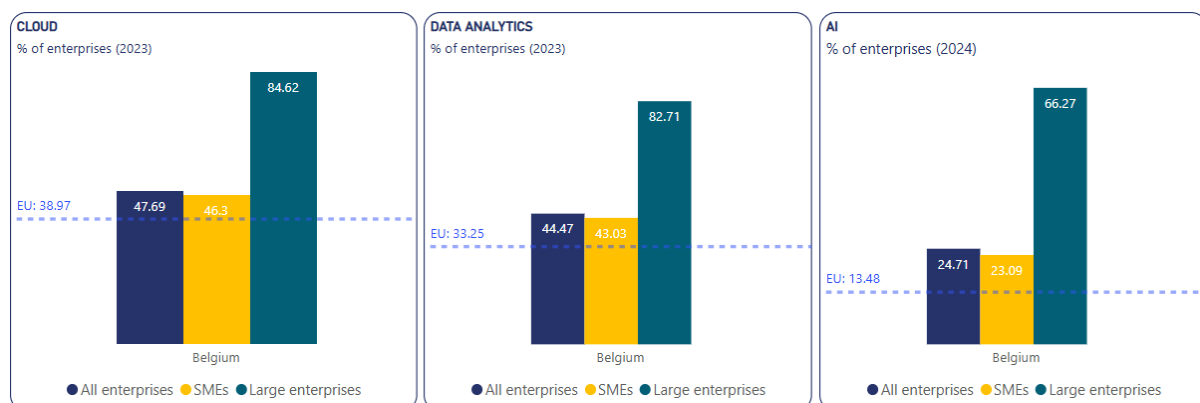
83.7% of Belgian SMEs had at least a basic level of digital intensity (2030 national target 90%) after a progression of +4.1% annually between 2022 and 2024; it stands well above the EU average of 72.91%, maintaining a leading position.

Belgium is driving digitalisation, AI, and sustainable innovation through federal and regional initiatives. The Ministry of Economy (FPS Economy) and regions along their competences support businesses via financial incentives, digital transformation programmes, public-private partnerships (such as with Digital Wallonia), and EU collaboration.

Regional initiatives foster innovation through strategic frameworks and financial support. Wallonie-Entreprendre (WE), SPW Recherche Flanders' Innovation & Entrepreneurship (VLAIO) agency and [Innoviris](#) (Brussels region) offer grants, including for university-business collaboration. The Agence du Numérique supports projects under StartIA, funding up to 70% for private and 100% for public sector projects. In Flanders, VLAIO backs SME innovation, while Innoviris plays a similar role in Brussels. Belgium prioritizes AI, smart automation, and ethical digitalisation, with a strong AI ecosystem (AI4Belgium, top universities, Robovision). Industry 4.0 and robotics are advancing in aerospace, healthcare, and logistics, while sustainable digitalisation integrates AI, IoT, and blockchain for green tech.

Belgium leads or participates in six European Digital Innovation Hubs (EDIHs), including Walhub, SustAin.brussels, and Flanders AI. Wallonia hosts two EDIHs: WalHub (Industry 4.0 & logistics) and CONNECT (Construction 4.0), supporting over 500 companies since 2023. Key priorities include AI, cybersecurity, IoT, and digital transformation for SMEs. In 2024, WalHub has developed an e-learning tool on cybersecurity dedicated to SMEs, while CONNECT developed several resources to help very small enterprises take their first steps in digital transformation. To further strengthen industry expertise, train-the-trainer sessions have been organized around digital technologies in collaboration with the Wallonian employment agency (FOREM) and training centre (IFAPME). Both EDIHs also contribute to the regional programmes '*Industrie du futur*' and '*Construction du futur*'.

Take-up of cloud/AI/data analytics



Belgium

- [Artificial intelligence or Cloud or Data analytics](#)

According to new data collected in 2024, **24.71% of Belgian enterprises adopted AI (2030 national target 75%) after a progression of +78.93% in a year; this performance stands considerably above the EU average of 13.48%.** The country is on track according to its national trajectory. Belgium experienced a significant growth in the use of AI by enterprises (78.93%) from 13.81% in 2023, surpassing the EU average increase between 2023 and 2024 (67.2%). At the same time, a significant difference existed between SMEs, which had an uptake rate of 23.09%, and large enterprises, which demonstrated a significantly higher uptake rate of 66.27%. As such, the gap between SMEs and large enterprises was 43.18 percentage points, which was higher than the EU gap of 28.53 percentage points.

Adoption of cloud, data analytics, and the three technologies together were not measured in 2024.

In 2023, 47.69% of Belgian firms adopted cloud technologies (2030 national target 75%), which is considerably above the EU average of 38.97%. More specifically, 46.3% of SMEs used cloud services, while a much higher proportion of large enterprises – more than 4 out of 5 (84.62%) – adopted these services. This indicates a percentage point difference of 38.32 in uptake between SMEs and large enterprises in Belgium, which was higher than the EU gap of 31.68.

Data from 2023 showed that 44.47% of Belgian firms adopted data analytics technologies (2030 national target 75%), considerably above the EU average of 33.25%. More specifically, while 43.03% of SMEs made use of data analytics, the uptake was considerably higher among large enterprises, with 82.71% engaging in such activities. This reflects a 39.68 percentage point difference between SMEs and large enterprises in Belgium, which is in line with the EU gap.

When taking the three technologies together in 2023, 64.21% of enterprises in Belgium engaged with either AI, cloud, or data analytics technologies (2030 national target 75%), considerably above the EU average of 54.7%. More specifically, the uptake among SMEs was slightly lower at 63.05%, while large enterprises demonstrated a significantly higher engagement at 94.98%. This indicates a percentage point difference of 31.93 in uptake between SMEs and large enterprises in Belgium, which is in line with the EU gap.

Indicators on the adoption of cloud computing, data analytics, and AI technologies in Belgium demonstrated a strong overall performance, with the country exceeding EU averages in all three areas. However, a significant disparity exists in technology adoption between SMEs and large enterprises. While large enterprises demonstrated high levels of adoption, SMEs lagged behind, particularly in AI adoption, and there was a sizeable gap in cloud computing and data analytics uptake. This mirrors broader EU trends, where large enterprises consistently outpace SMEs in technology adoption. Given that SMEs accounted for 95.8% of enterprises with more than 10 employees in Belgium and produced 38% of the country's value added in 2022, addressing these disparities is crucial to promoting digital transformation and driving economic growth.

- [Cloud](#)

The **BIPT** and other EU national regulatory authorities (NRAs) are monitoring the growing integration of telecom and cloud services, driven by technologies like **cloud and edge computing**. Key concerns include **interoperability, market competition, and the dominance of hyperscalers**.

Belgium had decided to engage in the IPCEI-CIS on Cloud in 2023. All IPCEI projects are coordinated by the Ministry of Economy but competences to engage lay often in the hands of the Regions. Belgium ultimately participated with two projects supported in Flanders and therefore 'indirect partners'

(funding via non-IPCEI funds managed by Flanders' VLAIO). Both projects are based on detailed IPCEI measures, and they focus on: (i) The development of smart charging solutions for electric vehicles; and (ii) software for decentralizing computing and storage infrastructure and decentralizing data ownership.

2024 recommendation on cloud: Support the broad uptake of the next generation of cloud infrastructure and services under development in the IPCEI-CIS by companies of all sizes, including by liaising with the direct participants to develop a country-specific dissemination strategy reaching beyond the participating organisations.

In 2024, Belgium continued the implementation of existing measures but did not take any new measure. The country has taken initial steps by supporting projects – especially in Flanders, but its engagement is still limited, and broader national coordination is needed. Belgium joined the IPCEI-CIS initiative in 2023, signalling its commitment to advancing cloud infrastructure. Belgium's involvement is regionally focused (Flanders), with no indication of broader engagement across Wallonia and Brussels. The projects were supported via regional funds, not through IPCEI itself, which may limit their alignment with EU-wide cloud initiatives. The recommendation calls for ensuring that companies of all sizes benefit, but Belgium's report lacked concrete actions to promote cloud adoption among SMEs.

- [Data Analytics](#)

No specific new measures were introduced or signalled by the adjusted roadmap submitted by Belgium in 2025.

- [Artificial Intelligence](#)

Some efforts were made to accelerate the uptake of AI in 2024. At federal level, the Ministry of Economy's recent state of play shows a good performance of Belgium regarding the adoption of AI, with almost one out of four businesses (of more than 10 full-time equivalents) using at least one AI tool. Furthermore, AI is taken into account in all government agreements. AI4Belgium, led by the Federal Public Service Policy and Support (BOSA), provides an overview of Belgium's AI ecosystem with its [Observatory for AI and new digital technologies](#) to monitor the progress and transparently inform the public. The Ministry has also published the yearly [update of its National Productivity Board](#) in December 2024, a report that takes stock of Belgium's productivity growth, with the perspective that AI can be a catalyst to boost it.

Belgium allocates **3.2% of its RRF budget** to AI projects, slightly below the **EU average of 3.7%**. While budgets were not set at the time of reporting, the new federal government's coalition agreement highlights **AI as a priority**, potentially leading to increased funding.

Wallonia is exploring an **AI sandbox** at federal and regional levels and developing a **new digital strategy** aligned with EU recommendations, focusing on **AI and cybersecurity**. The region currently hosts **two EDIHs** (with their potential fusion considered at the time of reporting), **one TEF**, and is considering joining an **AI factory**.

Flanders, a member of the ALT-EDIC, is working on a follow-up for EDIHs despite budget constraints, aiming for **one AI-focused EDIH supporting digital innovation in SMEs**. The region is advancing AI with generative AI guidelines for government, M365 Copilot deployment, and LLM training for AI4Gov. Its 2024 AI Policy Plan allocates EUR 35 million annually for research, business adoption, and training.

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Flanders is also investing in AI Factories, TEFs (Smart Cities, Agrifood, Edge-AI chips), and data-driven innovation, with AI linked to 40% of funded innovation projects in 2024.

2024 recommendations on AI: Belgium should continue to support innovation in AI to reinforce its leadership in the sector and create future global leader companies, including by engaging in an EU AI factories project or the ALT-EDIC.

Belgium addressed fully the recommendation by putting significant policy actions into place in 2024.

Unicorns, scale-ups and start-ups

At the beginning of 2025, Belgium had 7 unicorns (2030 national target of 14), which is equal to last year. Based on Dealroom data, these include 3 firms in enterprise software: Deliverect, Odoo, and Team.blue (enterprise software). One more unicorn has emerged in 2024 ([Lighthouse](#)). As signs of a gradually maturing ecosystem, Belgium is home to five of the [top 150 of Europe's leading start-up hubs according to the Financial Times](#), including two on technology, namely Hexa in Brussels, and CAP Innove in Nivelles.

Belgium's **business dynamism** has faced challenges, particularly for small firms struggling to grow and commercialise innovations. Despite a slowdown in the European tech industry in 2023, **Belgium** is since then recovering fast. Recent reports by industry (such as [Agoria](#)) suggest that **Belgium's tech ecosystem** is maturing and showing positive changes, with an improving **investment climate** and growing **Venture Capital (VC) activity**. In **2024**, Belgium saw [a record EUR 1.43 billion in tech investments](#), nearly doubling the 2023 total. **Flanders** led with **EUR 1.06 billion**, followed by **Wallonia** and **Brussels**. **Ghent** emerged as the tech capital, with **EUR 520 million** invested in 26 companies. The pace of investment in **start-ups** is accelerating, with early-stage rounds accounting for **77%** of the capital raised, significantly higher than the European average. federal level, the **Belgian government** has shown strong support for **start-ups**, with activities such as active participation in the **European Startup Nations Alliance (ESNA)**, hosting its **2024 Forum**. The new government has announced measures, including an **SME plan** with a focus on **start-ups**, and it plans to review the **tax shelter system** to better support growth. A 2025 study from the Ministry of Economy (FPS Economy) is also assessing ways to boost federal support for digital start-ups.

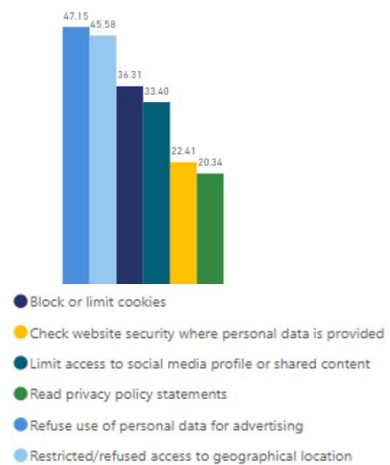
Flanders is also boosting support for **start-ups and scale-ups** with programmes like 'scale-ready' (targeting innovative start-ups) and **IMEC I-start**. In **2025**, the **University of Ghent** will establish [an AI Campus hub](#) to foster collaboration between **AI specialists** and **research institutions**.

Strengthening Cybersecurity & Resilience

Belgium is on a strong footing to achieve the Digital Decade's cybersecurity objective. Many initiatives in place continue to strengthen the country's capabilities and preparedness, especially through awareness raising and educational efforts by the Centre for Cybersecurity Belgium (CCB).

In Belgium, 68.2% of individuals took at least one action to protect their personal data online in 2023, which was slightly below the EU average of 69.55%. 40.22% of individuals engaged in three or more precautionary actions (and therefore could be considered as having above basic digital safety skills). The measure most frequently taken was refusing the use of personal data for advertising purposes (47.15% of individuals). In contrast, reading privacy policy statements before providing personal data was the measure taken the least (only 20.34% of individuals).

Type of activities to protect personal data online (% of individuals)



By 2022, 96.12% of Belgian enterprises deployed some ICT security measures (just above the EU average of 92.76%) and 62.82% of enterprises made their employees aware of their obligations in ICT security related issues, above the EU average (59.97%). In 2024, 3.96% of enterprises reported ICT security incidents caused by external cyberattacks (slightly above the EU average of 3.43% and down from 5.22% in 2022). In March 2025, the hacker collective NoName057 took down several Belgian government websites, including the government portal MyGov.be, which gives citizens access to official documents.

Concerning the deployment of secure internet standards, Belgium is one of the EU countries' best performers in the [roll-out of Internet Protocol version 6 \(IPv6\)](#) for end users (58%, EU average: 36%) despite a slightly decreasing trend. Belgium is also well above the EU average on the server side (31%, against 17% for the EU). IPv6 is an important protocol as it ensures the scalability, stability, and security of the Internet. The deployment of this new version has become increasingly urgent, as traditional IPv4 addresses have long been depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out as it introduces security features to DNS. In Belgium, the [DNSSEC validation rate](#) is 39% (Q3 2024), below the EU average of 47%.

Overall, the data on several dimensions of cybersecurity suggest that Belgium performs overall above the EU average, demonstrating strong adoption of ICT security measures and a leading position in IPv6 deployment. However, higher-than-average vulnerability to hardware and software failures, and a below-average DNSSEC validation rate, highlight areas where further improvements are needed to strengthen overall cybersecurity resilience.

According to the Digital Decade Eurobarometer 2025, 87% of Belgian citizens think that improved cybersecurity, better protection of online data, and safety of digital technologies would facilitate their daily use of digital technologies. This figure remains unchanged from last year, reflecting a stable perception.

2024 recommendations on cybersecurity: (i) Continue support its national Centre for Cybersecurity's (CCB) activities, including to raise awareness among enterprises for their internal strategies; (ii) Continue the implementation of the 5G Cybersecurity Toolbox to ensure secure and resilient 5G networks.

Belgium addressed fully the recommendations by putting significant policy actions into place in 2024. No recommendation is suggested for 2025 as Belgium has fully addressed the 2024 recommendation beyond its basic requirements.

The country's progress reflects a comprehensive approach, covering enterprise awareness, regulatory compliance, SME support, and 5G security. Through strong national coordination, enterprise support, and regulatory alignment, Belgium and **the multiple activities of its Centre for Cybersecurity Belgium (CCB)** keep demonstrating a clear commitment to enhancing cybersecurity at all levels, ensuring both large enterprises and SMEs are protected. Proactive measures to secure 5G infrastructure further reinforce this commitment. **Belgium should therefore continue its efforts in cybersecurity to address evolving threats, particularly for enterprises and administration.**

Belgium has made significant strides in cybersecurity in 2024, with ongoing support for the CCB. The CCB is leading the development of a **new National Cybersecurity Strategy**, coordinating government efforts, and spearheading awareness campaigns, including its Multi-Factor Authentication (MFA) initiative. **Belgium is one of the first EU countries to have fully transposed cybersecurity rules for critical entities and now has adequate national rules in place.** In October 2024, Belgium, along with Croatia, became one of the first countries to apply the NIS2 Directive, which was approved in 2022 to protect critical entities like energy, transport, and banking from major cyber threats.

The country has also introduced **the Cyber Fundamentals framework**, offering a structured approach to cybersecurity with certification, and actively participates in international initiatives. The CCB's Spear Warning system monitors threats, sending targeted warnings to vulnerable systems. Belgium is focusing on SMEs and micro-SMEs, providing tailored resources through the National Cybersecurity Coordination Centre (NCC-BE) to boost digital skills and resilience. EU funding opportunities are also being made available through the Financial Support to Third Parties (FSTP) program.

Belgium has implemented the 5G Cybersecurity Toolbox and improved security measures across its telecommunications infrastructure. The 5G rollout requires prior authorization, and inspections ensure ongoing compliance. **The country has also seen the expansion of cybersecurity skills development programmes** and is working to internationalize its CyberFundamentals Framework. In response to regional threats, the Flemish government is launching the Flemish Centre for Digital Security, integrating EU cybersecurity policies, while also addressing digital security in healthcare.

Belgium's proactive cybersecurity stance includes the Active Cyber Protection (ACP) initiative, with the launch of ethical hacking events like 'Hack the Government' in November 2024. The CCB also integrates practical NIS2 guides into SafeOnweb@Work to assist businesses in compliance. **Belgium's efforts have been recognized globally**, ranking in the highest category of the UN Global Cybersecurity Index (GCI) and winning the European Cybersecurity Award for Best Awareness Video. Additionally, Belgium's CyberFundamentals scheme was adopted by Romania, marking a significant step in international cooperation.

On [implementation of](#) the NIS2 Directive, following this transposition, the CCB has been conducting awareness-raising webinars to explain the Directive's legal framework and requirements for NIS2 entities. **The NIS2 Directive makes reporting incidents mandatory.** During this period, and at the time of reporting [on March 17](#), reports of cyber incidents had increased by 80%. In addition, by that time, 2 410 organisations from critical sectors had registered with the CCB. Figures from the Ministry of Economy estimated that about 2 500 of those organisations are in the scope of NIS2. These results are therefore in line with the CCB's expectations and contribute to a better threat picture.

Of note, the CCB played a **role in the overall Belgian Presidency of the Council of the EU (January-June 2024)**. During this six-month period, Belgium – and the CCB – contributed to several initiatives that will help strengthen Europe's digital resilience.

Protecting and empowering EU people and society

Belgium is actively addressing gaps in the population's digital skills through various initiatives, focusing on women in digital roles and lifelong learning to enhance labour market outcomes. However, significant challenges remain, including **high ICT and STEM shortages**, gender imbalance, and one of the EU's levels of skills mismatches. **The country excels in providing public services online**, particularly for businesses, and is committed to combating disinformation and promoting digital literacy. **While online civic participation is increasing, concerns about hostile online messages and disinformation persist**, especially among young people. Continued efforts and public engagement are crucial to improving Belgium's digital environment and supporting its competitiveness.

Empowering people and bringing the digital transformation closer to their needs

Despite **persisting gaps in both basic and advanced digital skills**, Belgium and its regions have **maintained and accelerated initiatives** to close those gaps, building on existing programmes and reinforcing measures. Belgium has performed well in increasing ICT training and growing the share of ICT specialists (above the EU average), based on a proactive approach to digital integration. However, the decline in female participation in the ICT workforce calls for corrective action. Recognizing the significant potential that the female workforce holds for boosting the country's competitiveness and growth, Belgium has been stepping up efforts through its inter-federal Women in Digital strategy and a host of other initiatives. **Strengthening lifelong learning, especially among low-skilled individuals, and targeted up- and re-skilling of adults** remain essential for improving Belgium's labour market outcomes and supporting competitiveness. **High ICT and STEM shortages** hinder economic performance as the educational system alone does not fully address labour market needs. **Skills mismatches** are also among the highest in the EU, at 25.9% compared to 19.6% at EU level. According to the dedicated [Eurobarometer](#) survey on SMEs and skills shortages in March 2025, in Belgium, 68% of SMEs identified 'difficulties in finding employees with the right skills' as one of the most serious problems they currently face, the highest percentage among all EU Member States.

Belgium remains one of the EU's forerunners with respect to the **provision of public services online, further improving those delivered to businesses in particular, and in terms of e-ID uptake**. The new government has renewed the country's commitments to **combating disinformation**. Awareness campaigns and digital literacy actions continue supporting a currently dynamic civic engagement online and protecting Belgian citizens across regions.

According to the 2025 Eurobarometer, 85% of Belgian people think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 82% consider it would improve their daily use of digital technologies, and 90% think public authorities should consider it important to ensure that people receive proper

human support to help them adapt to the changes in their lives brought about by digital technologies and services.

Equipping people with digital skills

Belgium demonstrates a strong commitment to developing basic digital skills and ICT training, and continues to outpace the EU average in the percentage of ICT specialists in employment. However, the decline in the share of female ICT professionals signals a potential gender imbalance in the sector.

Overall, Belgium made some progress in fostering digital skills. The regions and communities' government programmes referred to initiatives to pursue upskilling and reskilling the workforce. In the country's recovery and resilience plan (RRP), several initiatives, both at federal and at regional levels, are planned and have started to be implemented. These include measures to bring in individual learning accounts to boost lifelong learning and adapted support to vulnerable jobseekers to strengthen their social and labour market integration.

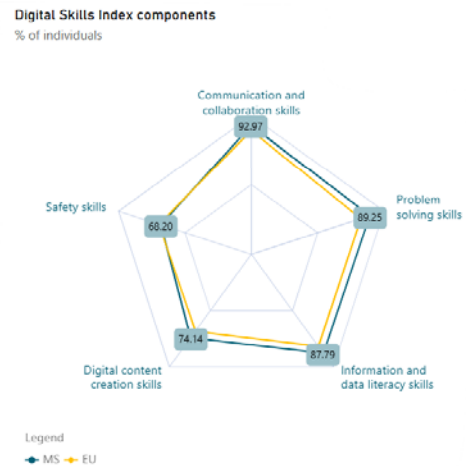
Belgium's RRP includes several measures to support the development of digital skills, allocating [EUR 233 million](#). The plan includes the digitalisation of schools and higher education institutions. It also includes e-inclusion projects targeted at supporting the digital inclusion of vulnerable groups, in particular people lacking basic digital skills and prison inmates. Upskilling and reskilling of labour force includes measures to digitalise and improve services and training offered by public administrations services.

Basic Digital Skills

Belgium is at 59.4% of adults with at least basic digital skills (2030 national target 80%), after a progression of +4.6% between 2021 and 2023 and stands above the EU average of 55.56%. While there was no new data collection in 2024, a deeper analysis reveals several areas where Belgium can focus its efforts to ensure even broader digital proficiency:

- **Gender Gap:** With 60.67% of males and 58.11% of females having basic digital skills, the gender gap in Belgium is at 2.56 pp., exceeding the EU average gap of 2.23pp.
- **Educational Level:** The gap between individuals with higher education and those with lower or no formal education is striking. While 80.83% of the highly educated have basic digital skills, only 32.32% of the less educated do, creating a substantial national gap of 27.07pp, which is wider than the EU average gap of 21.95pp.
- **Living Areas:** Urban areas in Belgium surprisingly lag with a 57.37% level of basic digital skills, which is below the EU average for urban areas of 62.55%. However, the country shows a relative homogeneity. The internal gap between living areas is narrow, at a difference of 3.24 pp, with towns and suburbs leading at 60.61%.
- **Age Groups:** For the 25 to 34 age group, a high 72.35% have basic digital skills, outperforming the EU average of 70.18%. However, the senior cohort of 65 to 74-year-olds falls behind with only 39.06% skilled, despite being significantly above the EU average of 28.19%.

Digital Skills Index Components: Belgium's strong performance in four of the five areas of the Digital Skills Index is noteworthy. The country excels in communication and collaboration skills at 92.97%, well above the EU average of 89.33%. Safety skills, however, are a point of relative weakness, with Belgium scoring 68.20%, just below the EU average of 69.55%.



2024 recommendations on basic digital skills: (i) Integrate the learning of digital skills into all levels of education and training, notably on AI, cybersecurity, and ethics of technology; (ii) Accelerate efforts to strengthen adults' participation in up- and reskilling training and elevate lifelong learning initiatives.

Belgium addressed fully the recommendations by putting significant policy actions into place in 2024. The country has made substantial progress in digital skills by integrating digital competencies into education, upskilling, and lifelong learning. It has introduced new measures covering both digital skills and cybersecurity, emphasizing the need for coordinated efforts across the education system. The country's latest roadmap reaffirms its commitment to closing digital skills gaps through national, regional, and EU-aligned initiatives. The full impact of these measures will become clearer as additional resources are allocated in 2025.

Last year's Digital Decade report showed that the country already had rolled out an extensive range of programmes and measures to support digital skills. The Ministry of Economy expects that Belgium's efforts at all levels regarding digital inclusion and programmes on upskilling and reskilling people will bear fruit in time. The launch of new programmes and additional measures is expected to gain momentum in the second half of 2025, once the 2025 governmental budgets are finalised.

For the limited update in 2025, two new measures were added to Belgium's roadmap that address the 2024 recommendation for basic digital skills:

- (i) A call for projects aiming to the enhancement of basic and female digital skills (total budget: EUR 1.2 million).
- (ii) Two studies released by the Ministry of Economy, mapping potential digital inclusive actions within companies and proposing an inclusive click-call-connect principle. The studies were recently published and will have been presented to the private sector in January 2025. They are expected to raise awareness among companies of the benefits of an inclusive digital strategy by discussing a potential ROI, and to show that they also have a role to play alongside the government to reach this objective.

In its roadmap update, Belgium also highlighted several measures that encompass skills and cybersecurity. The CCB is actively supporting the integration of digital skills into all levels of education and training, with a specific emphasis on AI, cybersecurity, and the ethics of technology.

In **Wallonia**, a book aimed at students was published at the end of 2024 and is now widely distributed in schools. Its goal is to provide best practices and cyber hygiene guidance to help students better

understand cybersecurity challenges. The book also supports teachers in addressing the topic in class, promoting awareness and encouraging appropriate responses to threats.

Beyond these national efforts, Belgium is actively addressing digital skills inclusion by participating in EU-wide initiatives. As a member of the Digital Decade's **Best Practice Accelerator (BPA)** in the 'Digital Skills' cluster, Belgium has showcased two notable programmes: 'Women in Digital Revolution,' a strategy aimed at tackling gender disparities in the tech sector, and 'Connectoo,' a training initiative designed to reduce the digital divide by equipping public officials with the skills to support citizens facing digital exclusion.

In addition to these initiatives, since last year's Digital Decade report, Belgium's regions have been implementing targeted measures to strengthen digital education.

In Wallonia, several ongoing programmes are expanding access to digital training and educational tools. The region organizes an annual event, 'Ludovia#Be,' which brings together educators and the EdTech sector to foster innovation in digital teaching. **Wallonia's network of Public Digital Spaces (EPNs) which assists citizens with digital administration and training, established eight new spaces in 2024.** The Federation of Wallonia-Brussels (FWB) is further enhancing these efforts through international and national collaborations. It has partnered with France to create a cross-border digital skills observatory, aligning competency frameworks and monitoring trends in digital education. The FWB is also actively integrating AI into education, aligning with the Digital Decade report's recommendations by reforming curricula, providing teacher training, and developing regulatory frameworks. AI is now formally embedded in the digital education framework, with specialized teacher training programmes designed to support the effective pedagogical use of AI.

Flanders has also made significant progress in advancing digital skills, announcing initiatives to increase the participation of its workforce in training and improve access to training for everyone, regardless of their employment status, in particular to improve the workforce's digital knowledge. **The region is also preparing to launch a Digital Strategy for Flanders,** which includes a dedicated action plan on digital skills. Since 2021, an ICT Policy Planner has provided structured roadmaps, templates, and resources to help schools develop their own ICT strategies. **A more dynamic version of this tool is expected in 2025** and will minimise the administrative burden while ensuring practical implementation.

In 2024, Flanders published a policy paper on 'Responsible AI in Education,' outlining principles for the ethical integration of AI into schools. These principles are now being translated into concrete actions, including research, legal analysis, knowledge development, and awareness campaigns. The region's Innovation & Entrepreneurship Agency (VLAIO) is also funding the **'[Digital School: Teacher Training](#)' project,** which began in late 2024. This initiative improves future teachers' digital skills by embedding the DigCompEdu framework (set out in the project) into initial teacher training programmes. With four projects launched in September 2024, this programme will run for two years, with a total budget of EUR 1.4 million.

Flanders has set targets to boost STEM participation in secondary education and improve study efficiency in higher education. STEM academies have shown some positive results, particularly among girls. Policy responses in the French Community have been slower, with no regional STEM strategy currently in place.

The German-speaking Community is providing ICT equipment for every pupil and sick kids for example get 'replaced' by a small robot in the classroom, that way these kids don't have to miss out on anything.

ICT specialists

Belgium is at 5.7% of ICT specialists in total employment (2030 national target 10%) after a progression of +5.6% in 2024 and stands above the EU average of 5.0%. The country is on track according to its national trajectory.

Among the Digital Decade targets, the ICT specialists goal is the most challenging for Belgium. The country has set an ambitious target of having over 500 000 ICT specialists by 2030 – an increase of at least 220 000 from current levels. Skills shortages in ICT and STEM fields continue to hinder business growth and the adoption of digital technologies. At the same time, **on ICT training, Belgium consistently outperforms the EU average.** In 2022, 33.0% of enterprises with 10 or more employees in Belgium provided ICT training, compared to 22.37% at the EU level. This upward trend continued in 2024, with 36.83% of Belgian enterprises offering such training (EU: 22.29%). The country's annual growth rate in this area was 5.6%, significantly above the EU's -0.2%.

However, progress on gender balance among ICT specialists has been less positive. In 2023, the share of female ICT specialists in Belgium matched the EU average at 19.4%. In 2024, this figure fell to 19.0%, below the EU's 19.5%. This means Belgium's growth rate of female ICT specialists was -2.1%, compared to a modest increase of 0.5% in the EU.

Belgium currently has the highest job vacancy rate in Europe, particularly in ICT (5.4% in Q3-2024), nearly double the EU average (2.8%). STEM graduates remain scarce, with only 18.3% of tertiary students enrolled in these fields (EU average: 27.1%), and ICT enrolments are also below average.

Belgium's education and training systems are under pressure, struggling to keep up with demand for highly qualified STEM professionals. This is compounded by declining basic skills among young people and critical teacher shortages. The number of new STEM graduates (12.9 per 1 000 aged 25-34) is below the EU average (17.5), and the number of ICT graduates is among the lowest in the EU (2.4 per 1 000 vs EU average 3.6). Participation in adult learning, especially among low-skilled individuals, remains insufficient to support the green and digital transitions.

Despite several initiatives aimed at strengthening the ICT talent pipeline through academic and industry collaboration, Belgium faces economic headwinds. According to the [Agoria Economic Monitor](#) (October 2024), job losses in the tech sector have reached a 12-year high, threatening employment targets.

To address these challenges, Belgium supports an EU-wide strategy to attract and retain ICT experts, particularly in emerging fields like AI and quantum. The country also recognizes the urgency of accelerating workforce reskilling and increasing female participation in ICT. Persistent efforts are needed to improve retention and gender diversity in the ICT workforce. Expanding training through consultancy services and flexible learning modules could further alleviate skills shortages. Continued policy support and potential funding incentives may be required to offset job losses.

On labour market demand, Eurostat experimental statistics based on web scraping show that in Belgium, the profiles of 'software and applications developers and analysts' are the most sought after,

representing 62.9% of online job advertisements for ICT specialists (compared to 58.0% at EU level). Two types of profiles are more in demand in Belgium than in the EU on average: 'information and communications technology operations and user support technicians' (11.1%) and 'telecommunications and broadcasting technicians' (2.5%).

2024 recommendations on ICT specialists: (i) Pursue academic and industrial partnerships, lowering barriers to attract and employ digital talent; (ii) Seek to increase the number of female ICT graduates.

Belgium addressed fully the recommendations by putting significant policy actions into place in 2024. Boosting the number of female ICT-specialists and female ICT graduates remains a promising low-hanging fruit for Belgium to reach the target of doubling its ICT specialists.

The country has taken concrete steps to address the first recommendation by launching new initiatives and reinforcing existing programmes. The AI4Belgium coalition has played a crucial role in bringing together stakeholders from government, the private sector, academia, and civil society to promote AI adoption and talent development. Additionally, the FARI institute, founded by VUB and ULB, has focused on responsible AI implementation by offering research capacity and training programmes. Belgium has also intensified its efforts to address the second recommendation, i.e., to promote and increase female participation in ICT, aligning its initiatives with the [Women in Digital](#) (WID) strategy. WID was kept very active through collaborations, working group meetings, communication activities such as public engagements and awareness campaigns, and high-level events maintaining the focus of policymakers on its work and the Decade's target.

On Belgium's progress on ICT specialists as a Digital Decade target, **several recent developments across the country's regions support this goal and are worth mentioning.**

At federal level, **the CCB** launched the CySec Education and Research Pool in 2023 to expand the number of qualified cybersecurity professionals and support IT security experts and organisations. Pending additional funding, this initiative is set to grow further in 2024 and beyond.

In Flanders, initiatives such as WeGoSTEM and #SheGoesICT actively promote female participation in ICT through targeted outreach. An upcoming 2025 STEM Monitor will provide updated data on gender representation. New STEM pathways and partnerships launched by Flanders Innovation & Entrepreneurship (VLAIO) aim to strengthen connections between STEM education and societal challenges like digitalisation, climate, and the circular economy. Additionally, the 'STEMhub' initiative from Flanders will support entrepreneurs in developing STEM skills, and sector agreements will continue to guide lifelong learning efforts.

Wallonia has expanded digital training opportunities through centres such as Technobel, Technocité, TechnofuturTIC, Technifutur, and FOREM Cepegre Centre, which offer specialized education in AI, cybersecurity, and Industry 4.0. The Skills Validation Consortium is working on new qualifications for IT roles (business analyst, architect, developer) to improve job market integration. By 2026, five Digital Factories will be established to train professionals in construction, industry, logistics, and transport in digital transformation.

[Key digital public services and solutions – trusted, user-friendly, and accessible to all](#)

In 2024, Belgium continued to excel in the provision of e-Government services, the delivery of digital public services for businesses, and giving access to e-Health records, with scores and growth rates that outperform the EU average. Digital public services for citizens, both total and cross-border, show

a decline in scores and growth rates that fall short of the EU average – but the country's performance overall exceeds it by far.

Under its national RRP, Belgium aims to accelerate the digitalisation of different administrative services at federal level, for instance, by redesigning the landscape of digital counters and encouraging entrepreneurship by digitalising interactions with the government. **Belgium's RRP** allocates [EUR 907 million](#) to digital public services. Key measures include: (i) the **digitalisation of social security services** and user-administration interactions; (ii) **12 federal investment projects** targeting digitalisation in areas such as justice, employment, foreign affairs, food safety, asylum and immigration, and crisis management, along with cross-cutting projects on public data use and the Single Digital Gateway; (iii) **e-Health initiatives**, providing tools for video consultations and home hospitalisation, promoting secure health data use, and establishing a Health Data Authority for data governance; and (iv) **Regional and local digitalisation** projects in Wallonia, Brussels, and Flanders, including targeted efforts like digitising the services of the Office of Birth and Childhood and urban/environmental permit procedures.

e-ID

The share of e-Government users is very high in Belgium: 84.87% of Belgian internet users engaged with e-Government services in 2024, well above the EU average of 74.71% (DESI 2025) but down from 85.85% the previous year, similarly to the EU average which was slightly higher at 75% in 2023.

In 2023, 77.08% of Belgian people had used their e-ID to access online services for private purpose in the last 12 months, which was well above the EU average (41.11%).

Belgium's largest digital investment (EUR 391.2 million) under its RRP is dedicated to further increasing the use of digital public services. The use of Belgium's e-ID system remains high across both EU and national services. While 77% of citizens used their e-ID for private services in 2023 (vs. 41.11% EU average), usage for national public services stood at 59.1% (vs. 36.14% EU average).

According to the FPS Policy & Support, the country's results for the various indicators of the e-Government Benchmark 2025 assessing accessibility, user-friendliness, and the reduction of burden for businesses broadly show a status quo in terms of User Support & Cross-border User Support (96.8% and 85.2% respectively – well above the EU average). Unfortunately, Transparency of Service Delivery is decreasing, from 58.3% to 52.8% (below the EU average of 66.8%). However, the use of e-ID on Belgian websites increased from 80.3 to 81.3 (EU average: 81.5). For Mobile friendliness, Belgium scored almost the maximum last year (99.3), remaining approximately stable at 99.2 in 2024 (EU average is 96.1). The [Digital Dashboard](#) is also worth mentioning in this regard.

The Commission's DESI e-Government benchmark suggests varying data and results for Belgium. For instance, its indicator for Pre-filled Forms indicates an increase of over 9 points between 2024 and 2025 (from 75.1 to 84.3 out of a score of 100). This reflects significant progress for the number of online services requesting data through a form which present already available data to the user. Other indicators such as User Support and Mobile Friendliness remained stable, and a slight decrease was observed for Transparency of Service Delivery (from 64.8 to 63) due to a changed composition for this indicator.

100% of Belgians currently have access to a form of e-ID notified under the eIDAS Regulation. Belgium offers six e-ID schemes (e-Cards, itsme®, email one-time password (OTP), SMS OTP, TOTP and

Username/Password). Its success in particular remains a success as Belgium's authentication app, and is a good example of collaboration between the public and private sector. It is now regularly used by 7 million Belgians – about 90% of the active population over 16 years of age. However, Belgium has not yet set up and notified e-ID schemes for legal persons under the eIDAS Regulation. This means that Belgian businesses cannot authenticate themselves to access public services offered by other Member States, including those enabled by the Once-Only Technical System.

A development worth noting is the preliminary success of the new **Belgian Digital Identity Wallet MyGov.be**, whose launch in May 2024 was mentioned in the 2024 Digital Decade report. It now has over 300 000 activations (by May 12, 2025), and the app has been equipped with numerous new functionalities (social statutes, activation using FaceID, etc.). **There are plans to continuously expand it with even more of those features.**

As noted in last year's report, Belgium's stakeholders, both public and private, are present in three of the Large-Scale Pilots (LSPs) consortia (POTENTIAL, EWC, DC4EU) proceeding to the grant agreement preparation stage. This includes government ministries and agencies both national and local. Use-cases Belgium will be involved in include: (i) POTENTIAL: Electronic identification/authentication for eGovernment services, electronic attestation of driving licence, remote qualified electronic signature; (ii) EWC: piloting the use-cases of Digital Travel Credentials, payments and organisational digital identities; and (iii) DC4EU: social security documents. Belgium did not take any new measures, but progress is being made on the numerous and significant measures that are already in place and benefit from RRP support.

Digitalisation of public services for citizens and businesses

Belgium's digital public services for citizens scored 81.43 (2030 national target of 100) after a slight decline of -1.1%, just below the EU average of 82.32. The country is lagging behind compared to its national trajectory. For cross-border digital public services for citizens, Belgium scored 74.38 in 2023 and 71.64 in 2024, both higher than the EU's 68.37 and 71.28, respectively. However, Belgium's growth rate of -3.7% lagged behind the EU's 4.3%.

On digital public services for businesses, Belgium scored 95.37 (2030 national target of 100) after an increase of 4.1%, well above the EU average of 86.23. The country is on track according to its national trajectory. For cross-border digital public services for businesses, Belgium scored 83.17 in 2023 and 90.74 in 2024, both higher than the EU's 73.13 and 73.76, respectively. Belgium's growth rate of 9.1% also surpassed the EU's 0.9%.

Belgium recognised early the need to link digital transformation with administrative simplification. The Directorate-General for Simplification and Digitalisation (DG SD), housed within the FPS BOSA, reflects this integrated approach. This structure evolved from earlier simplification services that were part of the FPS Chancellery of the Prime Minister, and later merged with the [Directorate-General for Digital Transformation](#) to support streamlined federal services.

A remarkable initiative of the Belgian government is its **Federal Action Plan for Administrative Simplification (PAFSA, or 'Kafka Plan')**, in place since 2022 to implement the federal government's ambitions for administrative simplification and digitalisation. It is updated every two years and contains 70 measures in various areas. By implementing measures linked to administrative services, it is estimated that EUR 116.2 million in public savings will be made. Belgium's **'Kafka test'**, which was **already** introduced by the government in 2004, aims to prevent unnecessary administrative burden

by requiring a brief questionnaire for policy proposals with significant impacts, aligning Belgium with international efforts to streamline regulations.

Online public services have progressed in terms of accessibility, user-friendliness, and reduction of burden on businesses. The trends in Belgium's performance with respect to the Digital Decade's targets were very dynamic in 2023-2024, but with regional variations and slower growth for the digitalisation of public services for citizens.

The measures provided in the Belgian RRP aim to further digitalise the public administration, in view of streamlining access to public services and thereby supporting SMEs. Cybersecurity support is being provided to SMEs. The online creation of a business will be made easier and federal public procurement will be further digitalised in order to make them more easily accessible. In Belgium, business and labour regulations come now only fourth and fifth place respectively in the list of barriers cited by enterprises in the EIB investment survey.

The country has undertaken several initiatives to simplify administrative procedures. However, there is scope for Belgium to further strengthen its mechanisms for simplifying regulation and cutting administrative burdens. For example, when preparing legislation, regulators are not required to identify and assess the impact of a 'no regulation' option or to identify and assess the impact of alternative non-regulatory options. Key challenges remain due to a lack of coordination across federal government departments which has hindered the sharing of best practices. Policy planning and evaluation would be improved by making the policymaking process more transparent.

Belgium is making progress in enabling a search-free automated exchange of authentic documents and data between authorities across the EU. It has already successfully tested its first transactions through the Once-Only Technical System, part of the EU Single Digital Gateway. Belgium is in the process of connecting up the first authorities, but more effort is needed to further reduce administrative burden.

In September 2024, the 'SME Office' of the Brussels-Capital Region came into force, with the aim of supporting impact analyses of Brussels regulations in order to minimize the potential negative impacts on SMEs. A digital platform for submitting planning and environmental permits in all 19 municipalities in the Region was created, with the possibility to submit applications digitally since December 2024.

Additional **developments have taken place towards data-driven public administration** in Flanders. In 2025, the region will launch a **programme to reduce the administrative burden and regulatory pressure**. Flanders is planning to improve digital services for entrepreneurs in the region through the existing *e-loket*, with the coalition agreement for 2024-2029 explicitly highlighting the government's ambition to **expand the use of regulatory sandboxes and experimental legislation**. Politician, administrations, and stakeholders will collaboratively develop initiatives, including by using digital applications. This will lead to the centralisation of digital services, proactive service provision, and publishing open data via [Datavindplaats](#), Flanders' consolidated catalogue of datasets. The Flemish government has set digitalisation goals and created an **investment programme, Flanders Radically Digital 3 (VRD 3)**, to promote the digital transformation of the Flemish government through cross-policy initiatives and to **work towards becoming a government as a platform**.

Wallonia has also fully committed to the administrative simplification process, aiming to reduce the burden on both citizens and businesses. In October 2024, a task force coordinated by the Minister for

Administrative Simplification was established to develop the Pact for Administrative Simplification, expected in the first quarter of 2025. This Pact will be guided by four key principles: (i) **User experience as a foundation**, ensuring that services are designed around the needs of users; (ii) **Digitisation of procedures**, while preserving access to physical service desks; (iii) **A generalised principle of trust**, where the administration relies on user declarations and avoids systematic checks; and (iv) **The 'Only Once' principle**, requiring users to provide their data just once, even when interacting with different public services.

e-Health

Belgium's access to e-health records remains exemplary, with a score of 100.0 in both 2023 and 2024, well above the EU's 79.12 and 82.70, respectively. The country is on track according to its national trajectory; it continues to strengthen its performance in line with its national target of 100% by means of measures that consistently improve access to health data and empower citizens through advanced digital health systems.

In its RRP, Belgium includes measures that can strengthen the resilience of its health system; for example, investments in digital health services and investments to improve health data collection and availability. The measures included in the RRP have been partially completed to date.

According to the 2025 Eurobarometer, 73% of Belgian people think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosing diseases) during their daily life by 2030.

2024 recommendation on e-Health: To improve the quality of service, Belgium could consider going beyond the requirements of the e-Health methodology and monitor the supply of a diverse set of health data by all categories of healthcare providers, as well as establish a feedback system for citizens enabling them to report any limitations in access to their data.

Belgium addressed fully the recommendation by putting significant policy actions into place in 2024. Ongoing initiatives have aimed to improve data access, empower citizens, and ensure interoperability across its health systems. All data categories investigated in this framework are available and timely for citizens and are supplied by all relevant healthcare providers in Belgium. Belgium is advancing beyond the basic requirements of the recommendation, with comprehensive plans in place to continue this progress. However, the success of these initiatives will depend on the continued implementation of an upcoming renewal to its e-Health action plan, and the integration of further EU regulations.

Belgium's '[*e-gezondheid*](#)' (e-Health) Interfederal Action Plan is central to its digital health strategy and aligns with last year's Digital Decade recommendations. Running through 2024 and set for renewal for 2025-2027, the plan focuses on improving access to health data, empowering people, and improving interoperability across healthcare providers. Key initiatives include the 'Access to Health Data' project, which standardises rules on informed consent, access management, and mandates, ensuring a harmonised system for data sharing. Individuals can share personal health data – such as insights from wearable technology and medication intake – via a user-friendly interface, improving accessibility and control over such data. The Belgian Integrated Health Record (BIHR) improves patient care by ensuring the interoperability of data and services throughout a patient's lifetime. This system facilitates a seamless data exchange between healthcare professionals and aligns with broader EU initiatives, including the European Health Data Space and the Data Governance Act.

Building a safe and human centric digital environment and preserving our democracy

In Belgium, efforts to strengthen digital democracy and online safety are under way with initiatives aimed at combating disinformation and protecting citizens online. The country has seen a steady increase in online civic participation, though it remains below the EU average. Concerns persist about the prevalence of hostile online messages and disinformation, particularly among young people. The federal government and regional authorities are implementing campaigns and legislation to promote digital literacy and critical thinking. However, **maintaining efforts** to stay vigilant and sustain public engagement will be essential to improving the public's online environment.

According to the **Digital Decade Eurobarometer 2025**, there is strong awareness among the Belgian population that the rights which apply offline should also be respected online, with 70% of respondents reporting so — up from 65% in last year's survey, and well above the EU average of 59%. 92% of Belgian citizens believe it is urgent for public authorities to address the negative impact of social media on children's mental health, including cyberbullying and online harassment. Similarly, 91% support the urgent implementation of age assurance mechanisms to restrict access to age-inappropriate content.

In Belgium, online participation to political and civic life is growing steadily. In 2024, 14.66% of people used the internet to participate to consultation, for voting or sharing opinions online. This share is below the EU average but trending upwards (13.34% in 2022), which is in line with the trend observed at the EU level (17.59% in 2022 and 20.45% in 2024).

Individuals encountering hostile and degrading online messages: In 2023, in Belgium, 30.86% of individuals encountered messages online that they considered hostile or degrading towards groups of people based on characteristics such as political views, LGBTIQ identities, or racial origin. This figure was slightly below the EU average of 33.5%. Among young Belgians, 41.78% reported encountering such messages, compared to a considerably lower 31.74% of adults (25–64), showing higher exposure among the youth (16–24), consistent with EU-wide trends. Males (32.76%) and females (28.98%) reported similar exposure rates, reflecting a minimal gender difference.

Individuals evaluating data, information and digital content: In 2023, 55.93% of individuals in Belgium declared having encountered information or content on internet news sites or social media that they considered untrue or doubtful, notably higher than the EU average of 49.25%. Of those who came across such content, 30.58% took the initiative to verify its truthfulness. This indicates that while a significant proportion of individuals faced potentially misleading content, nearly 1 in 3 individuals made efforts to check its accuracy, reflecting a relatively high level of critical engagement compared to the EU average. Youth (16–24) (66.35%) were significantly more likely than adults (25–64) (35.94%) to report encountering such content, and among those, 35.94% of youth checked its truthfulness compared to 32% of adults. Males (59.3%) were more likely than females (52.58%) to report seeing untrue or doubtful information, as well as to check its truthfulness (34.72% of males vs 26.47% of females).

The 2023 data on online interactions in Belgium reveals a concerning picture, with a significant proportion of individuals, particularly young people (16–24), exposed to perceived hostile and degrading online messages and potentially misleading information. Despite being slightly below the EU average in terms of exposure to hostile content, Belgium surpassed the EU average in terms of the prevalence of potentially untrue or doubtful information. These findings underscore the need for

continued efforts to promote digital literacy, critical thinking, and a safer online environment, especially among young people, to empower them to effectively navigate the online world.

The 2025 Eurobarometer shows that 86% of Belgian people think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values. This represents an increase of five percentage points compared to last year and is above the EU average (83%), which has also increased, reflecting the growing interest of the citizens in this respect.

The 2024 municipal, regional, federal and European **elections in Belgium have seen attempts at foreign interference, mainly through disinformation campaigns**. During the two electoral days of June 9 (regional, federal and European elections) and October 13 (municipal elections), the Belgian secret services detected interference of this type. In 2025, Belgium's military intelligence flagged Russian disinformation campaigns linked to the country's pledge to deliver F-16 fighter jets to Ukraine. Its annual report notes rising influence operations aimed at undermining public trust. The service plans to double its staff by 2040 to counter political tensions and espionage, and is launching a major recruitment campaign.

The coalition agreement of the new Belgian federal government pledged to **focus on combating disinformation**, linking it to Russian destabilisation efforts. Domestically, the government will explore **AI for police use**, including facial recognition to track criminals and detect mobile phone use while driving, although privacy concerns remain. The government will also be linking online accounts to real identities.

In Flanders, the Flemish government's campaign '[Klopt dat wel](#)' was launched to run through the 2024/2025 school year to help young people recognise disinformation. An interesting citizen science campaign about visual and AI-manipulated disinformation, the '[VISA VIS project](#)', was launched in October 2024 by the Imec-SMIT, VUB research group, Mediawijs (Imec's Flemish Knowledge Centre for Digital and Media Literacy), Filmpedagogerna (S) and CERTH (G), supported by the European Media and Information Fund (EMIF). The aim is to: (i) provide practical solutions for awareness-raising, such as AI tools, among 25-35 and 55+ year olds; and (ii) make digital checks more accessible to the general public. The consortium-based project will run through 2026. **The BIPT was formally recognised as Belgium's Digital Services Coordinator (DSC)**. Belgium is now able to start enforcing the Digital Services Act (DSA) for platforms based in the country, for example the social media platforms Telegram and BlueSky.

On the protection of the Belgian public and their data, the Belgian Data Protection Authority opened an investigation following a complaint by consumer rights organisation Testachats into Chinese **AI DeepSeek**. Testachats has argued that DeepSeek's data processing practices breach EU data protection rules, citing concerns over data transfers, profiling, and child protection. It has requested a temporary restriction on processing Belgian users' personal data. The complaint has been deemed admissible and referred to the authority's inspection service.

Flanders actively promoted the protection of minors throughout 2024. For instance, Mediawijs launched campaigns in formal education called [Nieuws in de Klas](#). This includes manuals, online interactive lessons and contests: (i) on journalism for those aged 12-14; (ii) on fact-checking for those aged 14-16; and (iii) on opinions and constructive social engagement for those aged 16-18. Mediawijs organised **extra training for teachers** at VRT, at DPG-media and at the Ghent University Museum (in spring 2025).

Leveraging digital transformation for a smart greening

The environmental and circular economy priorities remain at the heart of Belgium's federal and regional strategies and funding programmes. Belgium's strategy aligns with EU priorities on digital and green transitions, well positioning the country in responsible tech adoption.

Belgium's green transition is a comprehensive effort to achieve climate neutrality by 2050, in line with EU targets. The country is investing in renewable energy, energy efficiency, and sustainable mobility, supported by significant EU funding. The national RRP, including revised measures and the REPowerEU chapter, allocates 51% (EUR 2.7 billion) of its total funding to climate-related objectives. Notably, the REPowerEU chapter alone contributes 88% (EUR 637 million of EUR 726 million) to climate goals, well above the 37% threshold set by the RRF Regulation. This green transition is closely tied to Belgium's digital transformation, with measures to enhance digital skills, support SME digitalisation, and promote the development of green technologies.

In 2024, 14% of people in Belgium considered energy efficiency to be important when purchasing ICT devices (below the EU's 19.35% average), and the device's ecodesign was also considered to be important by 9.49%, below the EU average as well (12.04%). Those two eco-friendly criteria take on less importance for Belgian buyers than the price, performance (speed), and design of the ICT device.

Belgian people tend to recycle their mobile phones, laptops and tablets and desktop devices (12.84% for mobile phones, 14.07% for laptops or tablets, and 16.43% for desktops) more than the EU average (10.93%, 11.31% and 14.66%, respectively).

As the scope of the twin transitions is quite broad, many of Belgium's measures outlined in the initial roadmap already contributed to the twin transitions. Belgium is aiming to improve the way it communicates about the Digital Decade's objectives to the right bodies concerned. The addition of a new, specific target or KPI in time would be helpful to foster these efforts.

The twin transitions were already high on the agenda of the Belgian Presidency of the EU Council, which hosted a two-day event in Ghent, with its integration into new policies as well as the revision or review of existing policies. **Belgium committed to collecting more measures on this topic in time, in particular in its roadmap's next revision in 2025, as it has pledged to provide a yearly update.**

According to the Digital Decade Eurobarometer 2025, 73% of Belgian people consider digital technologies important to help fight climate change (standing slightly below the EU average of 74% and showing an decrease of four percentage points since last year), while 78% of Belgian respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities (slightly below the EU average of 80%).

2024 recommendations on green & digital: (i) Greening digital: Develop a coherent approach to twinning the digital and green transitions. Promote improvements in energy and material efficiency of digital infrastructures, in particular data centres.

(ii) Digital for green: Support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs;

(iii) Digital for green: Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

In 2024, Belgium continued the implementation of existing measures but did not take any new measure. The country has made progress in aligning digital and green transitions, particularly in telecom efficiency, AI for sustainability, and sustainable semiconductors. However, its approach remains fragmented, lacking a comprehensive strategy and structured monitoring of emission reductions from digital solutions. This makes it difficult to assess the effectiveness of digital solutions in reducing emissions across sectors, which is a key aspect of the 2024 recommendations. While individual initiatives show promise, a more coherent framework is needed to fully integrate these efforts, so as to scale and mainstream solutions and encourage more widespread adoption particularly by SMEs.

Belgium is consistently improving the energy efficiency of its digital infrastructure, particularly in telecoms. Recent commitments from Proximus (by 2030), Telenet, and Orange (through 2040-2050) reinforce the sector's commitment to net-zero emissions. The BIPT's environmental footprint study (updated in 2024) revealed a 9% drop in energy consumption (2018-2022) and that 77% of energy used in 2022 came from renewable sources. **A new update to this BIPT study expected by Q2 2025** will refresh sustainability indicators, assess new metrics, and expand its scope to smaller infrastructure operators, MVNOs, and service providers. It will also set out scenarios for lowering emissions, quantifying their costs and benefits. However, there are no plans to extend this scope beyond telecoms as this is outside the remit of the BIPT. As mentioned in the 2024 Digital Decade report, the study analyses the telecom networks' footprint, specifically looking into the evolution of energy consumption, carbon emissions and waste processing over the past five years⁷.

There are several 'digital for green' initiatives, through which Belgium is actively supporting recent and ongoing R&D projects that use digital solutions to cut emissions across sectors. Imec's [Sustainable Semiconductor Technologies and Systems](#) programme, launched to assess and disrupt chip fabrication processes for reduced environmental impact. The Flemish AI Research Programme includes new and [ongoing projects](#) that use AI for renewable energy, smart grids, and sustainability solutions.

The postal sector is under growing pressure to reduce its environmental impact. For some operators, sustainability has even become a key differentiator — take, for example, ecological city delivery services. In 2022, CityDepot ([now BD Logistics](#)) and the University of Antwerp launched a CO₂ calculator. Based on a scientifically calibrated method, this tool enables the calculation of total CO₂ emissions at the level of individual shipments, factoring in customer-defined dispatch and destination points. It also allows for comparisons between major operators. To support this, the full logistics

⁷ The update of the study in 2023 had revealed that during the 2018-2022 period, the energy consumption of the three examined operators (Proximus, Telenet and Orange) dropped by 9%. The electricity consumed by the network as such decreased by 77%. The consumption of the mobile network turns out to be up to 40 times more energy efficient per bit transferred than fixed networks. In 2022, 77% of the total energy consumed was renewable. Over the same period, the carbon emissions dropped by 19%. Although the Belgian telecommunications market is already carbon neutral thanks to the purchased emission allowances, further efforts are being made to continue reducing the carbon emissions. The objective is to achieve net zero emission based on science-based targets (SBTi) by 2040 at the earliest. However, in 2022 the carbon emissions increased compared to 2021 due to post-Covid normalization. The energy consumption of the set-top boxes and modems turned out to be almost as high as the energy consumption of the three largest operators combined.

network of these operators was mapped — from sorting and distribution centres to vehicle fleets — enabling business clients to estimate potential CO₂ savings.

Following a Royal Decree, all large operators in Belgium are now required to publish sustainability indicators. The BIPT has developed a dedicated [methodology](#) for this purpose and will oversee audits to ensure compliance.

Bpost (the Belgian postal service) has accelerated its green logistics efforts: since 2021, it has introduced reusable (parcel) packaging, [expanded e-bike trailers](#), and in 2024, it [launched a CO₂ tracking tool](#) for parcels. [A pilot project, which started in January 2025](#), will test packaging-free, label-free shipping via Parcel Machines, making it the first provider to offer such a solution.

On 24 April 2025, the **Walloon Government** adopted the 2025 roadmap outlining priority measures under the PACE 2030 (Air-Energy-Climate Plan). It focuses on reducing the digital sector's carbon footprint by promoting innovation through several actions: aligning Digital Wallonia with EU CO₂ reduction targets, raising public awareness of the climate impact of digital technology (especially mobile use), encouraging recycling of old devices, fostering energy-efficient digital investments, and supporting both 'Green IT' and 'IT for Green' solutions for businesses.

Meanwhile, the Ministry of Economy's Energy department is **developing a database on data centre energy use** (in line with Regulation (EC) 1099/2008), with the first national dataset (2024 reference year) expected by March 2026. The reporting deadline for 2023 data has been repeatedly extended, with submission now in progress. Meanwhile, an Energy Efficiency Directive database is now in place, containing various performance indicators for ongoing evaluation.

Belgium is actively encouraging **new and upcoming initiatives supporting the twin digital and green transitions**. These include: (i) an upcoming AI Code of Conduct to promote sustainable AI practices; (ii) expanded energy labelling and digital product passports to increase transparency on products' environmental impact; and (iii) 69 new project proposals submitted in January 2025 to the Energy Transition Fund (ETF), which currently supports more than 118 R&D projects (the evaluation process is ongoing).

The country is promoting private investment to foster the economy through the twin transitions. A proposal to reform the system of tax deductions for corporate investment has been adopted by the federal government. The main objective of the initiative is to make the system simpler and greener. The general deduction rate for self-employed people and SMEs rises from 8% to 10%, but it can increase to 20% for digital investments and to 30% (bigger firms) and 40% (smaller firms) for green investments. The list of green investments, which is currently significantly outdated, will be updated every three years.

Annex I – National roadmap analysis

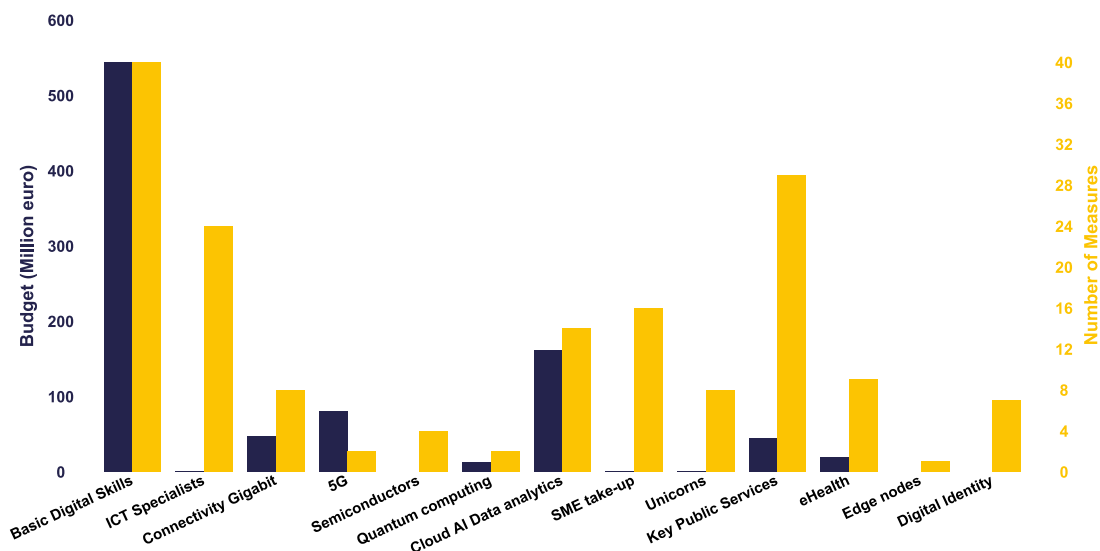
Belgium's national Digital Decade strategic roadmap

Belgium submitted an addendum to its national Digital Decade roadmap on 11 December 2024, addressing all the roadmap recommendations issued in 2024:

- **Targets:** Propose a target and trajectory for FTTP and edge nodes.
- **Measures:** (i) Review and update the budget description of all presented measures, highlighting EU sources, e.g. the RRF; (ii) Include more measures and policies that contribute to the twin transition; (iii) Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it.
- **Consultation:** Report with more detail the results of the consultation process and include more information about the stakeholders invited.

The revised national Digital Decade strategic roadmap reflects a measured update, influenced by political considerations and a phased approach to stakeholder engagement. The adjustments focus on refining policy measures, integrating new initiatives, and addressing specific recommendations from the 2024 roadmap assessment. A notable evolution is the new trajectories, and the continuous efforts to hold consultations with coordinators and relevant administrations across governance levels, which aim to enhance alignment with the EU's 2030 digital objectives. Furthermore, the roadmap outlines a strengthened stakeholder engagement strategy, including a 2025 outreach campaign by the national digital taskforce to ensure broader participation.

Measures and budget in national roadmap⁸

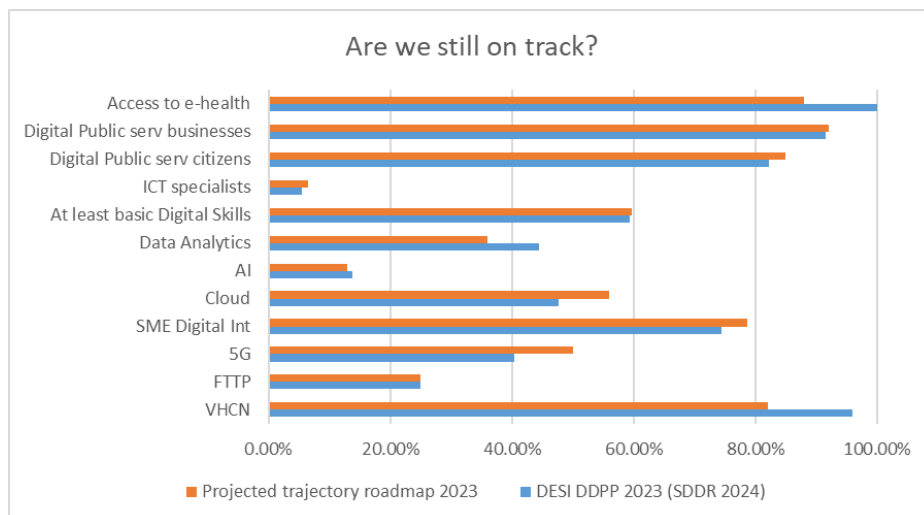


⁸ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Belgium's revised roadmap is composed of 166 measures with a budget of EUR 913.71 million (equivalent to 0.15% of GDP), up from EUR 892 million. **This document addresses all the roadmap recommendations issued in 2024.**

After last year's Digital Decade report recommended better coordination across governance levels, Belgium pledged to take into account when developing the next roadmap. **The country also decided to deliver a yearly roadmap** instead of one every two years as the DDPP requires. Flanders did not deliver an update to its roadmap, but has consistently delivered through best practice examples and regular exchange with the Commission and the Belgian government.

The recommendations for Belgium in last year's report focused on the addition of trajectories for edge nodes and semiconductors and an updated one for FTTP which was implemented in the update to the roadmap in late 2024. **The majority of the trajectories have not been adjusted**, with an exception for the missing KPIs on edge and FTTP. Trajectories that already have been submitted will be maintained, not updated, as Belgium has judged that it is still on track with its forecasts and remains committed to achieving each target by 2030. The progress justifying this is shown below, with the orange bars showing Belgium's projected trajectories as submitted in the first roadmap, and the blue bars showing its current state.



2024 was a year of elections across all government levels of Belgium's federal structure and at the time of reporting, not all governments had been formed. As a result of this transition period, there remains uncertainty on new priorities, measures, policies and budgets related to the Digital Decade objectives. In addition, most of the measures mentioned in the 2023 roadmap were expected to run until 2024 (end of the previous legislature), with a possibility for renewal under the next government. As new governments will be formed and new policies will emerge in 2025, Belgium committed to provide the Commission with a revised and elaborated roadmap in 2025.

The majority of the 2024 Digital Decade Report's recommendations have been addressed, and answers were provided to all recommendations specific to Belgium, using both new and existing measures. Main novelties are the addition of 5 new measures, including on people, digital skills, accessibility and inclusion.

Belgium did not carry out a stakeholder consultation on the roadmap.

However, it did provide an update about the process to address the 2024 recommendation: 'Report with more detail the results of the consultation process and include more information about the

stakeholders invited'. It will likely take place in 2025, and it is not clear which private organisations will be consulted. At first, Belgium plans to identify the gaps between their projected trajectories and the Digital Decade goals (which could be a potential path to attain the 2030 target(s)). With Belgium's steering group, it will be then decided if a more coordinated national strategy between various stakeholders will be needed to close the gaps (e.g. for 5G, only one administration is authorised, so coordination for a strategy will not be needed). If such a need for a more coordinated national strategy will emerge, private organisations will feed into the strategy in a second round and through designated single contact points of each and every body or administration concerned.

While efforts have been made to expand policy measures, particularly in cybersecurity, digital skills, and AI development (e.g. AI4Belgium, CySec Education and Research Pool), some areas require further development. In particular, the requested budgetary updates, including EU funding sources, remain referenced in external documents rather than integrated comprehensively into the roadmap itself. Additionally, the roadmap acknowledges difficulties in fully implementing the twin transitions due to the lack of a KPI, indicating that further developments are anticipated in 2025.

In terms of ambition, the adjustments introduce new initiatives, such as the environmental sustainability framework for telecom networks and more digital skills projects targeting inclusion. However, compared to the EU Digital Decade trajectories, some targets – particularly on connectivity and cloud adoption – remain dependent on external factors, such as regulatory reviews and market-driven deployment. The roadmap highlights ongoing efforts to accelerate FTTP and 5G roll-out, which are contingent on private sector cooperation and regulatory decisions.

Overall, the adjusted roadmap demonstrates a commitment to progressing toward the 2030 Digital Decade targets, albeit with a cautious and incremental approach. Strengths include stronger cybersecurity initiatives, a structured plan for digital skills development, and measures to improve digital inclusion. However, weaknesses persist in the completeness of funding details, the concrete integration of the twin transitions, and the strategic dissemination of cloud infrastructure. The adequacy of measures remains contingent on the successful implementation of planned outreach and further policy refinements in 2025.

In terms of governance, Belgium continues to show signs and actions of its commitment to the Digital Decade and EU digital policy, including its collaboration with the Commission. In July 2024, the **Benelux Union** hosted a strategic meeting between the three member countries on digitalisation. A few action points have emerged from this meeting and are currently being followed up. Furthermore, **Belgium's Ministry of Economy (FPS Economy)** has been approached by the Dutch embassy, to set up structural calls for information sharing and to share best practices and to support each other in certain areas, such as digital skills.

Wallonia's new government is revising its digital and AI strategies, including a cloud strategy review, and Flanders' 2024-2029 **government agreement** 'Working Together for a Warm and Prosperous Flanders' adopted in September 2024 focuses on a **significant digitalisation leap with a strong, aligned digital strategy in line with the Digital Decade targets.**

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Belgium hosts the EUROPEUM EDIC. It is also a member of the Local Digital Twins towards the CitiVERSE EDIC and an observer to the Alliance for Language Technologies EDIC, for which the region of Flanders is a member. In addition, Belgium is working towards setting up EDICs in the area of agri-food and genomics. Belgian entities are indirect and/or associated partners in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Belgium is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Belgium is leading the work of the 'Technology Uptake' cluster of the **Digital Decade's Best Practice Accelerator (BPA)**. In particular, a workshop was organised on the uptake of AI (with a focus on SMEs) in August 2024 and registered a high level of participation from across Europe, bringing together Member States, research centres, and business associations. Key insights were gathered from the EU level, businesses, research centres and countries. Belgium highlighted that resources and tools are available to share information, results and the work carried out (e.g. a Teams channel was created where past sessions are described and material is shared). Belgium invited all Member States who had not yet done so to identify their contact points and to send suggestions and best practices. The goal is to have at least two workshops a year, with a focus on examining the relevance of the topics discussed and exploring opportunities for collaboration with other clusters. Another workshop took place in March 2025. Belgium continues actively planning sessions for this cluster, including on the interoperability of data, robotics and quantum.

EU funding for digital policies in Belgium

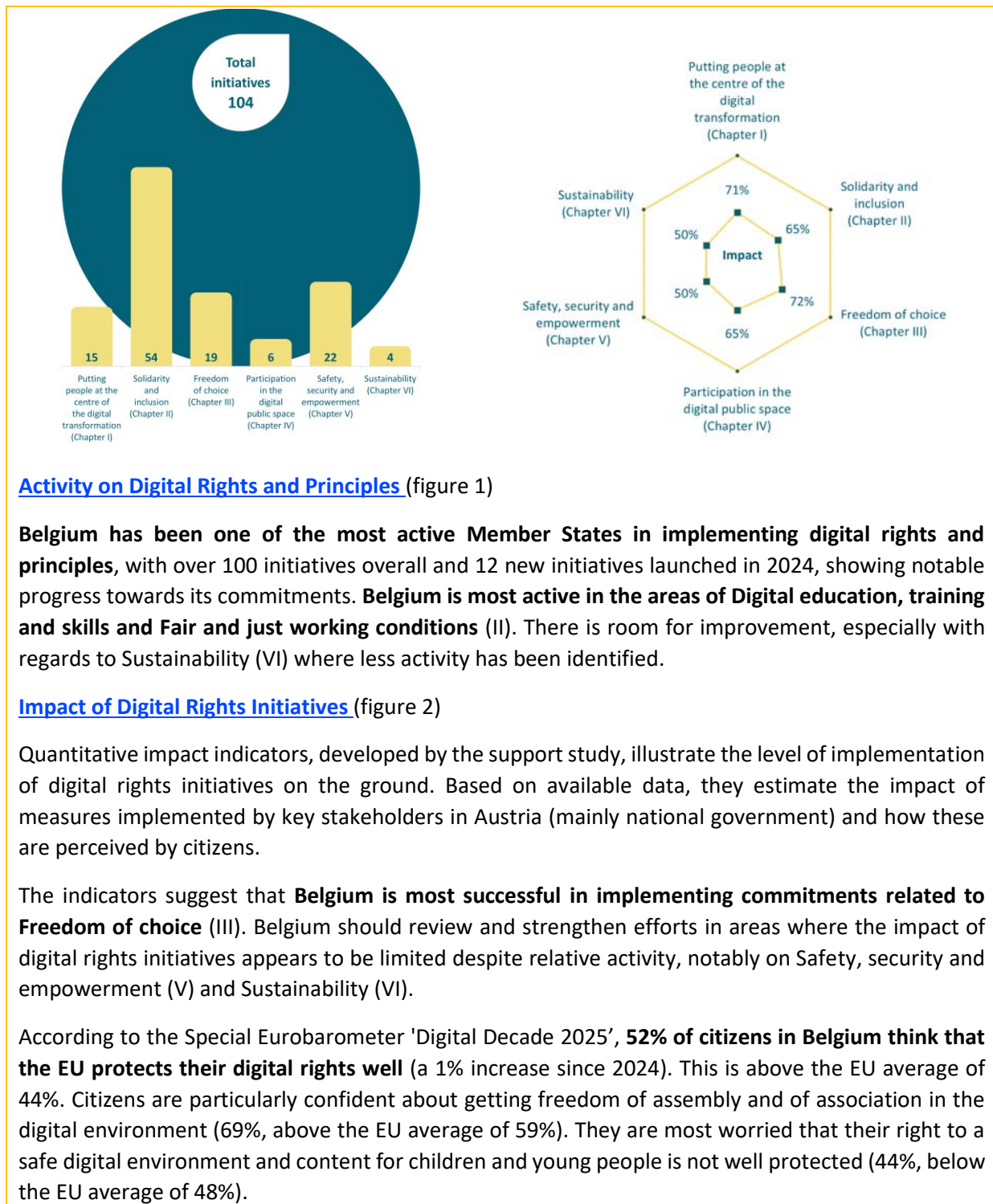
Belgium allocates 26% of its total recovery and resilience plan to digital (EUR 1.2 billion)⁹. In addition, under cohesion policy, EUR 329 million (representing 13% of the country's total cohesion policy funding), is dedicated to advancing Belgium's digital transformation¹⁰. According to JRC estimates, EUR 1.3 billion directly contribute to achieving Digital Decade targets (of which EUR 1.1 billion comes from the RRF and EUR 150 million from cohesion policy funding)¹¹. The RRF and Cohesion funding similarly provide a balanced support across several Digital Decade targets, including: digital public services, digital late adopters and unicorns, and the adoption of cloud, AI and data analytics. The RRP also substantially targets basic digital skills.

⁹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹⁰ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹¹ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹²



Activity on Digital Rights and Principles (figure 1)

Belgium has been one of the most active Member States in implementing digital rights and principles, with over 100 initiatives overall and 12 new initiatives launched in 2024, showing notable progress towards its commitments. Belgium is most active in the areas of Digital education, training and skills and Fair and just working conditions (II). There is room for improvement, especially with regards to Sustainability (VI) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Austria (mainly national government) and how these are perceived by citizens.

The indicators suggest that Belgium is most successful in implementing commitments related to **Freedom of choice** (III). Belgium should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Safety, security and empowerment (V) and Sustainability (VI).

According to the Special Eurobarometer 'Digital Decade 2025', **52% of citizens in Belgium think that the EU protects their digital rights well** (a 1% increase since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting freedom of assembly and of association in the digital environment (69%, above the EU average of 59%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (44%, below the EU average of 48%).

¹² Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
{SWD(2025) 292 final} - {SWD(2025) 293 final} - {SWD(2025) 295 final}

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Bulgaria

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Executive summary

Bulgaria has a well-developed connectivity infrastructure and is strengthening its role in critical technologies, like semiconductors and quantum computing. However, its competitiveness potential is hampered by a fragmented ecosystem; persistent R&D gaps; weak innovation and tech uptake by SMEs and start-ups; and cybersecurity concerns. While the country is advancing in digital public services, challenges remain in digital skills, inclusion, and integrating sustainability into its digital infrastructure.

Bulgaria's contribution to the Digital Decade is moderately ambitious, with 12 national targets, half of which are aligned with the EU 2030 targets. The country is following its trajectories well with 75% of them being on track (based on the 2024 trajectories established for 8 KPIs out of 8 analysed). Bulgaria did not address the 13 recommendations issued by the Commission in 2024 through new measures.

Bulgaria excels in assigning 5G spectrum and is gradually bridging geographical divides in access to high-speed connectivity. The country positions itself as a growing player in critical technologies, with initiatives in semiconductors and quantum computing. While enterprise digitalisation is progressing, particularly in AI adoption, the overall adoption of advanced digital technologies remains below par. Recent actions, such as the launch of an AI Factory at Sofia Tech Park confirm Bulgaria's ambition to enhance its tech ecosystem. Despite its ongoing reliance on Chinese telecommunication components, Bulgaria is orienting its digital policies towards greater sovereignty by strengthening European partnerships in critical technologies.

Digital Decade KPI ⁽¹⁾	Bulgaria				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	BG	EU
Fixed Very High Capacity Network (VHCN) coverage	88.6%	90.4%	2.0%	93.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	88.6%	90.4%	2.0%	93.0%	69.2%	8.4%	100.0%	-
Overall 5G coverage	78.9%	81.3%	3.1%	91.0%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	5	10	100.0%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	49.9%	2.9%	-	72.9%	2.8%	60.0%	90%
Cloud	14.2%	-	-	-	-	-	15.0%	75%
Artificial Intelligence	3.6%	6.5%	78.7%	5.0%	13.5%	67.2%	11.0%	75%
Data analytics	21.9%	-	-	-	-	-	9.0%	75%
AI or Cloud or Data analytics	29.3%	-	-	-	-	-	-	75%
Unicorns	0	0		-	286	4.4%	-	500
At least basic digital skills	35.5%	-	-	-	-	-	52.0%	80%
ICT specialists	4.3%	4.6%	7.0%	4.2%	5.0%	4.2%	5.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	67.5	68.0	0.8%	83.0	82.3	3.6%	100.0	100
Digital public services for businesses	91.9	94.0	2.4%	92.0	86.2	0.9%	100.0	100
Access to e-Health records	77.2	87.5	13.3%	82.8	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics.
(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024).

According to the 2025 special Eurobarometer on the Digital Decade, 76% of Bulgarian citizens consider that the digitalisation of daily public and private services is making their lives easier. Concerning the action of the public authorities, 86% consider it important to counter and mitigate the issue of fake news and disinformation online, and regarding competitiveness, 82% consider it important to ensure that European companies can grow and become 'European Champions' able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

Bulgaria boasts a robust connectivity infrastructure. It excels in assigning 5G spectrum and in rolling out gigabit networks to progressively bridge geographical divides. In 2024, Bulgaria's total VHCN and FTTP coverage outperformed the EU averages. Overall, 5G coverage lags behind EU coverage, and is growing at a slower pace. However, Bulgaria's coverage for households in sparsely populated areas shows improvement. Bulgaria is making strides in improving its broadband take-up indicators, with growth rates outpacing EU growth rates, but remaining below EU averages. The country is strengthening its position in **critical technologies**, notably through its integration in the European semiconductor ecosystem and initiatives in quantum computing. Despite these advancements, Bulgaria faces challenges in fully realising its **tech ecosystem's** potential. This is true particularly for SMEs and start-ups, due to persistent R&D and innovation gaps compared with the rest of the EU. Recent government initiatives and the establishment of European Digital Innovation Hubs (EDIHs) are positive steps, but the broader ecosystem issues constrain the ICT sector's growth. EU funding has supported Bulgaria's **enterprise digitalisation**, including the growing adoption of AI, the forthcoming AI Factory at Sofia Tech Park, and the development of supercomputers and Centres of Excellence in ICT and Big Data under Cohesion Policy. However, the overall uptake of digital technologies in the country still lags behind the EU average. Moreover, Bulgaria's **cybersecurity preparedness remains a concern**, and a significant part of its telecommunications infrastructure continues to depend on Chinese components, raising strategic and security-related challenges.

Protecting and empowering EU people and society

Bulgaria's approach to digital inclusiveness shows promise, with targeted investments in education, digital infrastructure, and improvements in the digitalisation of public services for both businesses and citizens. However, its **journey towards a fully inclusive digital society is complex and might require sustained effort**. Despite ongoing and well-targeted measures, Bulgaria still faces a host of educational challenges, including digital skills proficiency, persistent digital divides, and a lack of scientific research capacity. In 2023, the **basic digital skills** of Bulgaria's population trailed behind the EU average. Adult learning participation is also alarmingly low and declining. **Bulgaria's ICT training provision and ICT specialist workforce** are below the EU average, although the country is showing positive growth in these areas. Bulgaria has a **strong legal framework for digital services**, a well-developed e-government system, and is digitalising more services. It is progressively **improving its administrative processes** to alleviate the burden for citizens and enterprises. **However, and despite substantial Cohesion policy support in the field, Bulgaria lags behind in overall digital public services for citizens, and only one third of Bulgarians use e-government services.** A low proportion of public services is fully online, and the lack of digital inclusion for minorities and people living in remote areas remains a major obstacle to the wider use of online services. **Bulgaria's performance on e-ID use is currently very poor** – the lowest in the EU – but there are positive signs of improvement thanks to recent regulatory changes in 2023. The population's access to **e-Health** records is steadily improving, with some areas already surpassing EU averages. Digital democracy based on public participation, the

protection of children online and the fight against disinformation is also expanding, with scope for further acceleration.

Leveraging digital transformation for a smart greening

Bulgaria's progress in its **twin transition** is hampered by the lack of a practical, integrated approach to making digital infrastructure greener or tracking emission reductions.

National Digital Decade strategic roadmap

Bulgaria did not submit a revised national roadmap. Instead, it presented minor updates to the roadmap initially submitted on 8 April 2024, primarily correcting clerical errors and updating dates, but **without introducing significant changes or new measures**. The roadmap aligns with the values and measures in the National Recovery and Resilience Plan and the European programmes. Bulgaria addressed most of the State of the Digital Decade 2024 recommendations through written responses and references to existing measures. A full stakeholder consultation was conducted. The roadmap continues to prioritise: the digitalisation of secure, interoperable, human-centred public services; basic digital skills; and the digitalisation of businesses (SMEs, smart farming). It contains **60 measures** and has a budget of EUR 2.19 billion (equivalent to 2.11% of GDP) that covers all the Digital Decade objectives, such as digital inclusion; cybersecure and resilient infrastructure; sovereignty; and governance of the digital transformation.

Funding & projects for digital

Bulgaria allocates 23% of its total recovery and resilience plan to digital (EUR 1.3 billion)¹. In addition, under cohesion policy, EUR 1.3 billion, representing 12% of the country's total cohesion policy funding, is dedicated to advancing Bulgaria's digital transformation².

Bulgaria is a member of the 'Alliance for Language Technologies' EDIC. It is also a member of the European High-Performance Computing Joint Undertaking (JU) and of the Chips JU.

Bulgaria has not yet contributed to the Digital Decade's **Best Practice Accelerator**³.

Digital rights and principles

According to a support study, Bulgaria has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 79 initiatives overall and 4 new initiatives launched in 2024. Bulgaria is most active in the area of putting people at the centre of the digital transformation. Less activity has been identified with regards to privacy and individual control over data. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing safety, security and empowerment.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Recommendations

- **Digitalisation of SMEs and take-up of advanced technologies:** Improve the business climate and investment in R&D, notably strengthen Bulgaria's public science base and its linkages with the business ecosystem, while boosting private R&D efforts through well-calibrated public support tools.
- **Artificial Intelligence:** Continue the initiatives to promote AI development and adoption, with a focus on collaboration, ethical considerations, and policy alignment with the EU and across sectors.
- **Basic digital skills:** Leverage the strong performance of women in basic digital skills to reduce disparities linked to education, age, and geography, and to raise the overall level of digital competence. Prioritise targeted investments in teacher training, curriculum reform, and the development of digital and green skills.
- **ICT specialists:** Develop clear, targeted measures to help companies hire ICT experts in less populated areas. Set out a strategy addressing broader factors like infrastructure, economic conditions, and researcher mobility, and identify the most effective funding strategies. Expand ICT training and increase the number of female ICT specialists to help close the gap.
- **Cybersecurity:** Increase efforts in cybersecurity, particularly by supporting the development and deployment of cybersecurity capabilities, and by increasing awareness amongst private and public entities.
- **Key public services:** Continue the efforts to improve the digitalisation and user-friendliness of public procedures and to reduce the administrative burden, also by expanding the use of e-ID. Address the persisting societal and regional imbalances in the delivery of online services by, for example, cooperating with local stakeholders. Focus on accelerating the number of digital public services for citizens, particularly in cross-border services.
- **e-Health:** Ensure the timely and full availability of all types of medical images via the e-Health platform and app and provide clear information to the public. Expand online access to e-Health data to the entire population. Introduce technical functionalities that authorise persons to access this data on behalf of others. Strengthen communication to raise awareness of platform functionalities, especially among vulnerable groups.
- **Fixed and mobile connectivity:** Accelerate the expansion of both VHCN/FTTP and 5G coverage, with a focus on ensuring that deployment pace in sparsely populated areas is maintained. Continue investment to consolidate Bulgaria's strong position, especially in 5G deployment.
- **Green and digital transitions:** Set up clear mechanisms for measuring and promoting the environmental benefits of digital solutions across sectors. Work towards fully integrating green and digital priorities into the country's development strategy, through better alignment between political agendas, funding allocation, and private sector engagement.

A competitive, sovereign and resilient EU based on technological leadership

Bulgaria's digital competitiveness remains modest and places it in the lower-performing segment of the EU's tech landscape. Its digital transformation is supported by a well-developed telecommunications sector, rapidly expanding 5G networks and significant investments in fibre-optic infrastructure. These factors, combined with the growing start-up ecosystem and venture capital landscape, make Bulgaria a promising destination for investment and innovation. ICT sector growth, AI adoption among SMEs and the expansion of digital innovation hubs all signal progress. However, persistent underinvestment in research and development (R&D), weak science-business collaboration and the absence of unicorn enterprises are limiting its innovation potential. According to the European Innovation Scoreboard 2024, Bulgaria's innovation performance has improved but more slowly than the EU average. Sustaining this positive trajectory will be essential to closing the widening gap with the rest of the EU.

Bulgaria's ICT sector has shown strong growth, contributing **7.42%** of the country's gross value added in 2022 – above the EU average of 5.46% – and maintaining a rather steady upward trend since 2012⁴. That same year, R&D in this sector represented **35.22%** of total R&D expenditure by businesses, one of the highest shares in the EU. Despite this progress, **Bulgaria continues to face challenges in research and innovation**. ICT R&D personnel represented only 23.69% of the country's total R&D workforce in 2022 – relatively lower than in other Member States for which data is available.

Bulgaria has a dual funding approach for R&D, using both public funding (national budget) and EU funds (European Structural and Investment Funds and the European Regional Development Fund (ERDF)). **Public R&D spending remains insufficient**, limiting the development of a strong research base. Moreover, **institutional fragmentation further weakens the efficiency of funding**, because resources are spread too thinly across multiple institutions, preventing key players from achieving critical mass. **Another key obstacle is the weak link between academia and businesses**, which hampers innovation and the commercialization of research.

Bulgaria performs well on **connectivity infrastructure** roll-out, outperforming the EU on 5G spectrum assignment and Fixed Very High-Capacity Network (VHCN) and Fibre to the Premises (FTTP) coverage, although 5G coverage and broadband take-up still lag behind the EU averages.

Regarding critical technologies, Bulgaria is strengthening its resilience through its role in the EU's semiconductor ecosystem (notably via the Sofia Tech Park) and is continuing to promote quantum computing and the quantum research community.

The tech ecosystem for SMEs and start-ups shows potential, thanks to support from government initiatives and the establishment of European Digital Innovation Hubs (EDIHs), but a significant innovation gap with the rest of the EU remains.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

Bulgaria's ICT sector is a bright spot, but broader ecosystem challenges continue to constrain its growth.

Cybersecurity preparedness remains a concern, particularly given the continuing reliance on Chinese components in many of Bulgaria's telecommunications networks.

According to the 2025 Eurobarometer⁵, 84% of Bulgarian people think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities (an increase of three percentage points compared to last year).

Building technological leadership: digital infrastructure and technologies

Bulgaria's internet infrastructure is resilient overall thanks to strong growth in **Fixed Very High-Capacity Network (VHCN)** and **Fibre to the Premises (FTTP)** coverage as well as to assets such as affordable high-quality mobile connectivity. Performance nevertheless remains below the EU average in areas such as 5G take-up and 1 Gbps broadband subscriptions.

Bulgaria is strengthening its **semiconductor and quantum** computing sectors through new competence centres and research initiatives. However, it is lagging in overall **5G coverage and digital technology adoption**, requiring further efforts to enhance R&D, SME innovation, and enterprise digitalisation.

Connectivity infrastructure

Bulgaria's digital infrastructure has had a mixed performance compared with the EU average. It leads in certain areas such as VHCN and FTTP coverage as well as 5G spectrum assignment for pioneer bands, but it is lagging behind in overall 5G coverage and growth rates in most areas. Bulgaria's performance in sparsely populated areas is particularly noteworthy, with high coverage rates and growth in some areas. **Bulgaria's broadband take-up indicators show a mixed picture.** In 2023, 53.41% of fixed broadband subscriptions in Bulgaria were at speeds of 100 Mbps or higher – a lower share than the EU's overall 65.9%. This figure rose to 63.84% in 2024 and was still below the EU's 71.88%, but the year-on-year growth rate of 19.5% was more than double the EU's 9.1%. Bulgaria lagged behind the EU for subscriptions at speeds of 1 Gbps or higher, with 1.01% in 2023 and 2.02% in 2024 (compared with the EU's 18.47% and 22.25% respectively). Bulgaria's growth rate was 100.0%, almost five times faster than the EU (20.5%).

The share of 5G SIM cards in Bulgaria was 14.53% in 2023 and 24.41% in 2024 (both lower than the EU's 21.7% and 35.56% respectively). Bulgaria's growth rate of 68.0% exceeded the EU's 63.9%.

VHCN and FTTP

Bulgaria has made very good progress on fixed broadband connectivity, and its Gigabit networks (VHCN and FTTP) are expected to reach 99% in 2030. The country is on track according to its national trajectory for these two indicators. The latest figures and measures in place suggest that it is realistic to expect that Bulgaria will reach its national target of nearly 100% VHCN and FTTP coverage.

Bulgaria is at 90.36% of VHCN coverage (2030 national target at 99%) after a progression of +1.75% in 2024 and stands above the EU average. However, Bulgaria's growth rate of 2% in this area was lower than the EU's 4.9%. **A similar trend is observed for households in sparsely populated areas,**

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

where Bulgaria's coverage was 72.56% in 2023 and 79.1% in 2024, both higher than the EU's 55.61% and 61.89% respectively, but with a growth rate of 9% compared to the EU's 11.3%.

Bulgaria is at 90.36% of FTTP coverage (2030 national target nearly 100%) after a progression of +1.75% in 2024 and stands above the EU average. The growth rate of 2% is lower than the EU's 8.4%. **For households in sparsely populated areas,** Bulgaria's FTTP coverage was 72.56% in 2023 and 79.1% in 2024, compared to the EU's 52.55% and 58.78% respectively, with a growth rate of 9% against the EU's 11.9%.

Bulgaria is accelerating its connectivity efforts through a measure in its Recovery and Resilience Plan (RRP) which focuses on deploying VHCNs in sparsely populated, remote and rural areas. This measure has a budget of EUR 240 million (including EUR 200 million from the Recovery and Resilience Facility (RRF)). It aims to reduce the digital divide, ensure gigabit connectivity for all, and improve access to high-quality digital services.

Bulgaria is accelerating its connectivity efforts through a measure in its Recovery and Resilience Plan (RRP), focusing on the large-scale deployment of digital infrastructure. With a budget of EUR 270 million from the RRF, the initiative aims to reduce the digital divide, ensure gigabit connectivity for all, and improve access to high-quality digital services.

Bulgaria's good performance and encouraging deployments across its territory meant that it did not propose any new measure in its adjusted roadmap in 2024.

2024 recommendation on fixed connectivity: Stimulate demand in view of reaching full FTTP coverage.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measures.

Given the dynamic growth of FTTP subscribers using speeds of 1 Gbps and above, the Bulgarian telecom regulator – Communications Regulation Commission (CRC) expects FTTP network coverage to continue expanding to meet the growing demand for higher speeds. The demand for ultra-high-speed connectivity (particularly gigabit speeds) is increasing significantly. The share of subscribers using speeds above 1 Gbps remains relatively small, but the trend suggests a strong interest in high-speed networks that is likely to continue growing. The steady increase in subscribers within the 100 Mbps to 1 Gbps range indicates that these speeds still meet the connectivity needs of many businesses. In the short term, businesses are expected to increasingly focus their demand on gigabit connectivity.

Regarding copper switch-off, the CRC reports that it has no legal instruments to impose a plan, because the local access market was deregulated in June 2019. Wholesale copper services were last used in 2012, so no undertakings are affected by the process.

By mid-2024, no changes were observed in the positions of the top three undertakings, which account for the largest share of broadband subscribers.

5G

Bulgaria is at 81.33% of overall 5G coverage (2028 national target 100%) after a progression of +3.1% in 2024 and stands below the EU average. **In sparsely populated areas,** Bulgaria is at 38.25% of 5G coverage (2028 national target 100%) after a progression of +34.3% in 2024 and stands far below the EU average (79.57%). Bulgaria is lagging behind compared to its national trajectory. Bulgaria's growth

rate for its overall 5G coverage could be supported by additional measures and/or accelerated investment.

Bulgaria is at 81.33% of 5G coverage in the 3.4–3.8 GHz band after a progression of +33.8% in 2024 and stands above the EU average (67.72%). **In sparsely populated areas**, Bulgaria is at 38.25% of 5G coverage in the 3.4–3.8 GHz band after a progression of +184.4% in 2024 and stands above the EU average (26.19%).

In 2025, Bulgaria has fully assigned 96.67% of its harmonized spectrum for 5G pioneer bands, same value as last year, outperforming the EU's 74.63%.

2024 recommendations on mobile connectivity: (ii) Accelerate efforts to increase 5G coverage; (iii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measures. Regarding the implementation of Multi-Vendor Strategies, two Bulgarian mobile operators have informed the CRC of their plans to introduce a standalone 5G (SA) architecture in their networks. Publicly available information indicates that both architectures are based on Nokia solutions.

The CRC reported that just under 7.9 million subscribers were using mobile broadband access in mid-2024, a slight decrease of 1.5% since the end of 2023. The total number of mobile broadband subscribers exceeded 1.5 million and increased by 12.3% in the first half of 2024. On 1 July 2024, they represented almost 20% of the total number of mobile broadband subscriptions. The CRC believes that 5G subscriptions will become the largest group within the total number of mobile access subscriptions in the next few years.

On 1 July 2024, Bulgaria still had three major mobile operators, which each had stable market shares. 5G traffic accounted for 28% of total mobile broadband traffic in the first half of 2024.

Conditions have been established in Bulgaria to ensure the successful implementation of 5G.

Bulgaria has more than 4 400 5G base stations and the number of base stations has consistently grown over the years.

Bulgarian law allows operators to transfer or lease radio frequency spectrum in the 700 MHz, 3.6 GHz, and 26 GHz bands, subject to a decision by the CRC. However, the CRC did not receive any applications for the transfer or lease of the allocated radio frequency spectrum in 2024.

Semiconductors

Bulgaria is strengthening its semiconductor sector with C3BG, a national competence centre. The Ministry of Innovation and Growth and the Bulgarian SMEs Agency announced the establishment C3BG in September 2024. It will be part of the European Network of Competence Centres, providing technical expertise, design support, and skills development for SMEs. C3BG will receive EUR 8 million over four years with 50% aid intensity (50% of the funding will come from public sources). The winning consortium is led by the Technical University of Sofia and includes participants from other leading universities in Bulgaria, the Microelectronics and Industrial Electronic Systems Cluster, and Belgium's Imec. The project has been assessed and approved by the Chips Joint Undertaking and the implementation contract is due to be signed in 2025.

Sofia Tech Park is also involved in the [Chips of Europe project](#), tackling workforce shortages by fostering industry-academia collaboration to attract talent to semiconductor careers. Through these initiatives and others reported in last year's Digital Decade report, Bulgaria is ensuring that its semiconductor sector not only follows an industry-driven approach but also integrates national R&D strengths, workforce development, infrastructure growth, and policy support – thus reinforcing Bulgaria's contribution to the EU's semiconductor ecosystem.

Based on the objectives of the Strategic Technologies for Europe Platform (STEP) and the outcomes of the mid-term review of the 'Research, Innovation and Digitalisation for Smart Transformation' (PRIDST) programme, **Bulgaria has proposed revising PRIDST**. The revision aims to foster the development of critical technologies in areas such as deep tech and biotechnology, including through the establishment of technology infrastructures. It will also integrate measures for skills development related to the manufacturing of critical technologies in these fields. The ERDF's financial support for the proposed STEP measure under PRIDST is currently estimated at EUR 81.5 million.

Similarly, based on the same objectives of STEP and the outcomes of the mid-term review of the Programme 'Competitiveness and Innovation in Enterprises' 2021-2027 (PCIE), **Bulgaria has proposed revising PCIE**. This revision would encourage the development and manufacturing of critical technologies, focusing on investment in SMEs and large companies in the area of 'clean and resource-efficient technologies'. The ERDF's financial support under this proposed STEP measure within PCIE is estimated at EUR 30 million.

Edge nodes

According to the Edge Node Observatory, Bulgaria is estimated to have deployed a total of 10 edge nodes by 2024, a progression of +100% since 2023. This is doubling (+5 edge nodes) the amount estimated for 2023 (5, number revised since SDDR 2024).

Bulgaria has presented forecast data for the edge nodes metric, which shows a trend of rapid expansion with an emphasis on reducing the distances between nodes. This suggests that the accessibility of services and the efficiency of the network have improved, so the network is likely to expand in suburban regions and local centres of economic activity.

BRAIN++ and Edge-Enabled AI Robotics at Sofia Tech Park, a key initiative in Bulgaria's AI strategy, are advancing AI-powered robotics by integrating robotic foundation models with digital twins. This approach accelerates automation across manufacturing, R&D, healthcare, logistics, and urban planning, reducing traditional robotics' cost and complexity. By focusing on modular, scalable AI models, BRAIN++ ensures adaptability across diverse environments. AI-powered drones use 3D-scanned public spaces to create digital twins, thus allowing robots to refine their skills in realistic simulations before physical deployment. Collaboration with Sofia Tech Park's robotics lab further strengthens this ecosystem, ensuring seamless training, validation, and real-world integration.

Crucially, this initiative embodies edge computing principles. Robots trained on digital twins require real-time AI inference and decision-making at the edge, rather than relying solely on centralized cloud systems. Distributed AI processing at edge nodes enhances responsiveness, reliability, and autonomy, particularly in dynamic, human-interactive environments. To address safety and ethics, BRAIN++ emphasizes Trustworthy AI, developing the COMPL-AI framework to ensure AI systems operate safely, transparently, and reliably. By offering an open-source AI robotics platform to the EU's AI factories, BRAIN++ fosters collaboration and competitiveness in the EU's AI ecosystem, and also reinforces edge computing as a foundation for next-generation robotics.

Quantum technologies

Bulgaria continues to promote quantum computing, in particular with the ‘Increasing the Capacity in the Field of Quantum Informatics’ national programme.

The Ministry of Education and Science (in cooperation with notable and leading scientists in the field of quantum technologies) approved this project last year (the public consultations [have now closed](#)). The national programme aims to build a **highly skilled and cohesive quantum research community** in Bulgaria by attracting **at least 40 PhD students, postdoctoral researchers and young scientists** to conduct **cutting-edge research** in **quantum computing, simulation, metrology, sensing and communication**. The programme is expected to be implemented in 2025-2031 with up to BGN 12 million (EUR 6.1 million) earmarked from the budget of the Ministry of Education and Science.

The Centre for Quantum Technologies (CQT) at Sofia University St. Kliment Ohridski was officially established in late 2023 to coordinate and advance quantum research within the physics faculty. It focuses on four key areas: quantum computers, sensors, and control; quantum simulations and metrology; quantum algorithms; and quantum control. Through these research groups, the CQT will aim to strengthen Bulgaria’s position in quantum technology development. The CQT’s building is currently being constructed on the campus of the Faculty of Physics with funding provided by the Rectorate of Sofia University, which is expected to be ready in the spring of 2025. The building will enable the creation of jobs for 25-30 researchers and will include a seminar hall. The work of the CQT is funded by one project under the RRP for BGN 1.1 million (EUR 562 444) for 42 months (until June 2026); one project under Horizon Europe for EUR 360 000 (until September 2025); and several smaller projects of young scientists.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Bulgaria’s adoption of digital technologies remains significantly below the EU average, despite recent progress on the uptake of cloud services by SMEs.

Regarding the tech ecosystem and R&D, Bulgaria is sustaining its involvement in several EDIHs, and consolidating funding for R&D infrastructure such as centres of excellence (CoEs) and centres of competence (CoCs). Recent developments are encouraging, with growing awareness among enterprises of the importance of digitalisation and acceleration in their use of AI, as well as the recently announced AI factory to be hosted by Sofia Tech Park.

Total R&D intensity increased from 0.43% of GDP in 2007 to 0.79% in 2023, but R&D investment – both public and private – remains critically low (among the lowest in the EU) and is still far below Bulgaria’s 2% target for 2025. In addition to a **fragmented research system and weak science-business ties**, this underinvestment is weighing heavily on Bulgaria’s innovation potential.

Science-business cooperation remains at the low end of the scale. This is reflected in the share of public-private scientific co-publications and in the share of public R&D expenditure that is financed by businesses, which is also well below the EU average. Knowledge transfer and the commercialisation of research results is hampered by the **lack of an effective technology transfer ecosystem** (with properly funded technology transfer structures); the **lack of incentives for researchers to engage in collaboration** with the private sector; and the **lack of formalised relationships between academia and businesses**. This is despite the fact that several organisations supporting start-ups and innovative businesses have been established in Bulgaria over time (e.g. the Bulgarian Entrepreneurial Association

(BESCO); the Bulgarian Association for Equity and Risk Investment; and the Business Angel com platform).

Bulgaria has reported some recent developments that suggest that, with the emergence of widely available generative intelligence, many SMEs have realised that they need to develop their own strategy for holistic digitalisation and use of new technologies. In this regard, under the national RRP, Bulgaria's government has provided financial resources for innovation and digitalisation for smart transformation for almost all business activities – from a voucher scheme for improving staff skills to the development and localisation of IT solutions for the benefit of competitiveness.

SMEs with at least basic digital intensity

In 2024, 49.93% of SMEs showed at least a basic level of digital intensity (2030 national target 60%) after a progression of +2.9% annually between 2022 and 2024. The country stands far below the EU average of 72.91%, and ranks **last among EU Member States**. More specifically, only 16.46% of Bulgarian SMEs had a high or very high digital intensity, compared to the EU average of 32.66%, highlighting the need for further digital development among SMEs.

To address this issue, the Bulgarian RRP includes an investment to support the deployment of digital technologies in SMEs and improve their readiness for the subsequent adoption of Industry 4.0 technologies. The cohesion policy investment would primarily focus on supporting SMEs in achieving higher levels of digitalisation and deploying Industry 4.0 technologies.

2024 recommendation on digitalisation of SMEs: Accelerate its efforts with more measures aiming to increase SMEs' uptake of technologies, including measures to stimulate investments in technology transfers, such as through more lab-to-market measures, and support to its innovative start-ups.

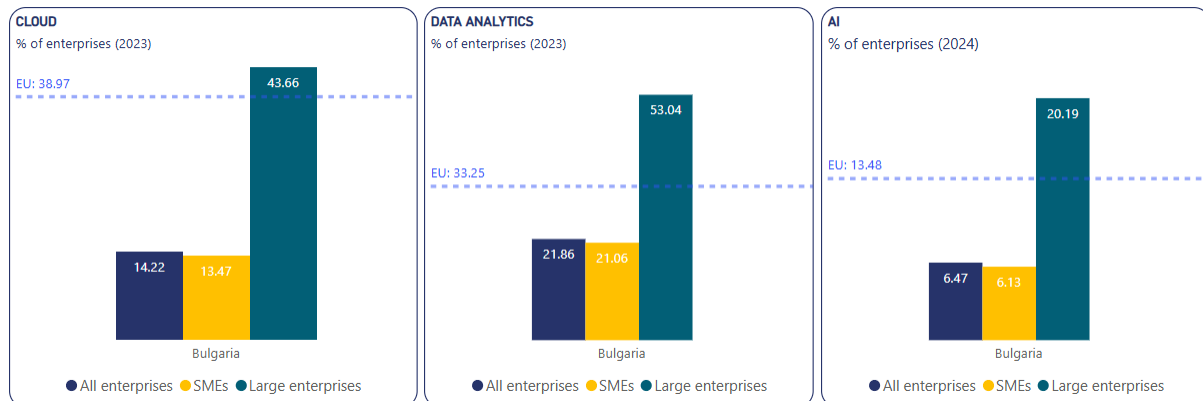
In 2024, Bulgaria continued the implementation of existing measures but did not take any new measures. Bulgaria reported that the intended measures described in the roadmap aim precisely at achieving the above objective and addressing the 2024 recommendation. New measures could be expected after analysing the results of the implementation of these and in the development of the new European programmes.

In **October 2023**, Bulgaria's **Ministry of Innovation and Growth** approved funding of **BGN 82 million (EUR 41.9 million)** to establish **eight European Digital Innovation Hubs (EDIHs)**. The programme is part of the Research, Innovation and Digitalisation for Smart Transformation (PRIDST) 2021-2027 and is consistent with the Digital Europe Programme's focus on EDIHs. The initiative aims to assist BGN 51.8 million (EUR 26.4 million) in fostering technological transformation in Bulgaria, with a focus on AI, digitalisation and smart solutions. The most ambitious of these hubs, 'Mechanica', plans to support 507 businesses and organisations. Others, like the 'RIC Gabrovo' hub (serving 22% of organisations), will play a more modest role. RIC launched the European Digital Innovation Hub in October 2024 and the deadline for the project's implementation is October 2027. **Bulgaria's sustained involvement in the EDIHs will accelerate the adoption of AI, digital, and green technologies.** This will bridge the gap between research, development and real-world AI deployment. It will also reinforce Bulgaria's contribution to the digital transformation of EU industries.

Bulgaria is seeking to ensure that public R&D investment contributes effectively to technological advancements and economic growth by **fostering an integrated research and innovation ecosystem**. In particular, to strengthen the national R&D ecosystem, Bulgaria adopted the **Act on the Promotion of Scientific Research and Innovation (ZNNII)** in May 2024. This law lays the foundation for

sustainable research funding and alignment with the European Research Area; establishes a national framework programme to improve coordination between government, academia, business and society; creates a national innovation fund to finance R&D projects; and enhances science-business linkages through the National Roadmap for Scientific Infrastructure. The NRSI covers 51 R&D sites (including CoEs and CoCs).

Take-up of cloud/AI/data analytics



Bulgaria has a mixed performance in the adoption of cloud computing, data analytics and AI technologies. It is lagging significantly behind the EU averages in all three areas. There is also a significant disparity between SMEs and large enterprises when it comes to the adoption of technology. Large enterprises have relatively high levels of adoption, but SMEs have trailed behind (particularly in AI adoption and cloud computing) and there is a sizeable gap in data analytics uptake. This mirrors trends in the EU as a whole (where large enterprises consistently outpace SMEs in technology adoption) and has significant implications for Bulgaria's economy. In 2022, SMEs in Bulgaria accounted for 42.7% of the total value added in the economy, while large enterprises generated 37.6%. SMEs represented 97.4% of the enterprises with more than 10 employees, while large enterprises made up just 2.6%.

- [Artificial intelligence or cloud or data analytics](#)

According to new data collected in 2024, 6.47% of Bulgarian enterprises adopted AI (2030 national target 11%) after a progression of +78.73% in a year; despite significant growth, this performance remains significantly below the EU average of 13.48%. More specifically, uptake among SMEs was slightly lower at 6.13%, while large enterprises reported a higher usage rate of 20.19%. This corresponds to a gap of 14.06 percentage points between SMEs and large enterprises, which is lower than the EU gap of 28.53 percentage points. **Bulgaria is on track according to its national trajectory.**

Adoption of cloud, data analytics, and the three technologies together were not measured in 2024.

In 2023, only 14.22% of Bulgarian firms adopted cloud technologies (2030 national target 15%), which is considerably lower than the EU average of 38.97%. Among these, a notable disparity existed between SMEs, which had an uptake of 13.47%, and large enterprises, among which 43.66% adopted cloud services. This reflects in a 30.19 percentage point gap between SMEs and large enterprises in Bulgaria, which aligns with the EU level gap of 31.68.

Data from 2023 showed that 21.86% of Bulgarian firms adopted data analytics technologies (2030 national target 9%), which corresponds to a considerably lower share than the EU average of 33.25%. Among these, approximately 1 out of 5 (21.06%) SMEs used data analytics, whereas 1 out of 2 (53.04%) large enterprises conducted data analytics. This resulted in a gap of 31.98 percentage

points between SMEs and large enterprises, which was lower than the EU gap of 39.72 percentage points.

When taking the three technologies together in 2023, 29.34% of enterprises in Bulgaria engaged with either AI, cloud, or data analytics technologies (2030 national target of 35%), considerably below the EU average of 54.7%. Among SMEs, the uptake was slightly lower at 28.34%, compared to a much higher rate of 68.22% among large enterprises. This indicates a percentage point difference of 39.88 in uptake between SMEs and large enterprises in Bulgaria, which is higher than the EU level gap of 32.97.

- [Cloud](#)

There are no specific developments to report that are relevant to the 2025 Digital Decade report.

- [Data Analytics](#)

There are no specific developments to report that are relevant to the 2025 Digital Decade report.

- [Artificial Intelligence](#)

Bulgaria is taking steps that will likely elevate AI use among Bulgarian enterprises. The 2024 Digital Decade report included [BgGPT](#), an open AI model in Bulgarian language, as one of the country's best practices. It was developed and launched in 2024 by the INSAIT research institute.

In March 2024, Bulgaria announced that it will host [BRAIN++](#), an AI training factory at [Sofia Tech Park](#), as part of a EUR 485 million initiative by the Commission to fund seven sites. Construction of this modern GPU AI data centre will begin in 2026. The EUR 90 million project, with 50% funded by the Bulgarian government, is a joint effort by Sofia Tech Park and the Institute for Computer Science, Artificial Intelligence and Technology (INSAIT). BRAIN++ will tap into the EU's supercomputing network, exchanging computing power, data, and talent across Europe, and contributing to a united European AI ecosystem that promotes ethical and responsible practices. It will also integrate a cloud solution called **BulgAI Sandbox**, providing a secure space for SMEs and researchers to develop, test, and deploy AI solutions. This hybrid approach combines Bulgaria's Discoverer+ EuroHPC supercomputer with cloud-based features, offering a flexible and accessible environment for AI innovation.

Bulgaria's government is closely monitoring the AI adoption and innovation levels of its enterprises, categorising them into four distinct groups. The 'leaders' group represents 14% of Bulgarian enterprises, which are the most innovative and seamlessly integrate AI into various business functions with dedicated budgets and a strong commitment to innovation. The 'catch-up' group comprises 23% of enterprises, which are rapidly adopting AI and experimenting with multiple tools. They are often involved in warehouse automation and AI-driven management systems but are slightly less innovative than the leaders. The 'laggards' group is the largest with 41% of enterprises that have minimal AI adoption and limited understanding of its potential, and that only rare and superficially use AI. The 'I Want To' group consists of the 22% of enterprises that are enthusiastic about AI but have limited actual implementation, often allocating budgets but lacking the necessary processes and expertise for effective adoption.

2024 recommendation on AI: Leverage activities as part of the ALT-EDIC and build on its capabilities such as BgGPT to design new measures aiming at developing the AI ecosystem and fostering AI adoption.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. The establishment of forms of cooperation between the government, the ICT sector and civil society (such as the established Advisory Council of the ICT Community and the thematic working group 'AI – Guarantees of equal access and respect for human rights' of the Ministry of Electronic Governance (MEG)) is helping to unite resources, share best practices and drive AI innovation. It also facilitates dialogue about the ethical implications and policy considerations associated with AI systems. Bulgaria's Digital Decade roadmap includes measures related to AI development. Integration of AI into different sectoral strategies allows a more balanced and efficient allocation of resources in order to better target activities contributing to specific policy projections. A project proposal within the Commission's Technical Support Instrument aims to build-up administrative capacity for AI governance in the context of the new EU AI Act and the Council of Europe's Convention on AI, Human Rights, Democracy and the Rule of Law.

Unicorns, scale-ups and start-ups

At the beginning of 2025, Bulgaria had no unicorns, which is equal to last year. A national forecast trajectory was not provided. However, the development of enterprises in the country in this field will continue to be monitored.

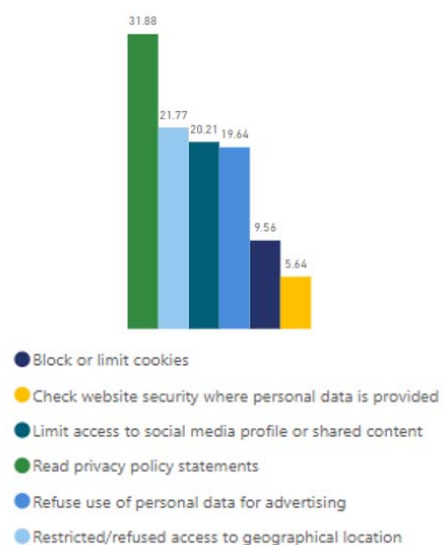
Bulgaria's business environment has experienced significant growth, particularly in its start-up ecosystem and foreign investment landscape. In January 2025, Bulgaria [received EUR 338 million in FDI](#), which highlights its rising appeal to investors. Sofia hosts over 800 start-ups and [ranks 37th globally as a start-up hub](#). In 2023, Bulgarian start-ups secured EUR 264 million in investment, supported by EUR 500 million from local VC funds via the Fund of Funds (FoF) – a [fourfold increase over five years](#). In January 2025, the FoF allocated EUR 100 million to the 'Entrepreneurship Fund'. Government initiatives like the Variable Capital Company aim to streamline business structures, despite challenges such as a skills shortages and regulatory issues.

Strengthening Cybersecurity & Resilience

Bulgaria's overall cybersecurity preparedness remains a concern. The country continues to lag behind in the adoption of ICT security measures, employee awareness, and the deployment of key secure internet standards.

Approximately 1 in 2 (50.75%) individuals in Bulgaria reported that they had taken at least one precautionary action to protect their personal data online in 2023. This was well below the EU average of 69.55%. Only 16% of individuals in Bulgaria took three or more such actions and can therefore be considered as having above-basic digital safety skills. The most common protective action was reading privacy policy statements before providing personal data (31.88% of individuals did this). By contrast, only 5.64% checked that the websites where their personal data were held were secure (this was the least common precautionary step).

Type of activities to protect personal data online (% of individuals)



The number of Bulgarian enterprises that experienced ICT security incidents leading to unavailability of ICT services due to attack from outside (e.g. ransomware attacks and denial of service attacks)

decreased slightly from 1.96% in 2022 to 1.79% in 2024. It is still below and is only half the EU average (3.43%). Bulgarian enterprises are also less subject to incidents related to hardware or software failures (9.18%) than enterprises in the EU as a whole (17.97%).

83.23% of enterprises deployed some ICT security measures (this was below the EU average of 92.76% and was the lowest score). Only 48.62% of enterprises made their employees aware of their obligations regarding ICT security (below the EU average of 59.97%).

Concerning the deployment of secure internet standards, Bulgaria is below the EU average in the [roll-out of the Internet Protocol version 6](#) (IPv6) for end users (Bulgaria: 16%, EU average: 36%) It is also the lowest performer on the server side (Bulgaria: 2%, EU average: 17%). IPv6 is important because it ensures the scalability, stability and security of the internet. The deployment of this new version is becoming increasingly urgent because traditional IPv4 addresses have long since been used up. Domain Name System Security Extensions (DNSSEC) is also an important standard that should be rolled out because it introduces security features to DNS. Bulgaria's [DNSSEC validation rate](#) was 46% in Q3 2024 (only slightly below the EU average of 47%).

Bulgaria has not yet transposed the provisions of the NIS2 Directive into its national legislation but has started the process of adopting the necessary legislation for this. The National Assembly [passed](#) government-sponsored amendments to the Cybersecurity Act on first reading in February 2025 and a second reading is expected in the spring. Bulgaria will have to take steps to implement this legislation once it has been implemented.

According to the Digital Decade Eurobarometer 2025, 76% of Bulgarian citizens think that improved cybersecurity, better protection of online data, and safety of digital technologies would facilitate their daily use of digital technologies. An increase of two percentage points compared to last year reflects the growing concern of the Bulgarians about this subject. Additionally, 82% believe that having access to affordable, high-speed internet would further improve their daily use of digital technologies (above the EU average of 80% and stable compared to last year).

A number of ongoing policy efforts are set to significantly improve Bulgaria's ability to prevent, detect, and respond to cyber threats across multiple critical sectors.

- Bulgaria's **Network and Information Security Directorate** at the Ministry of Electronic Governance (MEG) has launched or followed up several key initiatives to enhance national cybersecurity: **National cybersecurity infrastructure**: Strengthening cybersecurity measures across all digitalisation programmes.
- **5G cybersecurity**: Continuing implementation of the 5G cybersecurity toolbox for secure and resilient networks. However, 65% of Bulgaria's networks remain dependent on Chinese components (according to data on the percentage of national EU telecommunication networks set on Chinese technologies).
- **Cyber Incident Monitoring & Response Centre**: Established at strategic sites under the Internal Security Fund.

Several projects have recently been launched, starting in 2024.

- **National Coordination Centre (NCC-BG)**: Supporting cybersecurity innovation; funding opportunities; and collaboration between industry, academia, SMEs and public organisations. Financial support is provided to SMEs to enhance cybersecurity.
- **Cybersecurity Training Centre** (Ministry of Electronic Governance): A new centre for cybersecurity training, awareness, and incident management. It will include a **Cyber Training**

Area with interactive simulations for real-world attack scenarios, boosting the response capabilities of both public and private stakeholders.

- **Healthcare Cybersecurity Initiative** (Ministry of Health): Strengthening national cybersecurity in the health sector through a dedicated **Cyber Incident Response Team (CSIRT)** and integration with other national cybersecurity systems.
- **Energy Sector Cybersecurity** (Ministry of Energy): A project funded under the **Research, Innovation and Digitalisation for Intelligent Transformation Programme 2021-2027** and worth BGN 1.4 million. It aims to enhance cybersecurity infrastructure, implement vulnerability scanning tools and establish an incident-response system.
- The Ministry of Health has, when reporting on the steps Bulgaria is taking further to the [European action plan on cybersecurity of hospitals](#), highlighted its commitment to ensure a secure national health system for all citizens. Several cybersecurity measures have been developed, including the implementation of VPNs. Bulgaria is currently carrying out a project focused on incident response in the healthcare sector and is preparing another project to enhance cybersecurity in hospitals.

2024 recommendation on cybersecurity: Establish a national cybersecurity infrastructure to increase the efficiency of cybersecurity measures and integrate cybersecurity into all digitalisation programmes and projects.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Bulgaria has demonstrated a clear commitment to enhancing national cybersecurity infrastructure, with initiatives outlined in its roadmap. Measures and activities in the cybersecurity sector described in the roadmap are aimed precisely at the establishment of national cybersecurity infrastructure to increase the efficiency of cybersecurity measures. However, Bulgaria has acknowledged challenges in integrating cybersecurity into all digitalisation projects at this stage.

On 5G cybersecurity, Bulgaria reports that 5G networks are entirely private and that their operators are fully responsible for ensuring their security. The Bulgarian's state's limited role in this area might require further clarification or adjustments in the future, particularly in the light of EU frameworks and obligations.

The CRC has consistently emphasised (including during the provision of information for the NIS WS 5G/Telecoms Cybersecurity – BG country fiche update in November 2024) that it has fulfilled all its obligations in accordance with the Law on Electronic Communications.

Further to Decision No 162 of 19 May 2022 and pursuant to Article 243(3) of the Electronic Communications Act, the CRC has adopted the 'Rules for the Minimum Security Requirements of Public Electronic Communication Networks and Services and Risk Management Methods for Their Security'. These new rules enable the CRC to address a broad range of security issues related to public electronic communication networks and services, as well as methods for managing associated risks. These rules authorise the CRC to require operators to conduct audits and risk assessments; implement technical and organisational measures for risk mitigation; and report incidents. The rules are fully consistent with measures from the 5G Cybersecurity Toolbox, the relevant guidelines provided by ENISA (specifically the Guideline on Security Measures under the EECC) and the Technical Guideline on Incident Reporting.

Protecting and empowering EU people and society

Bulgaria is working to foster an inclusive digital transition. This involves various educational and vocational initiatives to address divides in gender, age, education as well as rural-urban disparities. Significant challenges nevertheless remain. 64.5% of the population lacks **basic digital skills and there is a low uptake of e-Government services**. The **uptake of digital public services** is promising because, although the delivery of online public services remains low among citizens, it is accelerating among enterprises. The country's National Health Information System (NHIS) is making it easier for citizens to access their health records. A new national strategy is driving **strong improvements for e-Health overall**. Bulgaria's online environment remains a concern, but current efforts to address risks online are having encouraging results.

Empowering people and bringing the digital transformation closer to their needs

Bulgaria is taking steps to foster an inclusive digital transition, recognizing the need to address various divides within its society. The strategic framework 'Digital Transformation of Bulgaria 2024-2030' aims to bridge gaps related to gender, rural-urban disparities, age, education levels, and socio-economic status. Significant challenges nevertheless remain. Initiatives such as the 'Increasing the Competences of Academic Teachers' and 'Digital Qualification' programmes are enhancing digital skills in higher education. Vocational training through the Network of Bulgarian Educational Enterprises is providing hands-on digital literacy. However, the impact of these programmes has yet to be fully realised, and their reach is still limited, particularly in rural areas.

Despite these efforts, Bulgaria faces substantial hurdles in digital skills proficiency. The fact that women in Bulgaria have slightly higher digital skills than men should not be allowed to obscure deeper issues, such as significant disparities between different education levels and age groups. Rural areas and older people are particularly affected, so more targeted interventions are needed. The upcoming school education initiative in 2025 aims to address some of these gaps by upgrading infrastructure and training teachers, but its success will depend on effective implementation and sustained support. Bulgaria faces challenges in terms of the **overall level of ICT training provision and the percentage of ICT specialists**, but its growth rates in these areas are encouraging. The decline in the growth rate of female ICT specialists is a concern that needs to be addressed in order to ensure a balanced and inclusive ICT workforce.

Bulgaria's e-Government system is well-developed and ongoing efforts are being made to digitalise public services and reduce administrative burdens. The Single Digital Gateway and other digital tools aim to simplify access to regulatory information and procedures. However, **while digital public services for businesses have improved**, citizens' uptake of **e-Government services** remains low, which indicates a need for greater public awareness and trust in digital platforms. **Bulgaria's performance on eID use is the lowest in the EU**, but regulatory changes might improve the situation. **Bulgaria's performance on e-Health is improving** and the National Health Information System is making it easier for citizen to access health records. However, the full integration of digital tools in healthcare remains a work in progress.

According to the 2025 Eurobarometer, 81% of Bulgarian people think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 78% consider it would improve their daily use of digital technologies, and 87% think public authorities should consider it important to ensure that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services (an increase of four percentage points compared to last year).

Equipping people with digital skills

Basic Digital Skills

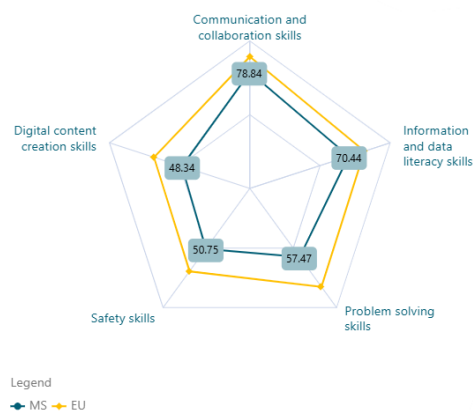
According to data from 2023, Bulgaria had 35.52% of its population having basic digital skills (2030 national target 52%) trailing behind the EU average of 55.56%. There was no new data collection in 2024, yet a deeper analysis can reveal new areas of improvement:

- **Gender Gap:** Interestingly, Bulgaria defies the common trend with 36.19% of females having basic digital skills compared to 34.83% of males, resulting in a negative gender gap of -1.36 percentage points. This is not only below the EU average gender gap of 2.23pp but also indicates an unusual situation where women are more digitally skilled than men.
- **Education Level:** There is a considerable disparity when it comes to education levels. Among those with high formal education, only 65.28% possess basic digital skills, significantly below the EU average of 79.83%. The situation is more dire for those with low or no formal education, where only 14.56% have basic digital skills, with a gap of 20.96pp compared to the national average, narrowly smaller than the EU average gap of 21.95pp.
- **Living Areas:** The digital skills gap is particularly pronounced in rural areas, where a mere 20.93% of residents have basic skills, starkly below the EU average of 47.50% for rural zones. The rural-urban digital divide in Bulgaria is substantial, with a 14.59pp difference from the national average, which is much greater than the EU average gap of 8.06pp.
- **Age Groups:** Young Bulgarians (16 to 24 years) are the most digitally competent, with 53.15%, yet this figure falls short of the EU average of 69.98%. The elderly (65 to 74 years) are at the lowest end of the spectrum, with only 7.30% having basic digital skills, which is significantly lower than the EU average of 28.19% for the same age group.

Digital Skills Index Components: Across the board, Bulgaria scores below the EU average in all five areas of the Digital Skills Index. Its highest performance is in communication and collaboration skills at 78.84%, but this is still not up to the EU average of 89.33%. The lowest score is in digital content creation skills (48.34%), significantly lower than the EU average of 68.28%.

Bulgaria's RRP includes investments to boost digital skills among its citizens. A nationwide digital skills training campaign is underway. To support those with limited digital access, a network of staffed digital clubs equipped with laptops will be established. The RRP also invests in improving STEM education in schools by building and equipping STEM labs and high-tech classrooms to promote digital literacy and modern teaching methods.

Digital Skills Index components
% of individuals



2024 recommendations on basic digital skills: (i) Take additional support measures to compensate for the deficit of basic to advanced digital skills, reviewing the approach on Bulgaria talent retention and providing attractive conditions; (ii) Ensure the implementation of measures that can enhance digital inclusion of vulnerable populations, raise awareness of people about their rights through guidance, and stimulate digital competence/culture from early childhood and throughout working life.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Bulgaria has reported that the measures described in the roadmap are intended to achieve the above objective and address the 2024 recommendation. New measures could be expected after analysing the results of their implementation and when developing the new EU programmes. Bulgaria's current efforts in the roadmap are consistent with the objectives of improving digital skills and inclusion. However, it does not specify concrete immediate actions for talent retention or a detailed current strategy to compensate for the digital skills deficit.

Bulgaria faces significant [challenges](#) in education and skills development. **Over 50% of 15-year-olds lack basic proficiency in maths or reading. Nearly 50% lack basic proficiency in science.** These are among the lowest rates in the EU. **The situation is particularly severe for disadvantaged students.** 62% of disadvantaged students fail to achieve minimum competency levels in all three subjects. Key factors include **poor teaching quality, an ineffective curriculum, socio-economic segregation in underperforming schools, and inadequate measures to address poverty-related disadvantages.** In addition, **digital skills among young Bulgarians are among the lowest in the EU**, further limiting their future opportunities.

Adult learning participation is also **alarmingly low and declining**, dropping from **11.6% in 2016 to 9.5% in 2022** – the lowest in the EU. Even when in employment, only **28% of adults engage in on-the-job training** (the **EU average is 53.9%**).

In order to achieve its 2030 targets and objectives, Bulgaria has launched several initiatives to **bridge digital gaps between urban and rural areas, generations and socio-economic groups** (particularly in education and vocational training). The plans mentioned in the following paragraphs were already included in the 2023 roadmap but have only recently begun to be put into practice.

Two national programmes aim to **enhance digital competencies in higher education**: 'Increasing the Competences of Academic Teachers' and 'Digital Qualification'. These initiatives focus on improving the digital skills of over **1 200 academic teachers and 800 teachers**; funding study programme updates; establishing **23 university centres for innovative educational technologies**; and providing training materials, video lectures and virtual libraries.

Higher education institutions are also integrating **digital technologies, virtual reality and interdisciplinary approaches** into their teaching and assessment. The aim is to **enhance digital skills and employability** by aligning education with modern technological trends.

In vocational education, the **Network of Bulgarian Educational Enterprises** supports digital literacy through hands-on training. 5 000 students receive simulated workplace training in over 124 educational enterprises every year, covering areas such as banking, IT, insurance and consulting. The annual Young Entrepreneur Fair also promotes skills development by connecting students with local and international business networks.

A major initiative for school education will be launched in 2025 (led by the Ministry of Education and Science) with a digital transformation budget of BGN 246.5 million (EUR 126 million). Its objectives

include: (i) **upgrading digital education infrastructure**, including the 'Digital Backpack' platform (described in last year's report); (ii) **training 3 897 teachers** in digital skills, media literacy and digital content creation, alongside support for 202 839 children and students, and 212 539 parents and educational mediators; and (iii) supporting **students' digital literacy** through **enhanced general education, extracurricular training and practical lab experience** in areas such as IT, virtual reality and analytical skills, as well as the use of automated processes and the integration of AI into school education.

The lack of ICT competences and the need to enhance the workforce's technological knowledge and digital skills remain critical challenges for education and training systems at all levels. To address these issues, the MEG has introduced national measures for acquiring and improving digital skills. These were included in the 2023 roadmap to the the strategic framework 'Digital Transformation of Bulgaria 2024-2030'. **A national skills policy plan was finalised in 2024.**

Bulgaria has also recently proposed the 'Capacity building of the MEG as competent authority for developing public policy for AI for implementing AI Act' project as part of the Technical Support Instrument (TSI) programme. The aim is to ensure compliance with the AI Act and enhance civil servants' AI literacy. Bulgaria will produce an institutional mapping to ensure that public administration can adapt to the regulatory environment and swiftly implement new and future digital legislation. Further to the needs highlighted by the mapping, Bulgaria will increase administrative capacity by means of training. It will also enhance the literacy and trust of the public administration by sharing of good practices and targeted workshops to inform civil servants about AI and its use. This proposal has been pre-approved. At the time of reporting, the procedure for the official approval of the project was expected to be completed by the end of March 2025.

Regarding training activities and the development of competencies and skills, the Institute of Public Administration's 2025 training catalogue now includes a new programme titled '**Intelligent Data Management and Artificial Intelligence**'. This programme covers topics related to the application of AI in the public sector and offers both in-person sessions and online modules. It aims to equip civil servants with both foundational and advanced knowledge of AI technologies. Additionally, in April, the IPA launched a study to assess the readiness of public administrations for AI adoption and to identify the training needs of civil servants. The results of this study are currently being analysed and will be published in due course.

The 'New Skills' initiative was funded by the European Social Fund+ (ESF+) and launched in early 2025. It will train 14 000 employees in digital, business and soft skills, and will be completed by the end of 2026. Applications to the 'New Skills' initiative closed on 5 March 2025. It has a budget of BGN 74 million (EUR 37.8 million). Employers can apply for grants ranging from BGN 20 000 (EUR 10 226) to BGN 5.9 million (EUR 3 million) to train employees (including in digital skills).

Since early 2024, targeted digital skills training has been funded via the national RRP and ESF+. Online testing and certification is available for those learning independently or on the job. 67 060 digital skills certificates had been issued by 9 February 2025 (65 716 through courses and 1 344 via independent assessment).

The 2024 project 'Addressing Labour Market Challenges' (ESF+ funded) is updating labour market forecasts in order to improve training strategies. This includes **analysing the impact of digital and green transitions on jobs and skill needs. The results are expected by 2026. A national survey in 2025** will examine barriers to adult learning among individuals aged 25-64.

To support disadvantaged learners, 760 digital clubs with computers, internet access, and mentors will be established. In addition, the Employment Agency runs training programmes (including a training programme on 'Digital Skills' that offers digital upskilling for unemployed and employed individuals based on training vouchers.

ICT specialists

Bulgaria is at 4.6% of ICT specialists in total employment (2030 national target 5%) after a progression of +7.0% in 2024; its stands below the EU average of 5.0%. In 2023, ICT specialists made up 4.3% of total employment, compared to the EU's 4.8%. Bulgaria's growth rate of 7.0% exceeded the EU's 4.2%, suggesting a positive evolution. **The country is on track according to its national trajectory.**

The percentage of female ICT specialists in Bulgaria was 29.1% in 2023, higher than the EU's 19.4%. This figure decreased by 7.2% to 27.0% in 2024 but was still above the EU's 19.5%. However, Bulgaria's year-on-year 7.2% decrease compared unfavourably with the EU's 0.5% year-on-year increase. **Bulgaria nevertheless continues to perform very well with respect to women in ICT jobs**, partly thanks to education policies and organisations like Women in Tech Bulgaria and Rails Girls Sofia, which actively support women entering and excelling in the field. In 2022, 9.06% of enterprises with 10 or more employees provided ICT training, significantly lower than the EU's 22.37%. This figure increased slightly to 9.11% in 2024, but was still well below the EU's 22.29%. However, Bulgaria's annual growth rate of 0.3% did outperform the EU's -0.2%. This indicates that, even if Bulgaria's overall level of ICT training provision is still low, Bulgaria is making progress in this area.

Systemic loss of scientific capacities is hampering Bulgaria's competitiveness and transition towards a knowledge-based economy. Bulgaria's pool of available workers for R&I (as measured by the share of new graduates in science and engineering in the population) has been on a downward trend since 2010 and is well below the EU average. This is further exacerbated by one of the lowest shares of people aged 25-34 who have successfully completed tertiary education (35.8% compared with the EU average of 43.1%) along with an ageing and numerically insufficient research staff due to low career projections. This is reflected in the low number of researchers (full-time equivalents) employed by the public sector per thousand of the active population, which has remained among the lowest of all EU Member States (2.8 in 2022 compared with the EU average of 4.1).

In terms of labour market demand, Eurostat experimental statistics based on web-scraping show that in Bulgaria the **profiles of 'software and applications developers and analysts' are the most sought after, representing 39.5% of online job advertisements for ICT specialists (58.0% at EU level).** Two types of profiles are more in demand in Bulgaria than in the EU as a whole: 'information and communications technology service managers' (5.3% of online job advertisements for ICT specialists), and 'information and communications technology operations and user support technicians' (11.7%).

Participation in higher education remains low (particularly in **STEM fields**) despite policy efforts. **The declining number of STEM graduates** is aggravating skills shortages. The especially low level of enrolment among disadvantaged groups (including Roma students) is limiting their early skill development and career prospects.

2024 recommendation on ICT specialists: Develop measures including through EU programmes to support companies to hire experts in the least populated areas where technology uptake and the skills gap are pressing issues.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

Bulgaria's digital public services overall and access to e-Health records have steadily improved, with some areas already surpassing EU averages. Bulgaria lags behind in overall digital public services for citizens, but it excels in digital public services for businesses and is rapidly improving in access to e-Health records. Bulgaria's growth rates in these areas often outpace the EU's, indicating a positive development path. **Bulgaria's performance on e-ID use is the lowest in the EU** – but there are positive signs of improvement thanks to 2023 regulatory changes.

Bulgaria's institutional framework poses [challenges](#) to its competitiveness, with low public trust, complex administration and an unstable legal environment. Productivity in public administration is hindered by low skills and pay disparities; and, unlike other EU Member States, Bulgaria lacks a dedicated pro-productivity institution. Corruption and judicial independence issues also affect the business environment.

The situation could improve as Bulgaria strengthens its legal framework for digital services and builds on its e-Government system by incentivising more of its population to use online services. Bulgaria is making efforts to digitalise registers, enhance interoperability, and apply the Once Only principle to streamline administrative processes.

Bulgaria's RRP contains [numerous measures to digitalise public administration](#). This includes enhancing the justice system's IT infrastructure, the digitalisation of healthcare (e.g. the development of the National Health Information System and of a National digital platform for medical diagnostics), employment and social services, and cultural collections. In addition, the RRP promotes the digital transformation of energy and transport systems, as well as agriculture, to streamline data exchange between farmers and the administration.

Only one third of Bulgarians use e-government services. The share of people using government internet websites or apps has been increasing every year in Bulgaria: from 31.74% in 2022 and 35.39% in 2023 to 36.48% in 2024. Engagement nevertheless remains far below the EU average of 74.71% in 2024 and is the second lowest in the EU. This is partly due to the very low share of public services which are fully online. Moreover, insufficient digital inclusion of minorities and people living in remote areas is a further obstacle to the use of online services. In addition, **the e-Government benchmark indicator for mobile friendliness** indicates a decrease of over 5 pps between 2024 and 2025 (from 95.7% to 90.5%) as several websites for services under the family life event were found to be unresponsive to smaller (mobile) screens.

The most popular reason for accessing public websites or apps in 2024 was to get information about services. The online public service usage data relates to a time when the Bulgarian parliament was debating the budget account in February 2025, when it was proposed to allocate some BGN 56 million (EUR 28.6 million) to the Ministry of Electronic Governance.

[e-ID](#)

In 2023, 6.09% of Bulgarian people had used their eID to access online services for a private purpose in the last 12 months. This was the lowest EU Member State performance in the EU and well below the EU average (41.11%). Use of eID for accessing services provided by national public authorities or public services was slightly lower at 5.36% (well below the EU average of 36.14%).

2024 recommendation on e-ID: Further develop and improve the architecture of e-Government, beyond digitisation, to enhance public procedures' user-friendliness while minimising administrative burden, such as by considering implementing the Once Only Principle.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Bulgaria is making progress in digital identity infrastructure and alignment with EU regulations, but it has not addressed key aspects of the recommendation (e.g. making public procedures more user-friendly or adopting the 'Once Only' principle).

Bulgaria is implementing the amended eIDAS Regulation to establish a European Digital Identity framework that will enable the use of the European Union Digital Identity Wallet (EUDIW).

Bulgaria currently has two main digital identity solutions for online public services: **EvrotrustID** (a private-sector solution controlled by the MEG) and the **national electronic identity card** (issued by the Ministry of the Interior). The MEG oversees digital identity policies. The Ministry of the Interior manages the national eID card. Regulatory changes introduced in 2023 are significantly improving the Evrotrust eID.

Bulgarian stakeholders are participating in one of the large-scale pilots (LSPs) consortia, namely the EU Digital Identity Wallet Consortium (EWC), which is proceeding to the grant-agreement preparation stage. This includes government ministries and agencies (both national and local).

Digitalisation of public services for citizens and businesses

For digital public services for citizens, Bulgaria scored at 67.98 (2030 national target of 100) after a small growth of +0.8% in 2024, below the EU average of 82.32. The country is lagging behind compared to its national trajectory. In 2023, Bulgaria's total score for digital public services for citizens was 67.47, falling short of the EU's 79.44. Bulgaria's growth rate of 0.8% was significantly lower than the EU's 3.6%. In the cross-border category, Bulgaria scored 45.71 in 2023 and 47.81 in 2024, both below the EU's 68.37 and 71.28, respectively. Nevertheless, Bulgaria's growth rate of 4.6% outpaced the EU's 4.3%.

For digital public services for businesses, Bulgaria scored at 94.04 (2030 national target of 100) after a progression of +2.4% in 2024 and stands well above the EU average of 86.23. The country is on track according to its national trajectory. In 2023, Bulgaria's total score was 91.88, surpassing the EU's 85.42. This lead widened in 2024, with Bulgaria at 94.04 and the EU at 86.23. Bulgaria's growth rate of 2.4% also exceeded the EU's 0.9%. In the cross-border category, Bulgaria scored 90.0 in 2023 and 92.5 in 2024, both higher than the EU's 73.13 and 73.76, respectively. Bulgaria's growth rate of 2.8% again surpassed the EU's 0.9%. Bulgaria is developing the necessary infrastructure towards seamless, automated exchange of authentic documents and data across the EU. There are still additional steps to be taken for Bulgaria to become technically ready to connect to the Once-Only common services, part of the EU Single Digital Gateway.

2024 recommendation on key public services: Continue collaborations with local public or private actors, to address the pronounced regional imbalances which hinder the access to, use and awareness of digital services, in particular regarding the delivery of online services for citizens.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Bulgaria reported that it is actively improving the availability and efficiency of digital public services. However, it did not sufficiently address regional imbalances or highlight collaborations with local actors. Leveraging the successful strategies used in digital public services for businesses and

access to e-Health records could serve as a model for the enhancement of services provided to citizens online.

Bulgaria is continuing work to improve its policymaking process. The Ministry of Economy and Industry reports that a set of measures in the government's programme has been put in place to improve strategic planning; the monitoring of policy implementation; and the use of evidence, data and innovative methods in policymaking. These measures complement **investments in IT tools for better strategic planning made under the national RRP**. Bulgaria has also reported that, in line with the obligation for administrative authorities to align their registers with the Electronic Government Act (EGA) by 31 March 2025, **the MEG was implementing a project to digitalise 5 pilot registers and configure 60 more pilot registers using the centralised creation and maintenance of registers (ISCCMR)**. These registers will comply with updated EGA requirements and secondary legislation. They will support the successful register reform and enable fully electronic administrative services. Users will therefore no longer need to submit documentary proof of facts that have already been recorded in the registers. Administrative bodies can use the system to create and maintain electronic registers free of charge. In addition, the reform introduces an obligation to provide electronic services for a reduced fee and establishes the role of an intermediary for requesting administrative services electronically.

To meet the growing demand for electronic identification solutions, State policy encourages private-sector involvement in developing electronic identification schemes. **Work is also underway to establish a national electronic identification system** that is regulated by the Electronic Identification Act. Electronic identifiers will be integrated into citizens' personal cards but may also be available on other platforms, including as a mobile application. The provision of electronic identifiers is expected to begin by mid-2025.

The implementation of the single model for requesting, payment and delivery of electronic administrative services (the Single Model) is continuing. The number of administrative bodies that have joined the e-government systems maintained by the MEG (e-Authentication, e-Payment, e-Delivery, Registry Information Exchange System RegiX, e-Forms) has grown significantly in recent years. 503 administrations at all levels are currently providing centralised e-services through the e-Government Portal (egov.bg). These services are provided via the Single Model, which ensures high-quality and affordable electronic services through a single point and significantly reduces the administrative burden on businesses and citizens.

e-Health

Bulgaria scored at 87.47 for access to e-Health records (2030 national target of 100) after a growth of +13.3% in 2024 and stands above the EU average of 82.7. In 2023, Bulgaria's score was 77.21, slightly below but close to the EU's 79.12. The 2024 score not only caught up with but also exceeded the EU average. Bulgaria's impressive growth rate of 13.3% significantly outpaced the EU's 4.5%. **The country is on track according to its national trajectory.**

The National Health Strategy 2030 prioritises e-Health and aims to digitally transform the sector through the development of cloud technologies, wireless communication networks (4G/5G) and high-speed optical data transmission networks. The National Strategy for e-Health and Digitalisation of the Health System 2030 was adopted to achieve these goals. It envisages the creation of a single health data space through the National Health Information System. This data space will facilitate citizens' access to their health records and assist medical specialists in diagnosis and treatment.

Patients can access information about available specialists online and through the Bulgarian Medical Association's register of doctors (eBLS – Doctor Search), which enhances people empowerment.

According to the 2025 Eurobarometer, 81% of Bulgarian people think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosing diseases) during their daily life by 2030.

2024 recommendations on e-Health: (i) Expand the coverage of the online access service to ensure that all citizens can access their electronic health data online; (ii) make the data type of medical images available to citizens through the online access service; (iii) ensure that all data types are made available in a timely manner.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Through ongoing policy actions, the country partially addressed the recommendations, notably by expanding online access and improving the timely availability of certain health data.

- Bulgaria has reported that citizens can access their electronic health record (EHR) via the <https://my.his.bg> website and the e-Health mobile application. Parents can also access their children's health data through their profiles (this responds to the recommendation to expand coverage). However, only 40-59% of the national population are technically able to access the service, so facilitating nationwide access remains a major task. Moreover, while legal guardians can access their wards' data, data subjects cannot generally delegate access to a person of their choice.
- Regarding data availability, Bulgaria has highlighted the point that citizens can access prescriptions, referrals and medical notes; and can receive messages about preventive examinations and referrals. This indicates that efforts have been made to ensure the timely provision of information. However, there was no explicit confirmation that **all** data types – such as lab results, medical imaging, and treatment plans – are fully available and delivered in a timely manner. Allergies, in particular, were noted as an exception.
- Bulgaria has not reported that it has made medical images (e.g. X-rays and MRIs) accessible via the online service. This lack of clarity suggests that the recommendation to make all data types (including medical images) available to citizens has not yet been fully addressed.

Bulgaria has made important progress in expanding access and ensuring timeliness for certain health data types, but significant gaps remain concerning the full nationwide coverage, the inclusion of medical images, and the availability of all health data categories in a timely manner.

In June 2024, Bulgaria reached a significant milestone with the completion of 'phase 3' in the development of its national immunisation system. This phase focused on optimising medical and statistical reporting for all medical institutions. These statistics are now available electronically on a monthly and annual basis. The COVID-19 vaccination register has been upgraded to include all vaccine types, thus allowing better analysis of vaccine coverage and availability, and thereby strengthening the national immunisation programme.

In addition, the e-Health mobile app was enhanced in September 2024 to send notifications for upcoming preventive exams and vaccinations. Specialised modules such as 'Child Health' have been developed and the 'Electronic Prescription' module has been upgraded to improve the control of medicinal product prescriptions. E-Hospitalisation modules have also been improved, simplifying the admission and stay processes for citizens and healthcare providers. The Data Warehouse module has been upgraded to support 25 use cases, thus enabling analysis of critical health indicators such as

morbidity, mortality, vaccination rates, hospitalisations and the spread of infectious diseases. The eRx application has been upgraded and now has new prescription-related functionalities.

June 2024 also saw the completion of the ‘CEF-TC-2019-2: Setting-up Generic Cross Border eHealth Services in Bulgaria’ project. This initiative is intended to enable seamless cross-border care and the exchange of patient information, particularly for summarised patient data and electronic prescriptions. The project timeline has been extended to 2026, supported by national funding, to further enhance the implementation of cross-border health services.

Building a safe and human centric digital environment and preserving our democracy

In the realm of digital democracy and online safety, Bulgaria is taking some steps to combat disinformation and protect children online through initiatives such as the National Safer Internet Centre. However, while **the prevalence of hostile and degrading online messages** is lower than the EU average, it does still underscore the need for continued vigilance and education. Bulgaria’s efforts to improve digital literacy and critical thinking are crucial, but further action and broader public engagement are needed in order to truly empower individuals to navigate the online environment effectively.

According to the Digital Decade Eurobarometer 2025, only 39% of respondents in Bulgaria said that, prior to the interview, they were aware that the rights which apply offline should also be respected online — well below the EU average of 59% — highlighting the limited awareness of digital rights among the Bulgarian population. However, this marks an increase from the 34% recorded in last year’s survey. 90% of Bulgarian citizens believe it is urgent for public authorities to protect children online from the negative impact of social media on their mental health. Similarly, 89% consider it urgent to address cyberbullying and online harassment, and to implement age assurance mechanisms to restrict access to age-inappropriate content.

Online participation in political and civic life is growing steadily in Bulgaria. In 2024, 21.07% of people used the internet to participate in consultation, for voting or sharing opinions online. This share is above the EU average and is trending upwards (the proportion was 17.86% in 2022), which is in line with the trend observed at the EU level (17.59% in 2022 and 20.45% in 2024).

Individuals encountering hostile and degrading online messages: in 2023, in Bulgaria, 23.83% of individuals came across online messages that were considered to be hostile or degrading towards groups based on factors such as religion, ethnicity or disability. This figure was notably below the EU average of 33.5%. Young people (16-24) (26.55%) and adults (25-64) (26.88%) had equal exposure levels. Similarly, males (24.13%) and females (23.54%) encountered such messages at almost identical rates.

Individuals evaluating data, information and digital content: in 2023, 32.21% of individuals in Bulgaria stated that they had seen untrue or doubtful information on the internet. This was well below the EU average of 49.25%. However, only 11.78% of these individuals checked the truthfulness of the content they encountered. This suggests that, despite a lower incidence of misleading content, a relatively small proportion of individuals engaged in fact-checking. Young people (16-24) (32.6%) and adults (25-64) (36.84%) reported close levels of exposure. Similarly, their verification rates were almost the same, with 12.18% of youth verifying content compared with 13.53% of adults. In terms of gender differences, males (32.99%) and females (31.46%) reported very similar exposure rates and their verification rates were the same (11.88% for males and 11.68% for females).

The 2023 data on online interactions in Bulgaria suggest a relatively lower incidence of hostile and degrading online messages and potentially misleading information than the EU average. However, the data also indicate a worrying lack of critical engagement, with only a relatively small proportion of individuals taking steps to verify the accuracy of the information they encounter.

The 2025 Eurobarometer shows that 80% of Bulgarian people think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values. This is slightly below the EU average (83%) but represents an increase of four percentage points compared to last year, reflecting the growing interest of the citizens in this respect.

Bulgaria remains [vulnerable](#) to disinformation and external interference in elections. A report by the Disinformation Observatory suggests that Bulgaria has been [heavily targeted by disinformation](#) from Russian networks and especially impacted by disinformation campaigns that have focused on the EU, NATO, the euro adoption process, the war in Ukraine, migration and COVID-19. However, the Foundation for Humanities and Social Studies has published [a survey](#) showing that propaganda and disinformation against the EU in Bulgaria has decreased over the past year. The number of publications – even when amplified by a special network of bots – was 50% lower in 2024 than in 2023 and has returned to the level it was at in the first year of the aggression against Ukraine.

Since last year, Bulgaria has aimed to combat disinformation and protect children online. This has included events at the National Safer Internet Centre (NSIC) on Safer Internet Day as well as ongoing efforts to enhance digital literacy, assist families and tackle illegal content (especially child pornography). The NSIC has received an award for long-term support in protecting children's rights in the digital environment. In 2024, the NSIC processed **1.7 million signals or calls (such as from parents seeking help on issues related to, for example, video games) through its advisory helpline**, with **79 000 signals** received from international INHOPE partners about illegal content hosted on Bulgarian servers. A key success in 2024 was the closure of a Telegram channel with over **100 000 child pornographic images**.

Bulgaria has also been actively addressing foreign influence and disinformation through international conferences; strategic communications initiatives by the Ministry of Defence; and collaboration with NATO and EU partners to strengthen resilience against hybrid threats. Recent measures are aimed to counter foreign influence on public opinion. In June 2024, [an international conference organised in Sofia](#) by the **Centre for the Study of Democracy** and the **Embassy of the Republic of Korea** focused on countering disinformation and foreign influence. A study presented at the event showed that **40% of Bulgarians** believe disinformation, especially on topics like military aid to Ukraine and Schengen membership. The conference discussed the monetisation of disinformation and its impact on voter behaviour.

The Digital Services Act (DSA) has formally designated Bulgaria's CRC as the national digital services coordinator (DSC). The CRC has launched national-level implementation activities that include publishing information, setting up complaint mechanisms, handling complaints and notices, and identifying intermediary service providers. It has also engaged with stakeholders through meetings and workshops. New organisational rules and regulations for the CRC entered into force on 1 November 2024 in order to align it with the DSA.

Leveraging digital transformation for a smart greening

Bulgaria's green transition is a complex and evolving process that is driven by the need to align with EU climate goals while addressing significant domestic challenges. **Bulgaria faces substantial obstacles, including political instability and public scepticism towards the green agenda.** In addition, Bulgaria's energy sector is **heavily reliant on coal**, and the transition to renewable energy sources is crucial to meeting EU climate targets and reducing greenhouse gas emissions. Bulgaria can nevertheless benefit from the green transition through enhanced competitiveness, improved public health and increased resilience to climate hazards.

The green transition is linked to the digital transformation as part of Bulgaria's broader reforms and investments. Bulgaria's RRP includes measures to support both the green and digital transitions, aiming to strengthen economic and social resilience. However, the focus remains on overcoming immediate political and economic challenges before fully integrating digital solutions into the green transition. **Bulgaria has received significant EU funding to support the green transition, but political uncertainty and public resistance have slowed progress.**

The CRC is a member of BEREC's Working Group on sustainability and has participated in other similar discussions at EU level.

The CRC attributes the scarcity of comprehensive studies on the environmental impact of digital technologies in Bulgaria to the absence of harmonised and comprehensive methodologies at EU level for measuring the various components of a digital ecosystem's impact, including data centres and networks. Obstacles include a lack of standardised data on the environmental impact of ICT, particularly in relation to ECNs (electronic communications networks) and ECSs (electronic communications services); and technical challenges inherent in the sector (such as the complexity and globalisation of value chains and the difficulty of assessing systemic effects).

In Bulgaria, mobile service providers have proactively developed and adopted sustainability strategies for telecommunications, with specific measures and goals aimed at reducing their carbon footprint.

In 2024, only 8.24% of people in Bulgaria considered energy efficiency as important when purchasing ICT devices (well below the EU average of 19.35%) and only 4.10% considered the eco-design of the device as important by 4.10% (also well below the EU average of 12.04%). Those two eco-friendly criteria were less important for Bulgarian buyers than the price, performance (speed) and design of the ICT device.

Bulgarian people tend to recycle their devices much less than the EU average. 3.78% recycle laptops or tablets, 4.78% recycle desktop devices and 6.44% recycle mobile phones (the corresponding EU averages are 11.31%, 14.66% and 10.93%). Most of these devices are still in use or kept in the household.

Just 35% of Bulgarians feel that they are equipped to contribute to the green transition, compared with an EU average of 54%.

According to the Digital Decade Eurobarometer 2025, 67% of Bulgarian people consider digital technologies important to help fight climate change (standing below the EU average of 74% and showing an decrease of seven percentage points since last year), while 74% of Bulgarian respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities (below the EU average of 80%).

2024 recommendations on green & digital: (i) Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs; (ii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Bulgaria acknowledged the importance of digitalisation and innovation but lacked a concrete integrated approach to linking the digital and green transitions. Regional programmes support innovation and industrial development, but they miss opportunities to focus on green IT improvements or the use of digital solutions for carbon reduction. Moreover, no methodology has been introduced to monitor or quantify emission reductions from digital solutions, and there has been no alignment with EU guidance or the European Green Digital Coalition's approach.

Bulgaria has taken digital initiatives for climate action and smart cities, but no additional measures have been reported for this year. In March 2024, **the Commission approved Bulgaria's national industrial strategy in March 2024 (EU-funded)**, outlining measures for transitioning to a green economy and digitalising production by enhancing energy efficiency and promoting circular economy models. Bulgaria continues to build on the key funding initiatives under its current programme for 2021-2027 on 'Competitiveness and Innovation in Enterprises'. This includes BGN 71.5 million (EUR 36.6 million) for **clean technology innovation and circular economy projects**; BGN 151.9 million (EUR 77.7 million) for improving **resource efficiency, recycling, and waste management in enterprises**; and BGN 149.1 million (EUR 76.2 million) for integrating **digital technologies for low-carbon development**.

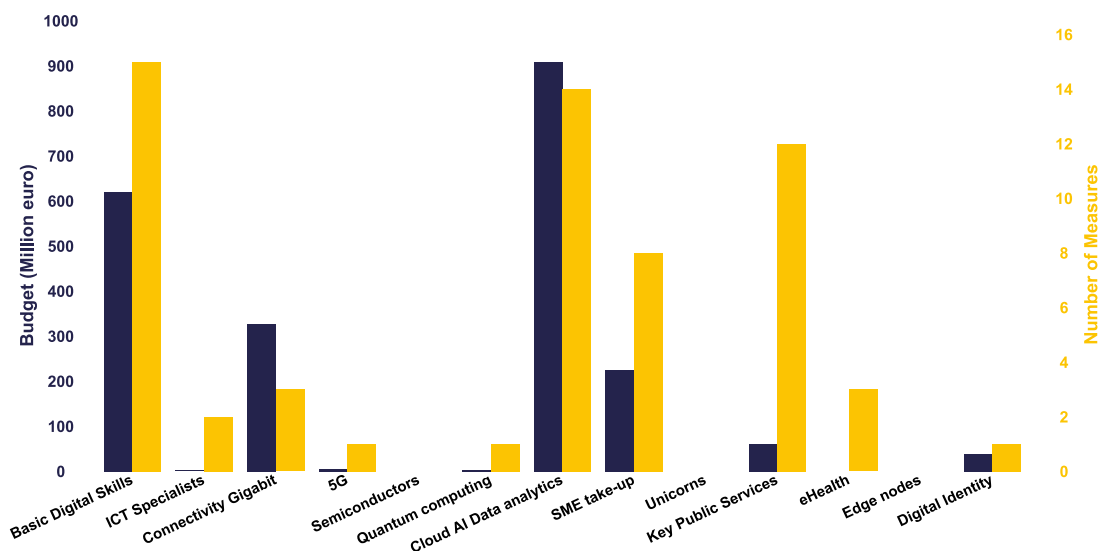
Annex I – National roadmap analysis

Bulgaria's national Digital Decade strategic roadmap

Bulgaria did not provide a national roadmap adjustment to address the roadmap recommendations issued in 2024:

- **Targets:** (i) Provide national targets for the following KPIs: unicorns, edge nodes and e-ID; (ii) Present national projected trajectory for unicorns; (iii) Align the level of ambition of the national targets for basic digital skills, ICT specialists, digitalisation of SMEs, take up of advanced technologies (cloud, AI, data analytics) by enterprises.
- **Measures:** (i) Clarify the budget description of all presented measures, highlighting EU sources such as the RRF; (ii) Indicate clearly whether the measures are investments or reforms; (iii) Include more targeted, specific measures and policies that contribute to synergising the digital transformation and the green transition; (iv) Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it.
- **Consultation:** Report with more detail the results of the consultation process and include more information about the stakeholders invited.

Measures and budget in national roadmap⁶



Bulgaria's roadmap is composed of **60 measures** and stands at EUR 2.19 billion (equivalent to 2.11% of GDP). No significant changes and novelties were made but Bulgaria did propose minor adjustments to the roadmap, such as by updating few dates and correcting few clerical errors, and provided targeted responses and justifications to the Commission. Values and/or trajectories for measures are agreed upon within the national RRP and the various European programmes, and will not be changed. **No new measures were updated or added.**

⁶ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Bulgaria's written feedback addresses most of the SDD24 recommendations. Those specific to Bulgaria have been addressed through clarifications or references to what the roadmap already includes that can best be directed or 'answered' to recommendations at this stage.

Bulgaria has provided the detail of the full stakeholder consultation conducted for the roadmap, involving an advisory council of over 35 ICT sector representatives (established at the Ministry of Electronic Governance (MEG)) and input from various institutions. In addition, the document was agreed with all members of Bulgaria's Council of Ministers and the heads of other institutions (the National Statistical Institute, the Communications Regulation Commission, the Archives State Agency and the Bulgarian Institute of Public Administration), whose proposals were also taken into account during the preparation of the map. All stakeholders in the ICT and construction sector have been consulted when drawing up the measures. The measures are written down and published in the national strategic document 'Digital transformation of Bulgaria for the period 2024-2030'; as well as in the National Strategy for the Digital Transformation of the Construction Sector 2030 and the roadmap for its implementation. These documents were created with the active participation of national representative ICT organisations and of a national task force, which included members from all interested parties. The documents were published for public consultation before their approval by the Council of Ministers. All feedback was taken into account when working on the draft documents. All feedback received during the public consultations was then taken into account.

Bulgaria has clarified the budget description of measures and highlighted EU sources such as the RRF in line with the 2024 recommendations. As regards aligning the level of ambition with the national targets for basic digital skills, ICT specialists, digitalisation of SMEs and take-up of advanced technologies (cloud, AI, data analytics) by enterprises, Bulgaria has reported that the measures and activities set out in the roadmap are aligned with the budget period until 2027, and that their financing was defined before the DDPP entered into force. It will therefore be possible to change them (even if this entails a change to the trajectories) during the development of the new EU programmes.

In terms of governance, Bulgaria continues to show commitment to the EU's digital policy and the Digital Decade's targets.

- **The MEG intends to develop a national strategy for digital transformation,** which will build on the currently valid framework document 'Digital Transformation of Bulgaria for the period 2024-2030'. An internal working group has been created for this purpose at the MEG. Its work has resulted in strategic goals being defined, including in the areas of competence of the MEG.
- **The targets and objectives of the Digital Decade are promoted at both the national and regional levels in Bulgaria.** For instance, the government's dedicated Digital Decade Council includes a representative of the National Association of Municipalities. Bulgaria also contributes to work on the digital transformation at the level of the Balkan region. In [February 2025](#), for instance, Sofia was chosen to host a renowned local government forum in the Balkans (the [B40 Balkans Cities Network](#)). The summit's theme was: 'The Future of the Balkans: Innovation and Growth'. In 2025, Sofia will also take on the leading role of four working groups made up of representatives from Balkan cities that will work on topics such as Cooperation and Smart Cities, and Digital Transformation and Local Democracy.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Bulgaria is a member of the Alliance for Language Technologies EDIC, and is working towards setting up an EDIC in the area of genomics. Bulgaria is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Bulgaria is not actively participating in the Digital Decade’s Best Practice Accelerator (BPA). However, its great success with respect to women in ICT jobs could be a **valuable contribution to the ‘Digital Skills’ Cluster**. Bulgaria’s advances in chips, quantum and connectivity, along with AI initiatives like the AI Factory and BgGPT, put it in a good position to further inform the ‘Tech Uptake’ Cluster. Bulgaria is nevertheless facing challenges such as enterprises’ limited take-up of AI, data analytics and the Cloud, so **it could therefore benefit, through involvement in this Cluster, from learning** how other Member States have tackled similar challenges and improved their situation.

EU funding for digital policies in Bulgaria

Bulgaria allocates 23% of its total recovery and resilience plan to digital (EUR 1.3 billion)⁷. In addition, under cohesion policy, EUR 1.3 billion (representing 12% of the country’s total cohesion policy funding), is dedicated to advancing Bulgaria’s digital transformation⁸. According to JRC estimates, EUR 1.6 billion directly contribute to achieving Digital Decade targets (of which EUR 0.9 billion comes from the RRF and EUR 0.7 billion from cohesion policy funding)⁹.

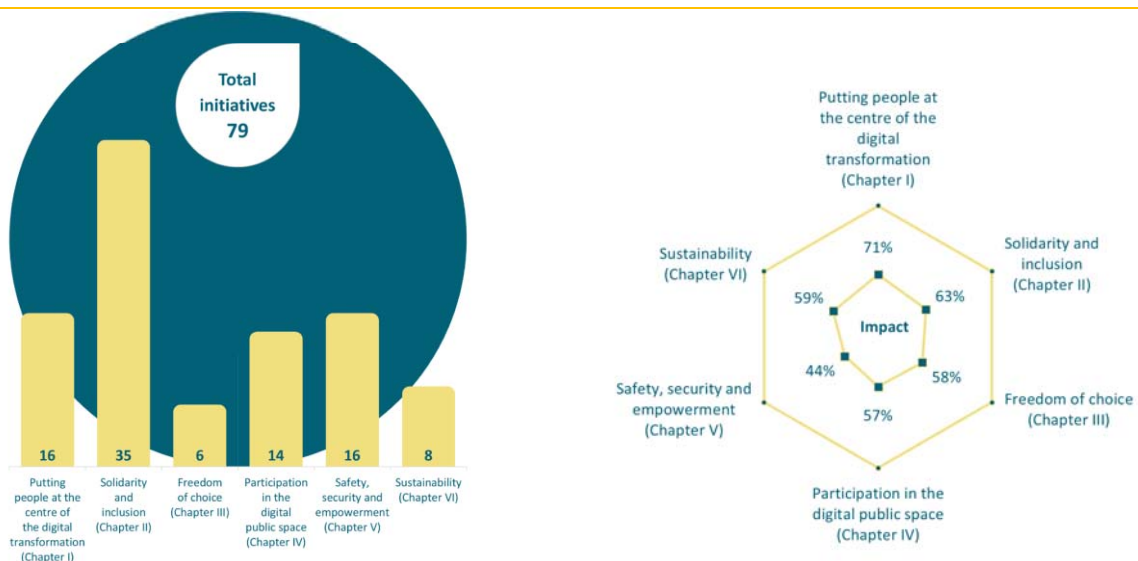
Under its RRP, Bulgaria prioritises investments in digital public services, Gigabit network coverage, as well as digital skills. Under Cohesion Policy, most funding allocated to the country’s digital transformation is directed to digital late adopters and unicorns, as well as digital public services, followed by adoption of cloud, AI, and data analytics.

⁷ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

⁸ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

⁹ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹⁰



Activity on Digital Rights and Principles (figure 1)

Bulgaria has been relatively active in implementing digital rights and principles, with 79 initiatives overall and 4 new initiatives launched in 2024, showing limited progress towards its commitments. **Bulgaria is most active in the area of Putting people at the centre of the digital transformation (I).** There is room for improvement, especially with regards to Privacy and individual control over data (V) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Bulgaria (mainly national government) and how these are perceived by citizens.

The indicators suggest that **Bulgaria is most successful in implementing commitments related to Putting people at the centre of the digital transformation (I).** Bulgaria should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Safety, security and empowerment (V).

According to the Special Eurobarometer 'Digital Decade 2025', **40% of citizens in Bulgaria think that the EU protects their digital rights well** (no evolution since 2024). This is below the EU average of 44%. Citizens are particularly confident about getting basic and advanced digital education, training and skills (67%, above the EU average of 60%). They are most worried that their right to a safe digital environment and content for children and young people to is not well protected (55%, above the EU average of 48%).

¹⁰ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
{SWD(2025) 292 final} - {SWD(2025) 293 final} - {SWD(2025) 295 final}



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DIGITAL DECADE 2025 COUNTRY REPORTS

Croatia

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Executive summary

Croatia has made significant strides in strategic technological sectors but still faces challenges in the widespread adoption of advanced digital technologies. Progress in areas, such as quantum communication, semiconductors, and cybersecurity has strengthened its growing contribution to EU competitiveness and sovereignty.

Croatia shows a substantial level of ambition in its contribution to the Digital Decade, having set 13 national targets, 77% of which are well aligned with the EU's 2030 targets. The country is following its trajectories moderately well with 63% of them being on track (on the basis of the 2024 trajectories defined for all 8 KPIs analysed). Croatia addressed 50% of the 12 recommendations issued by the Commission in 2024 by making some changes through new measures.

In 2024, the government continued its strategic reforms, with digitalisation efforts increasingly linked to strengthening industrial competitiveness, fostering innovation, and boosting technological sovereignty. To make the most of the digital transition, Croatia must tackle persistent gaps in edge infrastructure, SME digitalisation, the uptake of advanced technologies, and support for high-growth enterprises.

Digital Decade KPI ⁽¹⁾	Croatia				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	HR	EU
Fixed Very High Capacity Network (VHCN) coverage	67.8%	78.9%	16.4%	68.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	62.1%	75.4%	21.4%	66.0%	69.2%	8.4%	100.0%	-
Overall 5G coverage	83.4%	94.2%	12.9%	85.7%	94.3%	5.9%	99.0%	100%
Edge Nodes (estimate)	3	6	100.0%	-	2 257	90.5%	-	10 000
SMEs with at least a basic level of digital intensity (2)	-	63.5%	4.8%	-	72.9%	2.8%	90.0%	90%
Cloud	40.7%	38.6%	-5.4%	-	-	-	75.0%	75%
Artificial Intelligence	7.9%	11.8%	49.0%	13.0%	13.5%	67.2%	20.0%	75%
Data analytics	51.7%	-	-	-	-	-	30.0%	75%
AI or Cloud or Data analytics	65.6%	-	-	-	-	-	-	75%
Unicorns	2	2	0.0%	2	286	4.4%	4	500
At least basic digital skills	59.0%	-	-	-	-	-	80.0%	80%
ICT specialists	4.3%	5.0%	16.3%	4.5%	5.0%	4.2%	7.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	67.2	75.2	11.9%	75.0	82.3	3.6%	100.0	100
Digital public services for businesses	66.2	65.3	-1.3%	75.0	86.2	0.9%	100.0	100
Access to e-Health records	85.6	86.6	1.2%	95.0	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics.
(2) DESI 2025 reports Version 4 of the Digital Intensity Index, which is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of annual progress. It is not comparable to the national trajectory, which is based on Version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI 2025 (year 2024).

According to the 2025 special Eurobarometer on the Digital Decade, 81% of Croatians consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 90% consider it important to counter and mitigate the issue of fake news and

disinformation online. And on competitiveness, 91% consider it important to ensure that European companies can grow and become 'European Champions' capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Croatia has made significant progress in FTTP and 5G deployment, surpassing the average EU growth rates. VHCN, although still below the EU average, progresses at a swift pace, driven by infrastructure programmes backed by the Recovery and Resilience Facility (RRF). However, Croatia faces challenges in deploying stand-alone 5G networks, with limited progress and no specific measures in place to speed up the roll-out. Rural mid-band 5G coverage also remains well below the EU average, and a comprehensive demand-side strategy to stimulate uptake is only expected after 2027.

The country also holds a strong position in the adoption of data analytics. Although the basic digital intensity of SMEs grew faster than in the rest of the EU, it remains well below the EU average. Croatia continues to face challenges in the uptake of AI and cloud services, where adoption is lower than EU average. The start-up and scale-up ecosystem also remains weak, with only two unicorns recorded and limited venture capital activity.

The launch of a national quantum communication project and the launch of a semiconductor competence centre are expected to strengthen Croatia's position in strategic technologies. The country has also started taking steps towards decentralising ICT infrastructure with the deployment of six edge nodes. However, the edge computing ecosystem remains underdeveloped and lacks a dedicated national strategy. The country's cybersecurity capacity has improved with the adoption of the Cybersecurity Act and the launch of the National Coordination Centre for Industry, Technology, and Research in Cybersecurity; however, key standards like Internet Protocol version 6 and Domain Name System Security Extensions remain far below the EU average, signalling persistent vulnerabilities in the national digital infrastructure.

Protecting and empowering EU people and society

Despite solid digital skills among young people, Croatia continues to face major challenges in digital inclusion, with persistent skill gaps affecting older adults, people with lower education levels, and the rural population. While the share of ICT specialists in employment has improved and matches the EU average, shortages remain, labour market mismatches persist, and brain drain continues to weaken the digital talent pipeline.

Public digital services for citizens have improved steadily and are broadly on track, but digital public services for businesses shows negative trends, including a decline in cross-border service availability. Preparations for the national Digital Identity Wallet are advancing, which will reinforce secure access frameworks. Access to health records is strong, but some key gaps remain: medical images are unavailable, some healthcare providers are not connected, and delegated access is not possible. Supporting a more inclusive and trusted digital transition, Croatia has intensified efforts to promote media literacy, cybersecurity awareness, and protection against online risks, particularly among young people.

Leveraging digital transformation for a smart greening

Green and digital priorities are receiving greater attention in Croatia, supported by major investments from the RRF. Croatia has made progress in digitalising its energy infrastructure and improving water management systems with digital monitoring solutions. However, the country still lacks a coherent

national strategy linking digitalisation to climate objectives, and systematic monitoring of emission reductions through digital technologies has not yet been put in place. Consumer awareness of the environmental impact of ICT devices remains low, and voluntary sustainability efforts in the digital sector are still fragmented.

National Digital Decade strategic roadmap

Croatia submitted an adjustment to its national roadmap in January 2025, refining its set of measures and updating key connectivity targets. The adjustment was prepared with broad stakeholder consultation and addresses a substantial number of 2024 recommendations. The roadmap maintains a strong focus on strengthening digital infrastructure, SME digitalisation, digital skills development, and digital public services. However, gaps persist in the widespread adoption of advanced technologies, scaling up innovation-driven enterprises, and fully closing inclusion gaps in digital skills, particularly for older adults and rural areas. Overall, the Croatian roadmap includes 31 measures with a combined budget of 634.73 million, representing approximately 0.74% of the country's GDP.

Funding & projects for digital

Croatia allocates 20% of its total recovery and resilience plan to digital (EUR 1.4 billion)¹. In addition, under cohesion policy, EUR 755 million, representing 9% of the country's total cohesion policy funding, is dedicated to advancing Croatia's digital transformation².

Croatia is a member of the three European Digital Infrastructure Consortia (EDICs): the Alliance for Language Technologies EDIC, the Local Digital Twins towards the CitiVERSE EDIC and the EUROPEUM EDIC. Croatian organisations are indirect partners in the Important Project of Common European Interest on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Croatia is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Croatia has contributed to the Best Practice Accelerator³ by sharing one best practice under the Digital Skills cluster ('Women in Digital – Girls in ICT').

Digital rights and principles

According to a [support study](#) Croatia has been relatively active in implementing the European Declaration on Digital Rights and Principles, with 48 initiatives overall and 7 new initiatives launched in 2024. Croatia is most active in the area of solidarity and inclusion. Less activity has been identified with regards to a fair digital environment. Measures in the area of sustainability appear to have most impact on the ground, in contrast to those addressing putting people at the centre of the digital transformation.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Recommendations

- **Public services:** Strengthen the interoperability and user-friendliness of public services to encourage people and businesses to use them more.
- **e-Health:** Introduce a comprehensive legal and technical framework for enabling authorised individuals' access to electronic health data on behalf of others; make medical imaging accessible to individuals via the national online health access service; and ensure that all healthcare providers, including geriatric nursing homes and mental health facilities, are connected and actively supplying data.
- **Basic digital skills:** Intensify targeted action to bridge the digital skills divide across age, education, and rural-urban populations.
- **ICT specialists:** Expand training, upskilling, and retention programmes for ICT specialists, strengthen alignment with labour market needs, and tackle brain drain to safeguard Croatia's digital talent pipeline.
- **SME digitalisation:** Develop targeted programmes and incentives to increase SMEs' adoption of cloud, AI, and data analytics solutions, narrowing the gap between digitally advanced enterprises and those lagging behind.
- **Edge nodes:** Increase efforts in the area of edge nodes in view of their importance for competitiveness, resilience, sovereignty and climate action.
- **5G:** Accelerate full gigabit and 5G coverage, especially by addressing operational bottlenecks (planning, permitting) and expanding mid-band 5G spectrum deployment.
- **Cybersecurity:** Develop targeted cybersecurity support programmes for SMEs, expand resilience testing, and strengthen national capacity to address cyber incidents in the public and private sectors.

A competitive, sovereign and resilient EU based on technological leadership

Croatia continues to strengthen its digital competitiveness, making notable progress in enhancing its digital infrastructure and accelerating the digital transformation of its economy. The ICT sector plays an increasingly important role, contributing 5.32% to the country's gross value added in 2021 – above the EU average⁴. This contribution stems primarily from the dominance of ICT services, which represent around 70% of the sector's activity, followed by equipment sales and, to a lesser extent, hardware manufacturing. The sector has experienced steady growth in recent years, driven by strong government modernisation efforts and robust enterprise investments, particularly in digital technologies such as software development and ICT services⁵. These services, including software development and IT consulting, are increasingly contributing to Croatia's export growth and competitiveness⁶.

The broader economic context remains favourable. In 2025, Croatia maintains robust growth supported by EU funds, eurozone membership, and Schengen integration, with a steady rise in export-oriented services and digital trade⁷. The digital sector plays a growing role in this trend, notably through Croatia's active participation in European initiatives to boost research and development (R&D) and innovation. ICT R&D personnel represented 36.75% of the national total in 2021 and 35.26% in 2022. However, structural constraints – including labour shortages and fragmentation in the R&D landscape – continue to weigh on the economy's long-term growth potential.

R&D intensity reached 1.39% of gross domestic product (GDP) in 2023, up from 0.95% in 2018, largely driven by investments from the Recovery and Resilience Plan (RRP) and cohesion policy⁸. Business R&D in the ICT sector accounted for 26.7% of total R&D spending, highlighting its growing role in driving innovation. Nonetheless, public research remains fragmented, and further reforms are needed to ensure stronger institutional coordination and impact.

Digital innovation is gaining momentum, and the start-up ecosystem is evolving. Croatia outperforms the EU average in the adoption of cloud technologies and data analytics; however, the uptake of artificial intelligence remains modest. While the number of unicorns remains limited and venture capital investment (0.028% of GDP) falls below the EU average (0.078%), new measures – including the Vesna Deep Tech Venture Fund and improved R&D tax incentives – aim to improve access to finance and strengthen the innovation environment for high-growth firms⁹.

Croatia's performance in digital infrastructure and business digitalisation is improving. Significant investments have been made to expand high-capacity network connectivity and accelerate the digital transformation of small and medium-sized enterprises (SMEs) – both essential for strengthening the business environment and boosting overall economic competitiveness¹⁰.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

⁵ International Trade Administration, Croatia Country Commercial Guide. Available here: <https://www.trade.gov/country-commercial-guides/croatia-information-and-communication-technology>

⁶ European Commission. (2025). European Semester Annex on Innovation to Business: Croatia.

⁷ Economist Intelligence, One-click report: Croatia, 2025.

⁸ *ibid.*

⁹ *ibid.*

¹⁰ European Commission (2025). European Semester Annex Making Business Easier: Croatia.

Building technological leadership: digital infrastructure and technologies

Croatia is making strong progress in rolling out digital infrastructure, with some of the fastest growth rates in fibre and very high-capacity network (VHCN) coverage across the EU, particularly in rural areas, where coverage remains low but is catching up rapidly. The country is also advancing in strategic domains such as semiconductors and quantum technologies, though challenges remain in edge computing, mid-band 5G coverage, and gigabit service uptake.

Connectivity infrastructure

Croatia is at 78.93% of VHCN coverage (2030 national target: 100%) after an increase of +16.4% in 2024 and stands just below the EU average of 82.49%. The country is on track according to its national trajectory. However, Croatia's growth rate notably outperformed the EU average of 4.9%. For households in rural areas, VHCN coverage reached 49.09%, under the EU rural average of 61.89%, but with a very high annual growth rate of 92.8%, significantly exceeding the EU's 11.3%. These results suggest that Croatia exceeded its expected 2024 trajectory of 66%.

Fibre to the premises (FTTP) coverage in Croatia reached 75.39% in 2024 (national target: 100%), up +21.4% from 2023 and above the EU average of 69.24%. The country is on track according to its national trajectory.

In rural areas, FTTP coverage stood at 44.43%, still below the EU's 58.78%, but Croatia recorded exceptional annual growth of 126.0%, compared to the EU's 11.9%. Although no separate national FTTP trajectory has been reported, the observed pace of deployment is aligned with the country's broader VHCN goals.

Croatia reached 94.20% of 5G coverage in 2024 (national target: 99%), showing an increase of +12.9%, just below the EU average of 94.35%. The country is on track according to its national trajectory. In rural areas, 5G coverage was 86.35%, exceeding the EU rural average of 79.57%. However, rural growth of 7.8% was below the EU's 11.9%, indicating that further acceleration is needed in sparsely populated areas.

Coverage in the strategic 3.4-3.8 GHz band remains a challenge. Croatia's national coverage in this band stood at 45.18% in 2024, compared to the EU average of 67.72%, with a growth rate of 13.0% vs the EU's 32.6%. In rural areas, coverage reached only 8.48%, far below the EU rural average of 26.19%, and with a modest increase of 5.7%, signalling the need for intensified mid-band 5G roll-out.

On spectrum, Croatia has assigned 100% of the harmonised spectrum in the 5G pioneer bands as of 2024 and 2025, standing well above the EU averages of 73.4% and 74.63%, respectively. This places Croatia among the top performers in regulatory readiness.

In terms of fixed broadband take-up, 43.64% of subscriptions were ≥ 100 Mbps in 2024 (up from 38.62% in 2023), below the EU average of 71.88%, but with a growth rate of 13.0%, outpacing the EU's 9.1%. For 1 Gbps subscriptions, Croatia rose from 3.22% to 5.81% year-on-year, while the EU increased from 18.47% to 22.25%. Though the absolute share remains low, Croatia's 80.4% growth far exceeded the EU's 20.5%, reflecting rising consumer demand.

5G SIM card penetration reached 34.8% in 2024 (up from 17.38% in 2023), just below the EU average of 35.56%. With a growth rate of 100.2% compared to the EU's 63.9%, Croatia shows strong momentum in consumer adoption of 5G services.

VHCN and FTTP

Croatia's target for VHCN and FTTP coverage remains at 100% by 2030, as defined in the initial roadmap submitted in 2023. Given the strong public investment and improved FTTP roll-out observed in 2024, the target appears **realistic**. The strong growth already achieved, combined with Croatia's consistent alignment with or outperformance of EU benchmarks, supports this assessment.

The strategy is underpinned by significant funding from the RRP, with EUR 125.7 million allocated to the national broadband infrastructure programme targeting areas with insufficient commercial interest (ONP), enabling the roll-out of FTTP coverage to approximately 124 000 households and 700 000 residents. A further EUR 19.6 million was secured under the RRP to support the construction of passive infrastructure in rural areas, improving access to VHCN networks.

To complement these supply-side investments, Croatia plans to introduce a demand-side voucher scheme post-2027 to support gigabit uptake for up to 125 000 households. This dual approach is essential to ensuring both availability and adoption, particularly in less commercially attractive areas.

Croatia is also investing in its future backhaul capacities for underserved areas through the national programme for broadband backhaul infrastructure (NP-BBI), expected to be completed by 2030. However, implementation has faced significant delays. The design phase is underway, but progress remains limited, and outcomes are yet to be demonstrated.

No new fibre roll-out measures were included in the 2024 roadmap adjustment. However, given the strong performance to date and the comprehensive programme structure already in place, this omission appears justified. The roadmap continues to prioritise rural deployment, demand stimulation, and administrative streamlining.

The copper switch-off process remains at an early stage. As of early 2025, no formal decommissioning plan has been submitted by the incumbent operator, although conditions for partial switch-offs are met in several FTTP-covered areas. Croatia's electronic communications regulator, HAKOM, has confirmed that any future switch-offs will be subject to case-by-case approval under the Electronic Communications Act.

Recent market developments, including the emergence of a new operator now leading over half of the co-financed projects, have increased implementation capacity and enhanced competitive pressure. **Nonetheless, key barriers remain**, such as high construction costs in sparsely populated areas, affordability gaps among elderly and low-income populations, and heterogeneous fee regimes imposed by local authorities. To address these, Croatia is preparing legislative updates in Q3 2025 **to transpose the General Infrastructure Act**.

In summary, Croatia's strategy to achieve universal VHCN and FTTP coverage by 2030 is credible, well-supported, and advancing steadily. Key next steps include putting into operation the gigabit broadband voucher scheme, improving affordability, and maintaining momentum through proactive regulatory and stakeholder engagement.

2024 recommendation: Continue and expand the measures aimed at supporting FTTP roll-out, aiming to fully close the rural-urban divide, including by supporting demand for gigabit services.

In 2024, Croatia continued implementing existing measures but did not take any new measures. The country continued implementing major RRP-funded infrastructure programmes and confirmed the upcoming launch of a voucher scheme targeting gigabit uptake in underserved areas. Preparatory work is also ongoing on legislative updates to support cost-effective roll-out. While no

new measures were introduced in the 2024 roadmap adjustment, the scope and scale of ongoing investments justify this. Further efforts may be needed to accelerate demand-side measures before 2027 and to ensure affordability for vulnerable groups.

5G

In its 2024 roadmap adjustment, Croatia updated its 5G target to reach **99% coverage of inhabited areas and 75% coverage in the 3.4-3.8 GHz band by 2030**. These targets reflect a moderate but realistic ambition, taking into account Croatia's fragmented geography, smaller market size, and existing spectrum allocation. With full spectrum availability across all pioneer bands and the steady deployment pace observed in 2024, the country remains broadly on track to meet its national objectives, although continued focus will be required in mid-band deployment and rural coverage. General 5G coverage is progressing well, but standalone 5G remains limited.

To support these targets, Croatia introduced new measures in its 2024 roadmap adjustment aimed at **improving coordination and addressing roll-out barriers**, especially for standalone 5G and rural coverage. A key development is the creation of a **national 5G working group**, coordinated by HAKOM, which brings together telecom operators, industry, and academia. This group facilitates information exchange, identifies regulatory obstacles, and supports preparation for industrial 5G use cases.

Another important measure is the **Digital Connectivity Programme**, financed under the RRP. In 2024, Croatia made progress with procurement procedures, and the national broadcasting infrastructure operator **OiV was selected** to deploy passive infrastructure in rural areas.

While these actions demonstrate progress, the roadmap signals that a more comprehensive demand-side strategy is not expected until after 2027, following a funding gap assessment planned for 2026. This delay may limit near-term uptake, particularly for standalone 5G. Operators reported that market readiness and clear industrial use cases are still lacking. As of early 2025, there is no regulatory pressure to accelerate standalone deployment, although the authorities are monitoring market signals and may consider intervention as industrial demand develops.

Croatia is one of the few EU Member States to have **fully assigned 100% of the harmonised spectrum in all three 5G pioneer bands**: 700 MHz, 3.6 GHz, and 26 GHz. These bands were fully allocated through public auctions concluded in 2021 and 2023. In the 3.4-3.8 GHz band specifically, all national operators have been granted 100 MHz blocks, while the 3.4-3.48 GHz sub-band is allocated for regional use.

These allocations provide the basis for high-capacity 5G deployment nationwide. However, rural mid-band coverage remains limited, and Croatia will need to accelerate deployment in this frequency range to meet its 2030 target.

2024 recommendation: Ensure that new players have sufficient access to spectrum for innovative B2B and B2C applications and encourage operators to speed up the deployment of 5G standalone core networks.

Croatia made some efforts to address the recommendation through new policy actions in 2024. While the 2024 roadmap does not include new spectrum access schemes for alternative or vertical players, Croatia has fully assigned all harmonised 5G pioneer bands, ensuring spectrum availability for future demand. The establishment of a national 5G working group coordinated by HAKOM provides a structured forum for identifying regulatory and market barriers, including access issues for innovative use cases.

Regarding 5G standalone deployment, progress remains limited. The roadmap adjustment does not introduce direct incentives or targets for standalone core roll-outs, but Croatia has confirmed that the current market environment does not yet justify regulatory intervention. The authorities are monitoring developments closely and anticipate further action once industrial demand emerges, supported by the funding gap assessment planned for 2026.

Semiconductors

Semiconductors are gaining strategic importance in Croatia's digital industrial policy, with national efforts focused on chip design, characterisation, and SME support. While no new measures were introduced in the 2024 roadmap update, the planned implementation of the Croatian Competence Centre for Semiconductors (CROCCS) has progressed. CROCCS is coordinated by the University of Zagreb's Faculty of Electrical Engineering and Computing and was positively evaluated under the DIGITAL-chips-2024-SG-CCC-1 call. A grant agreement is under preparation, with expected co-funding of EUR 1million annually from 2025 to 2028 through the Digital Europe Programme and national sources.

The centre brings together a consortium of eight national partners, including Rimac Technology, KONČAR, and the Ruđer Bošković Institute. CROCCS will provide SMEs and academic institutions with access to chip design tools, advanced characterisation and measurement infrastructure, and services for testing and validation. These capabilities will be supported by both existing facilities and newly acquired equipment distributed across the partner institutions.

The chip characterisation laboratory in Zagreb is expected to serve as a national and EU-level facility, with particular expertise in power device testing and electrostatic discharge (ESD) simulations. SME users will be supported in accessing EU pilot lines and preparing market-ready demonstrators, with services offered at no or reduced cost.

While Croatia does not currently host fabrication plants or large-scale manufacturing capacity, its role in the semiconductor value chain is anchored in design, prototyping, and research infrastructure. CROCCS also aims to attract investment, strengthen talent retention, and promote innovation in high-tech sectors such as automotive and energy.

No direct policy link has been established between semiconductors and critical raw materials, but Croatia is developing broader circular economy initiatives, including material reuse measures financed through the RRP. These may provide a foundation for future alignment with raw materials strategies.

Croatia's contribution to European semiconductor sovereignty lies in research, design, and advanced infrastructure rather than industrial-scale production. CROCCS represents a significant step toward integrating national capabilities into EU-level efforts under the European Chips Act.

Edge nodes

According to the Edge Node Observatory, **Croatia had deployed a total of six edge nodes by 2024,** doubling the number from 2023 but still placing Croatia among the countries with the lowest number of edge nodes. This increase highlights the initial steps toward decentralising ICT infrastructure but also reflects the absence of a strategic national framework in this area.

In 2024, **no field trials or dedicated funding measures were launched** to support edge computing infrastructure. Croatia currently lacks a strategy specifically targeting the development and deployment of edge nodes. Public ICT resources remain concentrated in **centralised state cloud**

infrastructure, operated by entities such as **APIS IT** (Agency for Support to Information Systems and Information Technologies), **FINA** (Financial Agency), **CARNET** (Croatian Academic and Research Network), and **AKD** (Agency for Commercial Activities). While some of these providers maintain physical decentralisation across facilities, the operational set-up does not align with the architectural principles of edge computing, which brings compute capacity closer to end users.

The **Act on Digital Information Infrastructure (ZODII)**, regulates access to the State cloud for public and private [actors has been adopted in May 2025](#). However, the legislative scope currently focuses on **interoperability and cloud governance**, without addressing edge-specific infrastructure needs.

In this context, Croatia's edge node ecosystem remains underdeveloped and disconnected from ongoing broadband and 5G deployment efforts. A clear strategy – including **defined objectives, timelines, and incentives** – will be essential to integrate edge computing into the broader digital infrastructure landscape.

2024 recommendation: Increase efforts in the area (...) of edge nodes, in view of their importance for competitiveness, resilience, sovereignty, European values and climate action.

No information available on measures taken to address the recommendation. There is no national monitoring framework, no dedicated roadmap measures, and no national funding instruments to support edge computing development. Public ICT infrastructure remains highly centralised in the State cloud, and there is currently no national strategy or deployment trajectory for edge nodes.

Quantum technologies

In 2024, Croatia continued its engagement in quantum technologies with the Croatian Quantum Communication Infrastructure (CroQCI) project. Supported by EU funding since 2023, the project's total value backed is EUR 10 million and is implemented by a national consortium of eight partners. It aims to deploy terrestrial and space-based quantum communication technologies, contributing to the EU-wide quantum infrastructure and enabling ultra-secure data transmission for public and scientific services.

The CroQCI project includes activities to demonstrate quantum key distribution (QKD), build testing environments, and strengthen domestic expertise. It is expected to facilitate secure communications and support training, research, and knowledge transfer within Croatia. The initiative was acknowledged during the 2025 fact-finding mission as a key measure for advancing quantum communication in the country.

In parallel, Croatia is investing in quantum computing development through a dedicated measure in its 2024 digital roadmap. Led by the University of Zagreb's Computing Centre (SRCE), the measure focuses on establishing a test environment for quantum and hybrid computing simulations, integrated within the national high-performance computing (HPC) ecosystem. SRCE's role includes facilitating access for academic and industrial users and contributing to the advancement of strategic computing infrastructure.

While Croatia's quantum ecosystem remains research-oriented, these initiatives show substantial progress in building up national capabilities and aligning with broader EU efforts. Both the CroQCI and quantum computing measures form the foundation for Croatia's long-term participation in secure and advanced digital technologies.

2024 recommendation: Increase efforts in the area of quantum computing [...], in view of their importance for competitiveness, resilience, sovereignty, European values and climate action.

Croatia made some efforts to address the recommendation through new policy actions in 2024. The measures, led by SRCE, aim to develop a test environment for quantum and hybrid computing simulations integrated into the national HPC ecosystem. While this constitutes a first step toward strengthening institutional and research capacity, there is no evidence of a broader strategic framework or targeted support for industry and commercial applications. Efforts in quantum communication were more advanced, with the launch of the EU-funded CroQCI project, implemented by a national consortium to support secure quantum infrastructure. Overall, Croatia's engagement remains research-focused and at an early stage, and further efforts will be needed to scale up investment, define long-term governance, and ensure alignment with EU-level initiatives.

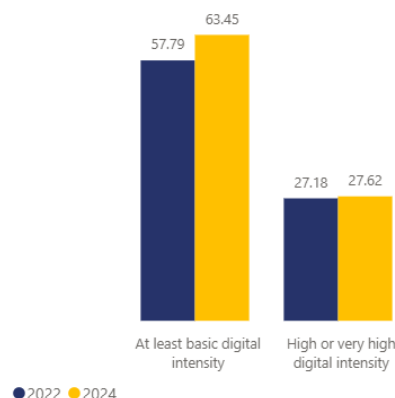
Supporting EU-wide digital ecosystems and scaling up innovative enterprises

The digitalisation of Croatian enterprises continued to improve in 2024, with notable advances in adopting advanced technologies but persisting challenges in the digital intensity of SMEs and innovation scaling. Building on the Draghi report's emphasis on competitiveness, this chapter analyses Croatia's progress in enterprise digitalisation, uptake of cloud, AI and data analytics, and the development of the start-up and scale-up ecosystem.

SMEs with at least basic digital intensity

In Croatia, **63.45% of SMEs had at least a basic level of digital intensity in 2024** (2030 national target:

Digital intensity Index
% of enterprises



90%), following an increase of +4.8% since 2022. This remains **significantly below the EU average of 72.91%**, despite one of the fastest improvement rates in the EUMore specifically, **only 27.62% of Croatian SMEs** reached high or very high digital intensity, also below the EU average of 32.66%. This reflects ongoing structural weaknesses in the digital transformation of Croatia's enterprise sector, particularly among micro- and small businesses.

Croatia continues to rely on a wide range of investment schemes to promote SME digitalisation. Under the RRP, **EUR 29.7 million in non-refundable support** has been allocated specifically for digital transformation of SMEs, alongside **EUR 62.2 million** awarded under the cohesion programme, covering a total of **over 2 500**

contracts by 2023. Additional funding under the 2021-2027 **Competitiveness and Cohesion Programme (PKK)** includes **earmarked funding of EUR 74 million**, of which over **EUR 51 million has already been granted.** These programmes target business process automation, digital tool adoption, and innovation scaling.

Croatia continues to rely on a wide range of investment schemes to promote SME digitalisation. Under the RRP, component related to digital economy EUR 29.7 million in non-refundable support has been allocated specifically for the digital transformation of SMEs, alongside **EUR 63.6 million awarded under the RRP and the European Regional Development Fund (ERDF)**, covering a total of over 2 500 contracts by 2023. **One example of additional funding under the 2021-2027 Competitiveness and Cohesion Programme includes EUR 60 million allocated to the Croatian Venture Capital Initiative 2**

(CVCi 2) initiative. These programmes target business process automation, digital tool adoption, and innovation scaling.

The national support framework has been reinforced through the establishment of **four European Digital Innovation Hubs (EDIHs)**, which became operational between late 2022 and early 2023. These include:

- [**CROBOHUB++**](#) at the University of Zagreb, focusing on services in artificial intelligence, cybersecurity, and HPC, including pre-investment testing, training, and support to SMEs for product development;
- [**Adria EDIH**](#) in Rijeka, promoting digital solutions in the maritime and energy sectors;
- [**AI4Health.Cro**](#), coordinated by the Ruđer Bošković Institute, specialised in e-Health innovation and support for the European Health Data Space; and
- [**JURK EDIH**](#), coordinated by the Regional Coordinator of Sisak-Moslavina (RK SMŽ), supporting digitalisation in the fields of artificial intelligence, blockchain, and gaming.

Together, they act as regional competence centres, providing SMEs with access to digital maturity assessments, pre-investment testing environments, training, and guidance in securing both national and EU-level financing. Their role is particularly important in underserved areas and for sectors with low digital maturity, ensuring more balanced support at local level.

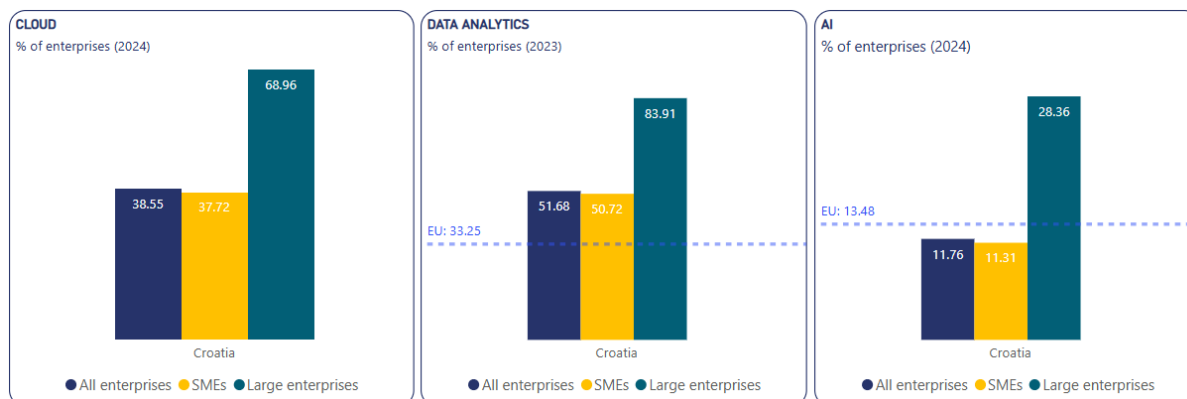
Looking ahead, it will be essential to sustain the momentum of these support schemes, especially as Croatia moves towards bridging the digital intensity gap with the EU average. While Croatia's structural funding pipeline remains strong, fragmentation across instruments and limited technical support services for SMEs continue to pose challenges. Strengthening advisory services, enhancing coordination between national and regional schemes, and ensuring inclusive access for micro-enterprises will be key to raising overall SME digital maturity.

Take-up of cloud/AI/data analytics

According to 2023 data, **65.59% of Croatian enterprises used at least one of the following technologies:** cloud computing, data analytics, and artificial intelligence, placing the country **well above the EU average of 54.7%**. Among SMEs, the uptake stood at **64.88%**, while **89.74% of large enterprises** reported usage, resulting in a **24.86 percentage point gap** – significantly narrower than the EU gap of 32.97. These results confirm Croatia's position as one of the stronger performers in digital technology uptake among enterprises, with progress driven by both structural funding and an increasingly supportive ecosystem.

According to [2022 data from the Croatian Bureau of Statistics](#), SMEs in Croatia account for 60.2% of the total value added in the non-financial business economy, while large enterprises contributed 39.8%. SMEs accounted for **97.4% of all enterprises with more than 10 employees**, compared to just 2.6% for large firms. This structure underscores the importance of **boosting digital adoption among SMEs**, not only to close uptake gaps but also to fully realise the transformative potential of advanced technologies in a business environment dominated by small-scale operators¹¹.

¹¹ European Commission. (2025). European Semester Annex Making Business Easier: Croatia.



- [Cloud](#)

Cloud computing remains the most widely adopted advanced technology among Croatian enterprises. In 2023, **40.73% of firms** used cloud services, slightly outperforming the EU average of 38.97%. SME adoption stood at **39.96%**, while **66.87% of large enterprises** made use of cloud services, resulting in a **26.91 percentage point difference** – a gap smaller than the EU average of 31.68. However, updated 2024 figures show a modest **decline in overall usage to 38.55%**, with SME uptake falling to **37.72%**, while large enterprise adoption continued to grow to **68.96%**, widening the gap to **29.15 points**.

This dip among SMEs may reflect cost pressures or implementation barriers, though support remains available through a mix of **RRP-funded investment grants, cohesion policy schemes**, and access to public cloud infrastructure via the **Centre for Shared Services (CDU)**. ZODII in 2025 is expanding SME access to national cloud services.

Croatian entities are also **indirectly involved in the Important Project of Common European Interest (IPCEI) on Next Generation Cloud Infrastructure and Services**, although no national-level dissemination or coordination actions have yet been launched.

- [Data Analytics](#)

Croatia has emerged as a **top performer in the EU** for the adoption of data analytics. In 2023, **51.68% of enterprises** reported using data analytics, well above the **EU average of 33.25%**. SME adoption reached **50.72%**, while **83.91% of large enterprises** used such tools, reflecting a **33.19 percentage point gap** – narrower than the EU average of 39.72. The high level of uptake is partly attributable to the growing availability of real-time public data services, the mobilisation of EU funds for analytics software adoption, and the active role of EDIHs in providing training and testing environments.

- [Artificial Intelligence](#)

In contrast, AI adoption in Croatia remains at an earlier stage of development and **the country is lagging behind compared to its national trajectory**. In 2024, **11.76% of Croatian enterprises used artificial intelligence**, just below the **EU average of 13.48%**. Compared to 2023 (7.89%), this marks a **49.05% increase**, though the EU grew faster at 67.2%. SME usage stood at **11.31%**, while **28.36% of large enterprises** had adopted AI solutions, producing a **17.05 percentage point gap** – much smaller than the EU's 28.53 gap, indicating relatively balanced uptake across different-sized companies.

Recent policy efforts are beginning to address this lag. The **'Grants for Digitalisation'** (EUR 27.3 million) and a **voucher scheme for SME digitalisation worth EUR 9.95 million** support AI-related investment, alongside a **national AI-capable data infrastructure** launched in 2023. Still, the current national 2030

target of 30% AI uptake – far below the EU target of 75% – reflects a **low level of ambition** and suggests the need for stronger public-private partnerships, demonstration pilots, and sector-specific adoption strategies.

2024 recommendation: Increase the level of effort [...] by supporting the development and deployment of trustworthy, secure and sovereign advanced technologies and solutions (AI/cloud/data).

Croatia made some efforts to address the recommendation through new policy actions in 2024. The roll-out of RRP-funded measures – including EUR 27.3 million for Grants for Digitalisation and EUR 9.95 million for the voucher programme – helped to stimulate uptake of cloud and AI tools, particularly among SMEs. In addition, the launch of a secure, sovereign AI data infrastructure at the CDU provides a national platform for AI model development and analytics.

Despite this, AI adoption remains modest (11.76% vs 13.48% EU average), and the 2030 targets for AI and data analytics remain well below EU benchmarks. There is currently no dedicated national strategy to stimulate widespread adoption across sectors, nor are there targeted initiatives to deepen digital integration beyond basic uptake. Further efforts will be needed to scale deployment and ensure SMEs move from early adoption to full digital transformation.

Unicorns, scale-ups and start-ups

At the beginning of 2025, **Croatia had two unicorns**, with a 2030 national target of four. This figure remains unchanged from the previous year. While the ambition level remains limited, 2024 saw a broadening of national efforts to strengthen the investment landscape for high-growth and innovation-driven enterprises.

The **ICT sector in Croatia represents 5.26% of national gross value added**, close to the EU average of 5.5%. Notably, **business R&D expenditure in the ICT sector accounts for 34.27% of total R&D expenditure**, reflecting the sector's growing role in driving innovation. However, broader access to equity and venture capital financing remains limited. **Venture capital investment as a share of GDP is below the EU average**, and private equity investment fell sharply in recent years, indicating persistent financing constraints for high-growth firms.

To address these structural gaps, Croatia launched several financing instruments in 2024. **CVCi 2**, supported by the European Investment Fund, combines **EUR 60 million from ERDF** with **EUR 20 million in national co-financing**, while a new **EUR 80 million programme** was introduced for start-up support. These efforts complement existing instruments, including **EUR 70 million in innovation grants** and **EUR 210 million in vouchers** promoting business R&D collaboration. In addition, the **Vesna Deep Tech Venture Fund**, with a budget of EUR 40 million, aims to stimulate early-stage investment in deep tech sectors¹².

To support long-term capital development, Croatia initiated work on a **Strategic Framework for the Development of Capital Markets 2025-2030**, backed by diagnostic and benchmarking reviews completed in 2024. The draft framework and its accompanying action plans aim to improve investor incentives, legal certainty, and access to non-bank finance such as crowdfunding and equity instruments.

Meanwhile, **R&D tax incentives are being revised** to increase take-up by innovative firms and to simplify access for start-ups. A separate reform is targeting the development of a national acceleration

¹² European Commission. (2025). European Semester Annex on Innovation to Business: Croatia.

ecosystem and providing grant-based support for deep tech ventures. These are reinforced by the **Vesna Deep Tech Venture Fund**, which is offering EUR 40 million to early-stage firms in high-tech sectors.

Despite progress, Croatia still lacks a **dedicated national strategy for scale-ups and unicorn development**, and financing conditions remain well below the EU average. Venture capital penetration is still limited in scope, and regulatory hurdles – particularly around fund formation and investor participation – continue to affect the growth of the venture capital ecosystem.

Entrepreneurial activity remains relatively high, supported by RRP-funded initiatives, targeted business support schemes, and platforms like **START** for digital company registration. However, the absence of a fully integrated policy framework for scaling firms may continue to hinder Croatia's capacity to produce high-growth, innovation-driven champions in the medium term¹³.

2024 recommendation: Increase the level of effort to support the unicorns target, including by increasing the level of R&D in the ICT sector, improving access to finance and supporting the development and deployment of trustworthy, secure and sovereign advanced technologies and solutions.

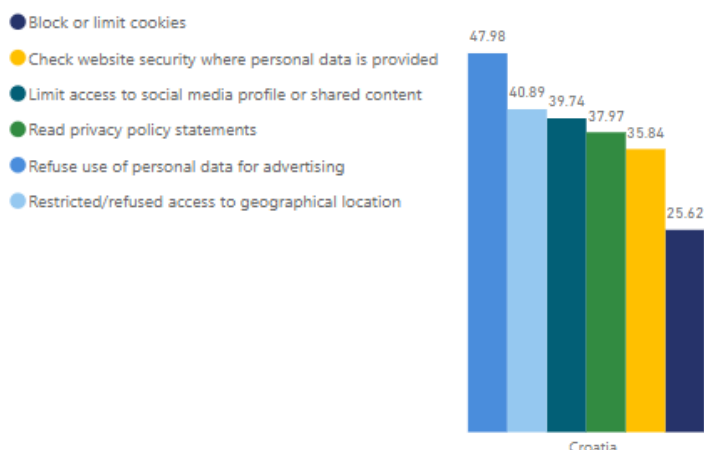
Croatia made some efforts to address the recommendation through new policy actions in 2024. It continued implementing existing investment schemes and introduced several new financial instruments to support start-ups and deep tech ventures. However, the country still lacks a dedicated strategy for scale-ups and unicorn development, and structural barriers to late-stage financing and innovation scaling persist.

Strengthening Cybersecurity & Resilience

In 2023, **63.9% of individuals in Croatia took at least one precautionary action to protect their personal data online**, slightly below the EU average of 69.55%. Of these, **47.06% engaged in three or more actions**, suggesting above-basic digital safety skills. The most common action was **refusing the use of personal data for advertising purposes (47.98%)**, while **only 25.62% changed browser settings to manage cookies**, indicating gaps in more advanced protective behaviours.

Croatian enterprises report a relatively high incidence of cyber-related disruptions. In 2024, **26.1% of enterprises experienced at least one ICT security incident**, compared to the EU average of 21.54%. The most frequent causes of unavailability were **hardware or software failures (23.54%)**, while **external attacks** (e.g. ransomware or denial of service) were reported by 3.34% of enterprises, slightly below the EU average (3.43%).

Type of activities to protect personal data online (% of individuals)



¹³ European Commission. (2025). ES Annex Making Business Easier: Croatia.

Data destruction or corruption due to malware or unauthorised access was rare (1.25%), and **Croatia recorded one of the lowest overall rates of incidents involving data disclosure**, whether through internal or external actions (2.01%, EU: 2.28%).

From a legal perspective, Croatia has now fully transposed the NIS2 Directive. The **new Cybersecurity Act** entered into force on 7 February 2024, repealing Article 41 of the Electronic Communications Act and updating the earlier 2021 legislation. It was followed by the adoption of the **Cybersecurity Regulation** (Official Gazette No 135/2024) on 30 November 2024, which establishes detailed obligations for **cybersecurity risk management, reporting, and the identification of essential and important entities**. This marks a major step forward in aligning Croatia's regulatory framework with EU requirements.

The national approach to cyber awareness and capacity building had also evolved by the end of 2024. In late 2023, the Croatian government designated the Croatian Academic and Research Network (CARNET) as the National Coordination Centre for Industry, Technology, and Research in Cybersecurity (NCC-HR), in line with Regulation (EU) 2021/887. In an earlier step, the Information Systems Security Bureau (ZSIS) had already been designated as the [national authority for cybersecurity certification](#) under Regulation (EU) 2019/881 (Cybersecurity Act).

In parallel, the national approach to cybersecurity awareness and capacity building was reinforced. In late 2023, CARNET was designated as the NCC-HR, in line with Regulation (EU) 2021/887. The NCC-HR [coordinates a range of nationally and EU-funded initiatives](#), including the 'Deployment of NCC-HR' project, co-financed under the Digital Europe Programme with a total value of EUR 7.87 million. The project runs until 2028 and supports the development of professional cybersecurity skills, stakeholder coordination through a newly created Cybersecurity Competence Community, and cascade funding for innovation in cybersecurity. To ensure wide engagement, the NCC-HR also plans to organise regional Cyber Meet-ups in collaboration with local and regional authorities, targeting SMEs, institutions and academia. Croatia is also working with other Member States towards the development of the European Digital Infrastructure Consortia (EDIC) European Cybersecurity Skills Academy.

Additional national efforts include a cybersecurity voucher scheme and targeted SME support via the EDIH CROBOHUB++ centre, offering training, threat detection tools, and test-before-invest services.

Despite these efforts, Croatia still faces challenges in achieving widespread security readiness. The **relatively high incidence of service disruption in businesses**, combined with **low adoption of critical standards like IPv6**, signals the need for continued investment in enterprise-level cybersecurity infrastructure, staff training, and public digital literacy.

Concerning the deployment of secure internet standards, Croatia remains significantly behind the EU average in the roll-out of Internet Protocol version 6 (IPv6). In Q3 2024, only **4.0% of end users** in Croatia connected via IPv6, compared to the EU average of 37%. Server-side adoption is even lower: only **1.0% of servers** supported IPv6, against an EU average of 16%. Moreover, Croatia has experienced a **declining trend in IPv6 usage** among end users, down from 5.8% in Q3 2022. This stagnation and regression pose risks for scalability, security and interoperability, especially given the exhaustion of IPv4 addresses. Accelerating the deployment of IPv6 is essential to future-proof the national internet infrastructure and ensure compatibility with EU-wide digital services. **Domain Name System Security Extensions (DNSSEC)** is another important standard introducing authentication and integrity checks in DNS. In Croatia, the **DNSSEC validation rate was just 13% in Q3 2024**, substantially below the EU average of 43%, underscoring the need for internet providers and public platforms to further incentivise its adoption.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Croatia continues to face important digital inclusion challenges, with divides persisting on the basis of education level, age group, and rural-urban areas. However, strong progress has been made in expanding basic digital skills, promoting women's participation in ICT, and improving the accessibility of public digital services. Croatia is also reinforcing its efforts on media literacy, cybersecurity awareness, and protection against online risks, particularly for young people. Initiatives promoting safe use of digital technologies in schools and campaigns addressing disinformation have been strengthened, supporting a more inclusive and resilient digital transition. [Eurobarometer data on fake news, concerns, etc.]

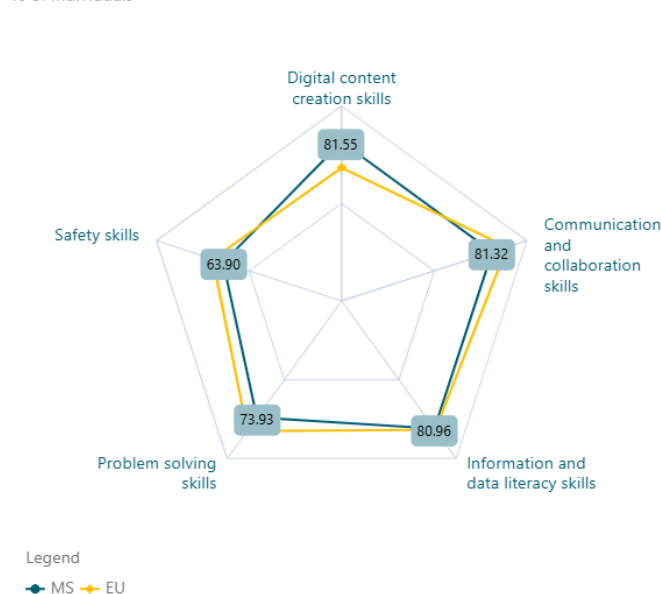
Equipping people with digital skills

Basic Digital Skills

Croatia is at **58.95%** of population with at least basic digital skills (2030 national target: 80%), **above the EU average** of 55.56%. The value has improved steadily in recent years, but the pace of growth must be maintained to stay on track. Based on the 2023 level, Croatia would need to increase the share of digitally skilled individuals by approximately three percentage points per year to meet its 2030 goal. While this pace aligns with recent progress, **reaching the target is not yet guaranteed**, especially in light of persistent inclusion gaps.

- **Gender Gap:** 60.22% of men and 57.71% of women in Croatia reported at least basic digital skills, resulting in a gender gap of **2.51 percentage points**, slightly above the EU average of 2.33 pp.
- **Education Level:** Digital skills are strongly correlated with education. Among individuals with a higher education level, **81.46%** reported basic digital skills (above the EU average of 79.83%), while among those with a low education level, only **26.12%** did. This results in a gap of **32.83 percentage points**, considerably above the EU average gap of 21.95 pp.

Digital Skills Index components
% of individuals



- **Living Areas:** In rural areas, **50.13%** of Croatians have at least basic digital skills, which is above the EU rural average (47.50%). However, the rural-national gap remains at **8.82 percentage points**, closely mirroring the EU average.
- **Age Groups:** Croatian youth (16-24) are highly digitally proficient, with **86.33%** reporting at least basic digital skills, well above the EU average of 69.98%. In contrast, **only 17.86%** of individuals aged 65-74 have these skills – significantly below the EU average of 28.19%.
- **Digital Skills Index components:** Croatia performs below the EU average in four out of five competence areas, but stands out in **digital content creation**, with an **81.55% score**, well above the EU's 68.28%. The weakest area remains **safety skills**, where Croatia scores 63.90%, compared to the EU average of 69.55%.

Croatia continues to implement a comprehensive set of policy actions to support digital upskilling. A key initiative is the **voucher system for adult education and reskilling**, in operation since April 2022. As of early 2025, **over 19 000 vouchers** have been granted for digital skills acquisition, with **100+ accredited training programmes** offered across **150+ institutions** nationwide. Particular attention is given to the inclusion of **vulnerable groups**, such as the long-term unemployed, persons not in education, employment, or training (NEETs), and low-skilled adults.

The government is also reforming **primary, secondary, and higher education** to embed digital competences more systematically. The national curriculum is being updated to reflect AI-driven learning environments and smart recommendation systems. In schools, teacher training includes practical modules on **online safety, AI ethics**, and the responsible use of digital tools. In higher education, institutions are being equipped with new digital infrastructure, and staff are receiving support to design and deliver **modular digital content**, contributing to a system-wide increase in **digital maturity**.

To further support lifelong learning, Croatia is aligning its voucher system with the **Council Recommendation on Individual Learning Accounts** and is actively monitoring inclusion and equity metrics as part of labour market reforms. These initiatives are supported through a substantial **EUR 211 million allocation under the RRP**, covering components related to tourism, education, R&D and labour market. The plan includes reforms to improve **basic skills among pupils** through extended instruction time, and to strengthen the link between **vocational and adult education** and labour market needs. Dedicated actions also aim to **increase the attractiveness of ICT studies and research careers**, including through improved working conditions, simplified procedures, and enhanced promotion opportunities. Complementary investments promote **upskilling and reskilling across all generations**, including in **tourism, green, and digital sectors**, helping build an inclusive and future-ready workforce ¹⁴.

2024 recommendation: Continue the efforts on digital basic skills [...] with a view to ensuring sufficient progress towards the 2030 targets.

Croatia continued implementing existing measures but did not take any new measures. In 2024, the national voucher scheme for reskilling remained active and exceeded 19 000 beneficiaries, while curriculum reform and teacher training in digital competence continued to advance. Inclusion remains a key focus, particularly for low-skilled adults and older citizens. Sustained investment will be needed to maintain momentum and close persistent gaps.

¹⁴ European Commission, [Recovery and Resilience Scoreboard: Thematic analysis Digital skills and education](#), 2024.

ICT specialists

In its roadmap, Croatia set an indicative 2030 target of around **10% of ICT specialists as a share of total employment**, with the figure standing at **5.0% in 2024**, on a par with the EU average. This marks a significant increase from 4.3% in 2023, reflecting a growth rate of **+16.3%**, far above the EU's +4.2%, which puts **Croatia on track with its national trajectory**.

The demand for digital professionals is expanding across sectors. As in other EU countries, **software and application developers** are the most sought-after ICT profile. However, Croatia diverges from the EU trend with exceptionally high demand for **field-based and infrastructure roles**. According to Eurostat web scraping data, **27.1%** of ICT-related job ads targeted **electronics and telecommunications installers and repairers** (vs 6.6% EU), and **18.5%** were for **telecommunications and broadcasting technicians** (vs 1.7% EU). These shares indicate a **strong domestic emphasis on technical implementation roles**, in addition to standard software and support functions.

In parallel, Croatia has recorded significant progress in **gender convergence**. The share of **female ICT specialists** increased from **17.5% in 2023 to 21.5% in 2024**, surpassing the EU average of 19.5%. This represents a year-on-year growth of +22.9%, compared to just +0.5% at EU level. These gains reflect the impact of targeted campaigns and scholarships, as well as national initiatives promoting women's participation in ICT. In 2025, Croatia presented the '**Women in Digital – Girls in ICT**' programme through the **Best Practice Accelerator**¹⁵, inspiring other Member States to adopt similar early engagement actions.

While employment in the ICT sector is growing, Croatia continues to face **structural skills shortages and emigration pressures**. Employer surveys show that **43% of Croatian firms report difficulties hiring candidates with the right skills**, above the EU average of 38%. In the ICT field, this is linked to a mismatch between education output and labour market needs, and to the **continued outflow of skilled graduates** from the country¹⁶.

Croatia's training and upskilling infrastructure remains underdeveloped. In 2024, only **20.44% of enterprises** provided ICT training to their employees, slightly below the EU average (22.29%) and declining from 2022. This downward trend could further exacerbate the mismatch between supply and demand for digital professionals.

To address these challenges, Croatia continues to implement several supporting measures such as **science, technology, engineering and mathematics (STEM) scholarship schemes** to support students enrolling in priority areas such as ICT and engineering, while public universities are encouraged to adapt **enrolment quotas** based on sectoral demand.

Despite these efforts, challenges remain in stabilising the domestic digital talent pipeline. The country still lacks a dedicated strategy to attract and retain international digital talent. A reform is under way through the **new Act on Scientific Activity and Higher Education**, which will allow quality scientists to be attracted from the EU and globally (including the diaspora), but this focuses on researchers rather than the broader digital workforce. The country still lacks a dedicated strategy to attract and retain international digital talent, and **brain drain of ICT professionals** remains a major

¹⁵ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are available to all Member States via the BPA Repository and are showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

¹⁶ European Commission. (2025). European Semester Annex Education and Skills: Croatia.

obstacle. While Croatia has succeeded in growing its base of ICT specialists and improving gender diversity, a more **systematic and demand-driven approach** will be needed to consolidate gains and achieve the 2030 targets.

2024 recommendation: Continue the efforts on [...] ICT specialists with a view to ensuring sufficient progress towards the 2030 targets.

In 2024, Croatia continued implementing existing measures but did not take any new measures. The country recorded strong growth in the share of ICT specialists and in female participation, and reinforced incentives for ICT studies. However, challenges persist regarding the provision of ICT training, brain drain, and labour market mismatches, requiring sustained attention to fully meet the 2030 targets.

[Key digital public services and solutions – trusted, user-friendly, and accessible to all](#)

Regarding digital public services for citizens, in 2024 Croatia scored 75.16 (2030 national target of 100) after significant progress of +11.9%. The country is on track according to its national trajectory. In the cross-border category for digital public services for citizens, Croatia improved from 47.02 in 2023 to 53.81 in 2024, recording a growth rate of 14.4%, substantially higher than the EU's 4.3%. Nevertheless, it remains below the EU average of 71.28.

Regarding digital public services for businesses, Croatia scored 65.31 in 2024 (2030 national target of 100), showing negative growth of -1.3% and remaining well below the EU average of 86.23. The country is lagging behind compared to its national trajectory. In cross-border digital public services for businesses, the score declined from 36.11 in 2023 to 32.5 in 2024, contrasting with the EU's slight positive growth.

In terms of access to e-Health records, Croatia scored 86.55 in 2024 (2030 national target of 100), after modest growth of +1.2%, standing above the EU average of 82.7. This result confirms the good performance already observed in 2023 (85.57 compared to the EU's 79.12). Croatia is broadly on track with its national trajectory.

2024 recommendation: Take measures to increase the digitalisation of public services and improve the accessibility and user-friendliness of its services to citizens and enterprises.

In 2024, Croatia continued implementing existing measures but did not take any new measures. Progress was recorded in the digitalisation of citizens' services, improvements in access to e-Health records, and the advancement of interoperability initiatives supported by RRP funding. No new dedicated measures were introduced in the 2024 roadmap adjustment, and further efforts are needed to ensure comprehensive user-centric service delivery and to close remaining gaps with EU averages.

[eID](#)

Croatia has a nationally certified eID scheme, the eOI (electronic identity card), widely adopted for accessing public services. According to Eurostat, 36.7% of Croatian citizens used their eID to access online public services in 2023, close to the EU average of 36.14%. Usage is mainly focused on national services, with cross-border functionality still limited.

In the 2024 roadmap adjustment, Croatia reinforced its preparatory work to develop a national Digital Identity Wallet aligned with EU standards. A dedicated working group has been operational since 2021, coordinating legal, technical, and organisational aspects. Preparations include enhancing the eOI

system, expanding mobile-based access via the Certilia app, and promoting qualified electronic signatures.

As of early 2025, Croatia is not participating in the EU large-scale pilots for the European Digital Identity Wallet but continues to align its infrastructure with EU standards, planning future cross-border support.

Digitalisation of public services for citizens and businesses

Croatia is making steady progress towards the EU 2030 target of 100% availability of key digital public services. Although the share of e-Government users declined slightly from 88.46% in 2023 to 82.86% in 2024, it remains significantly above the EU average of 74.71%. While no new measures were introduced in the 2024 roadmap adjustment, Croatia confirmed that major initiatives supported under the RRP would continue, including the expansion of the State Cloud, the creation of a national digital mobile platform, and the enhancement of public sector interoperability.

Simplification and interoperability remain central pillars. The development of a central register for public authorities is under way to improve data quality, promote the Once Only principle, and enable efficient information exchange, also supporting Common European Data Spaces.

Additionally, a one-stop-shop platform has been established through the Croatian RRF to harmonise helpdesk services for citizens and businesses, promoting the use of electronic signatures and national digital identities.

In terms of digital sovereignty, Croatia is strengthening its public sector cloud infrastructure under the RRP (EUR 1.3 billion investment) to ensure secure data management and trusted connections with European platforms.

Despite this progress, challenges persist regarding full system integration and user-centric service design, which will be critical to achieving the 2030 objectives.

e-Health

Croatia maintained strong performance in 2024 in access to e-Health records, scoring 86.55, above the EU average of 82.7. However, with modest growth of +1.2%, the country is lagging behind compared to its national trajectory.

No new e-Health measures were introduced in the 2024 roadmap adjustment. Efforts continue under major RRP-funded projects, notably the upgrade of the **Central Health Information System (CEZIH)**, the expansion of the **e-Prescription** and **e-Referral** platforms, and the deployment of hospital information systems. Croatia is also aligning its e-Health infrastructure with the European Health Data Space, preparing for future cross-border healthcare services.

Croatia's score increased slightly in 2024. **12 of the 13 data categories** investigated in the benchmark study are now made available in a timely manner – **all except medical images**. Citizens can now access their health data via a **mobile application**, improving user accessibility. While previously only **outpatient psychiatric care** was included under mental health services, a new project is under way to **expand the scope to additional mental health service providers**. Due to this broader definition, **the overall connectivity rate of the category has dropped below 60%**, as many newly included providers are not yet connected or supplying data to the national access service. **All other provider categories**, except **geriatric nursing homes**, are connected and supplying relevant health data. In terms of authorised access, **legal guardians** may access the data of their wards, but **citizens cannot yet delegate**

access to another person of their choice, as there is no general legal or technical framework enabling this functionality.

2024 recommendation: (i) Introduce a legal basis and provide the technical functionality for authorised persons to access electronic health data on behalf of others; (ii) Make the medical images data type available to citizens through the online access service; (iii) Offer a mobile application for citizens to access their electronic health records.

In 2024, Croatia continued implementing existing measures but did not take any new measures.

(i) **Partially addressed.** Legal guardians can access the data of their wards, but no legal or technical functionality exists for broader delegation by data subjects.

(ii) **Not addressed.** Medical images are still not accessible via the Health Portal.

(iii) **Partially addressed.** A mobile-friendly solution exists and citizens can access their health data via an app, but no unified national mobile application has been rolled out.

Building a safe and human centric digital environment and preserving our democracy

In Croatia, online participation in political and civic life is relatively high and shows an upward trend.

In 2024, 27.86% of people used the internet to participate in consultations, vote, or share opinions on civic or political issues. This share is above the EU average (20.45%), and marks a steady improvement compared to 23.38% in 2022 and 20.08% in 2023.

In 2023, more than half of Croatian internet users declared that they had encountered untrue or doubtful information online. According to the latest data, 57.77% of individuals reported encountering such content on internet news sites or social media, a figure significantly above the EU average of 49.25%. Among these individuals, 27.27% checked the truthfulness of the information, suggesting a moderate level of critical evaluation. Young people between 16 and 24 years of age emerged as those more likely to report exposure (80.52% vs 60.92% of adults between 25 and 64 years of age) and to verify information (57.13% vs 25.55% of adults). In terms of gender, males (65.28%) reported a higher exposure to doubtful content than females (50.46%), but verification rates were similar (28.45% for males and 26.12% for females).

Available data also show that in Croatia, the proportion of individuals encountering hostile or degrading messages online remains below the EU average. In 2023, 24.13% of individuals encountered such content, compared to an EU average of 33.5%. An interesting pattern is observed in the age breakdown: exposure among youth (16-24) was lower (21.47%) than among adults (25-64) (27.72%), contrary to trends observed in most other Member States. A modest gender gap was noted, with 26.13% of males and 22.18% of females reporting exposure to such content.

2024 reports of the Adria Digital Media Observatory (ADMO) provide detailed insights into the most frequent topics subject to disinformation in Croatia. Research shows that **Russian disinformation** efforts have been particularly prominent in narratives about Russia's war of aggression against Ukraine, with disinformation ecosystems involving 21 supranational clusters across Croatia and neighbouring countries, significantly influenced by Serbian pro-Russian media¹⁷. Moreover, systematic information manipulation was observed through the Facebook profiles of Russian embassies, including the Russian Embassy in Croatia, which particularly intensified following the start of the full-scale invasion of

¹⁷ ADMO Report: [Mapping Ukraine War Disinformation Ecosystem in Croatia and Slovenia](#), 2024. p. 3

Ukraine¹⁸. In addition, a considerable share of anti-Ukraine disinformation disseminated in Croatia originates from fringe news sites, predominantly based in Serbia¹⁹.

In the climate domain, a separate mapping exercise revealed the existence of 10 supranational clusters disseminating climate-related disinformation, including Croatian actors. Although the number of actors involved in climate disinformation was lower compared to COVID-19 and the military aggression in Ukraine, the presence of pseudo-media at the centre of the ecosystem was confirmed²⁰.

Research into the reporting on the **Israel-Hamas conflict** found that Croatian mainstream media largely relied on reputable international and national sources such as AFP, Reuters, BBC, and HINA during the first three days of the conflict. However, a small number of cases were found where sources previously labelled as purveyors of disinformation were used²¹.

Looking at policy responses, Croatia's initiatives mainly focus on promoting media literacy and strengthening fact-checking ecosystems. **In 2024, several digital platforms (Google, YouTube, Facebook, TikTok) maintained or introduced fact-checking and media literacy campaigns in Croatia,** including Google's Fact Check Explorer and YouTube's Hit Pause campaign. However, ADMO highlighted that these global initiatives had limited local adaptation and that user engagement with fact-checking tools remained low. Croatia's primary fact-checking partner remains **Faktograf.hr**, with cooperation expanding only moderately to other institutions.

At the institutional level, the **ADMO**, coordinated by the University of Dubrovnik and supported by partners including GONG, AFP, and several faculties of the University of Zagreb, plays a significant role in fostering media literacy and research activities against disinformation. These efforts contribute to Croatia's implementation of the Digital Services Act (DSA). The **Croatian Regulatory Authority for Network Industries (HAKOM)** has been officially designated as the Digital Services Coordinator (DSC), responsible for overseeing the application of the DSA. **Nonetheless, ADMO monitoring revealed that public awareness of DSA-related user rights remains low and that further outreach efforts are necessary.**

Finally, regarding the protection of minors, Croatia has not yet introduced specific legislation on mandatory online age verification or parental controls. However, ongoing media literacy initiatives supported by ADMO and its partners target younger audiences and aim to strengthen critical thinking skills to better resist disinformation²².

Croatia has transposed the relevant obligations of the **Audiovisual Media Services Directive (AVMSD)** into its national legislation. Under the Electronic Media Act and the **Ordinance on the Protection of Minors in the Electronic Media (Narodne Novine (NN); Official Gazette of the Republic of Croatia) No 106/2022**, video-sharing platforms under Croatian jurisdiction are required to implement user age verification systems or other technical measures to restrict access to content that could seriously harm minors' physical, mental, or moral development, such as gratuitous violence or pornography. However, in practice, most age verification systems rely primarily on basic methods, such as self-declared date of birth, with limited use of more secure technologies like ID verification or AI-based age estimation. Moreover, while parental control tools exist on some platforms, their availability and quality vary considerably, and no harmonised national requirements have been introduced so far. Unlike other

¹⁸ ADMO Report: [Russian State Actors on Facebook and Foreign Information Manipulation and Interference in the Adriatic and Balkan Regions](#), 2024. p. 3–5

¹⁹ ADMO Report: [Content Analysis of Disinformation and Narratives Related to the War in Ukraine](#), 2024. p. 3

²⁰ ADMO Report: [Mapping Climate Disinformation Ecosystem in Croatia and Slovenia](#), 2024. p. 3–5

²¹ ADMO Report: [Journalistic Sources on the Israel/Hamas Conflict in the Croatian Media](#), 2024. p. 3–55.

²² ADMO Report: [Report about Social Media Initiatives for Empowering Users, the Research Community and the Fact-Checking Community in Croatia](#), 2024. p. 4–7.

Member States that are moving toward detailed technical standards for age verification, Croatia has not yet adopted additional regulations or frameworks, such as mandatory pre-installed parental controls or coordination with the development of the **European Digital Identity Wallet** ('mini-wallet'). The minimum age for providing valid consent to digital services remains set at 16 years, in line with Croatia's implementation of the General Data Protection Regulation (GDPR) ²³.

The 2023 data on online interactions in Croatia reveal a mixed picture, with a lower proportion of individuals perceiving hostile and degrading online messages compared to the EU average. However, a significant proportion of individuals in Croatia still encountered potentially misleading information online. On a positive note, a notable share of young people (16-24) has been taking steps to verify the accuracy of online content. Overall, the findings suggest that **Croatia has been making progress in promoting digital literacy and critical thinking and highlight the importance of continued efforts to support individuals in developing these skills and to promote a safe and informed online environment.**

²³ European Audiovisual Observatory (Council of Europe), [The protection of minors on VSPs: age verification and parental control](#), 2023. p.76-78

Leveraging digital transformation for a smart greening

Croatia's RRP includes major investments to support the **revitalisation, construction and digitalisation of the energy system**, contributing to the **decarbonisation of the energy sector** (Component C1.2, R1-I1). These measures aim to modernise the electricity transmission network, enabling a better balance between generation and consumption points. The digitalisation of the energy infrastructure is expected to **increase the security of energy supply** and **reduce the environmental impact** of the accompanying infrastructure ²⁴.

In addition, Croatia is also modernising water management systems, aiming to improve resilience to climate change through digital monitoring and leakage reduction measures. However, systematic nature-based solutions and large-scale climate-proofing measures are not yet widely applied, and comprehensive monitoring and evaluation frameworks remain to be fully developed ²⁵.

In the **telecom sector**, sustainability and energy efficiency are increasingly recognised as priorities. Operators have initiated **voluntary green transition actions**, including using **renewable energy sources** and **afforestation programmes**. However, **these efforts are not yet coordinated under a dedicated national green telecom policy** or a broader strategic framework linking digitalisation to climate objectives.

In addition, measures already mentioned in previous chapters also contribute to supporting the green and digital transitions. The **State Cloud** includes enhanced functionalities for more efficient and sustainable data management. Similarly, the establishment of the **Croatian Competence Centre for Semiconductors (CROCCS)** is expected to foster the development of greener ICT hardware solutions, supporting energy efficiency in the digital ecosystem.

In terms of **consumer behaviour** towards environmentally friendly ICT usage, Croatia's performance remains mixed. In 2024, only **12.51%** of individuals considered **energy efficiency** important when purchasing ICT devices (EU average: 19.35%), and only **0.70%** considered **eco-design** important (EU average: 12.04%). Instead, **price (58.33%)** and **device performance (54.74%)** remain the dominant purchasing criteria.

Concerning device end-of-life practices, Croatia reported **lower recycling rates** than the EU average: **12.4%** of old desktop computers, **7.99%** of old laptops/tablets, and **5.59%** of old mobile phones were recycled (EU averages: 14.66%, 11.31%, and 10.93%, respectively). However, **reuse practices** are stronger: **33.56%** of Croatians reported **selling or giving away** their old mobile phones, compared to an EU average of 18.05%, reflecting an emerging culture of circular economy practices.

Overall, Croatia's digital contribution to the green transition is becoming stronger, particularly through large infrastructure investments in the energy sector and early telecom green actions. However, further progress is needed in **coordinating sustainability efforts**, **raising consumer awareness**, and **embedding environmental criteria into digital policies**.

²⁴ European Commission, [Recovery and Resilience Scoreboard, Digital Public Services Thematic Analysis](#), 2024.

²⁵ European Commission. (2025). European Semester, Annex Climate: Croatia.

2024 recommendation: Develop a coherent approach to twinning the digital and green transitions:

- Promote improvements in energy and material efficiency of digital infrastructures, in particular data centres.
- Support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.
- Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as attracting relevant financing.

In 2024, Croatia made some efforts to address the recommendation through new policy actions in 2024. Croatia made some efforts through RRP-supported digitalisation of the energy network, but no coherent national strategy or monitoring framework has been established yet. Voluntary green actions in the telecom sector remain fragmented. Further efforts are needed to fully address the recommendation.

Annex I – National roadmap analysis

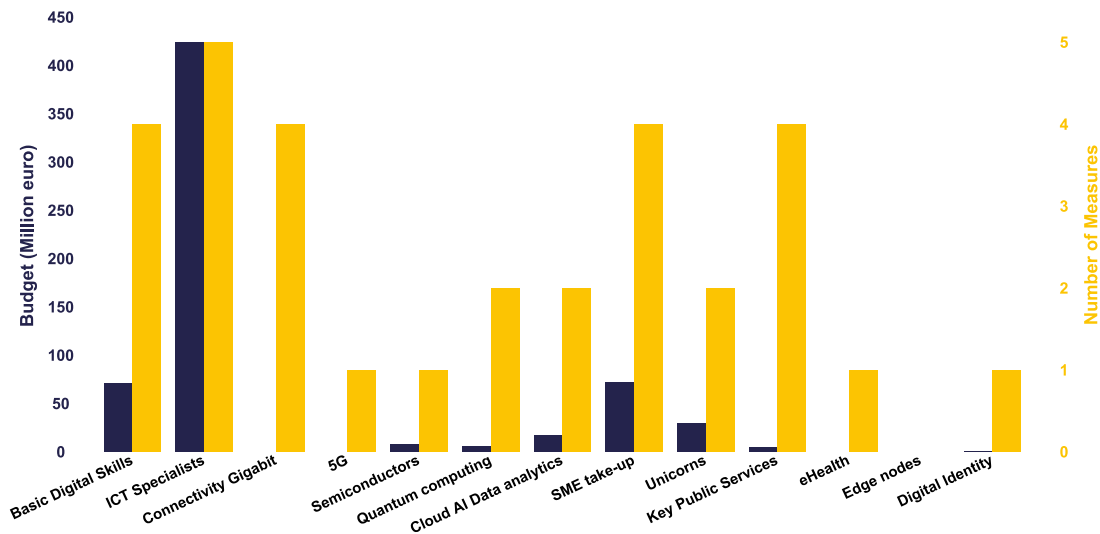
Croatia's national Digital Decade strategic roadmap

Croatia submitted an adjustment to its national roadmap in January 2025, following the 2024 recommendations. The adjustment clarified the national approach, updated 5G coverage targets, and refined the measure set, without fundamentally revising the strategic directions. It also improved alignment with the Digital Decade objectives, enhanced stakeholder consultations, and updated links to policy.

- **Targets:** Croatia partially addressed the recommendation to raise ambition. The 2030 target for overall 5G coverage remains aligned with the EU target (100%), while a new mid-band 5G coverage target (75% by 2030) was introduced. This is below the EU ambition but reflects national circumstances. No changes were made to targets for ICT specialists or AI/data analytics adoption. A target for edge node deployment, required under the Digital Decade, is still missing.
- **Measures:** The measure repository was strengthened, with updated and more detailed descriptions across connectivity, skills, AI/data, cloud, and digital public services. However, no fully new measures were introduced.
- **Digital Rights and Principles:** Mapping of measures to the Digital Decade objectives and the European Declaration on Digital Rights and Principles was improved.
- **Consultation:** The stakeholder consultation process was enhanced, including a kick-off conference in September 2024 and continuous coordination with relevant state bodies and associations, such as the Croatian Employers' Association and the Croatian Chamber of Economy.

While Croatia's adjusted roadmap covers the majority of Digital Decade targets, the absence of a target for edge node deployment highlights an important gap. Overall, the Croatian roadmap includes 31 measures with a budget of EUR 635 million (equivalent to 0.74% of GDP).

Measures and budget in national roadmap ²⁶



Croatia's adjustment improves the structure and clarity of the roadmap. The strengthened measure descriptions, enhanced mapping to objectives, and update of 5G targets are positive developments. However, the lack of new measures, the limited ambition for key digital transformation areas such as AI/data adoption and ICT specialists, and the absence of an edge node target remain significant challenges. Funding levels also remain modest relative to the scale of needs, notably for AI, cloud, and rural connectivity. While the adjustment confirms a solid baseline, further efforts are needed to maintain momentum, particularly in driving the twin transition, SME digitalisation, and the adoption of advanced technologies.

²⁶ When referring to national roadmaps, the data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance has been carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Croatia is a member of the three established EDICs: the Alliance for Language Technologies EDIC, the Local Digital Twins towards the CitiVERSE EDIC and the EUROPEUM EDIC. In addition, Croatia is working towards setting up EDICs in the area of connected public administration, cybersecurity skills, agri-food and genomics. Croatian entities are indirect partners in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Croatia is a participating state of the EuroHPC Joint Undertaking (JU) and the Chips JU.

Croatia has contributed to the Best Practice Accelerator²⁷ by sharing a measure in the framework of the Digital Skills cluster (**Women in Digital – Girls in ICT**).

EU funding for digital policies in Croatia

Croatia allocates 20% of its total recovery and resilience plan to digital (EUR 1.4 billion)²⁸. In addition, under cohesion policy, EUR 755 million (representing 9% of the country's total cohesion policy funding), is dedicated to advancing Croatia's digital transformation²⁹. According to JRC estimates, EUR 1.4 billion directly contribute to achieving Digital Decade targets (of which EUR 0.9 billion comes from the RRF and EUR 0.5 billion from cohesion policy funding)³⁰.

Digital investments are focused on digital skills, digitalisation of public services, connectivity, and support for business digitalisation.

The total amount of funding mobilised remains consistent with the 2024 report, confirming the strong alignment between EU financial support and Croatia's digital transition priorities.

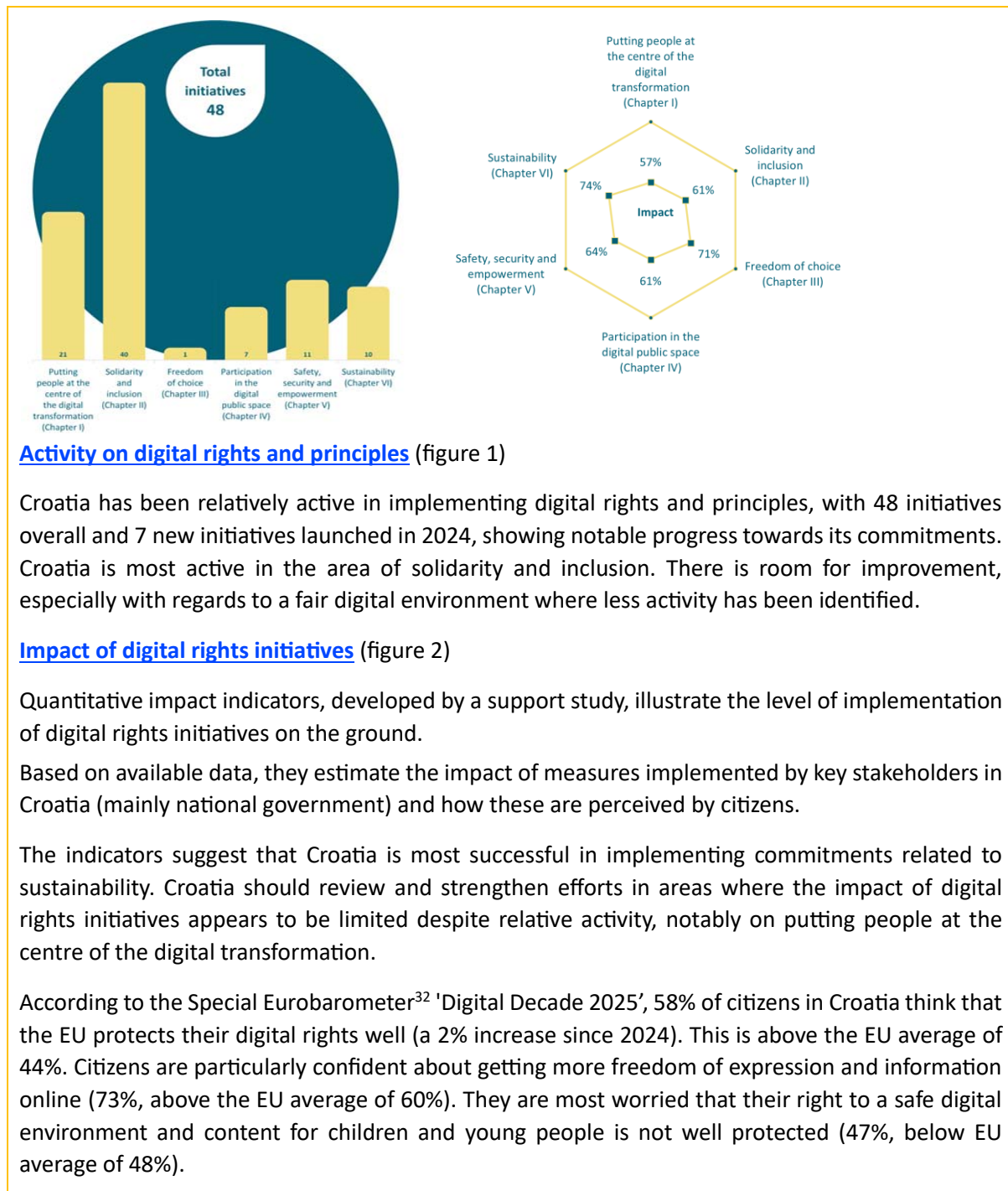
²⁷ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are available to all Member States via the BPA Repository and are showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

²⁸ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

²⁹ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³⁰ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital rights and principles³¹



³¹ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).

³² Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
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DIGITAL DECADE 2025 COUNTRY REPORTS

Cyprus

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Executive summary

Cyprus has made remarkable progress in gigabit connectivity infrastructure but continues to face challenges in closing the digital skills gap between different population segments. Nonetheless, the country can count on a relatively good share of ICT specialists in employment.

Cyprus shows a substantial level of ambition in its contribution to the Digital Decade having set 14 national targets, 86% of which are aligned with the EU 2030 targets. The country is following its trajectories very well with 100% of them being on track (based on the 2024 trajectories defined for 8 KPIs out of 8 analysed). Cyprus addressed 63% of the 11 recommendations issued by the Commission in 2024, either by implementing significant policy changes (36%) or making some changes (27%) through new measures.

In 2024, the adoption of Artificial Intelligence (AI) by enterprises shows significant progress while remaining subpar. An AI taskforce has recently been tasked with formulating recommendations for a national strategy to harness the growth potential of AI. In addition, last year, Cyprus adopted a new national strategy for research and innovation (2024-2026), aimed at positioning the country as a regional hub for entrepreneurship and high-tech innovation. With regards to the digitalisation of public services for citizens, while progress was made last year, the pace of change is not yet sufficient to reach the EU average. Nonetheless, Cyprus remains on track according to its national trajectory. The digital transformation of the public sector continues to be a priority, with several measures added to the revised roadmap, including a measure to improve access to e-health records.

Digital Decade KPI ⁽¹⁾	Cyprus				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	CY	EU
Fixed Very High Capacity Network (VHCN) coverage	77.1%	89.1%	15.5%	72.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	77.1%	89.1%	15.5%	71.2%	69.2%	8.4%	100.0%	-
Overall 5G coverage	100.0%	100.0%	0.0%	100.0%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	5	9	80.0%	-	2257	90.5%	10	10000
SMEs with at least a basic level of digital intensity (2)	-	74.3%	3.0%	-	72.9%	2.8%	90.1%	90%
Cloud	45.5%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	4.7%	7.9%	69.2%	8.0%	13.5%	67.2%	75.0%	75%
Data analytics	33.5%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	58.0%	-	-	-	-	-	-	75%
Unicorns	3	3	0.0%	-	286	4.4%	5	500
At least basic digital skills	49.5%	-	-	-	-	-	80.0%	80%
ICT specialists	5.6%	5.0%	-10.7%	5.2%	5.0%	4.2%	10.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	74.0	77.6	5.0%	71.5	82.3	3.6%	100.0	100
Digital public services for businesses	86.1	86.0	-0.1%	89.8	86.2	0.9%	100.0	100
Access to e-Health records	68.1	75.4	10.7%	74.1	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, which is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the Special Eurobarometer 'Digital Decade 2025', 81% of Cypriot citizens consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 91% consider it important to counter and mitigate the issue of fake news and disinformation online, and on competitiveness, 87% consider it important to ensure that European companies can grow and become 'European Champions' capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Cyprus demonstrates strong performance in all connectivity indicators, with outstanding results in gigabit coverage (VHCN and FTTP), as well as in overall 5G coverage. The share of small and medium-size enterprises (SMEs) having at least a basic level of digital intensity is progressing quite well, slightly faster than the EU average. Enterprises are also increasingly making use of AI technologies, but uptake remains relatively low compared to the EU. The AI taskforce, recently appointed to promote the wider adoption and use of Artificial Intelligence (AI) in Cyprus, will focus on reinforcing research and development, innovation, and practical applications for economic growth. The country can also rely on a very vibrant startup ecosystem, which is growing fast. Cybersecurity is another of Cyprus's priority areas, with a new measure added in the roadmap to reinforce the country's capacity to respond to growing threats and support SMEs and startups in managing cybersecurity risks. In parallel, Cyprus is working with other EU countries to set up a coalition that addresses the cybersecurity skills shortage in the EU.

Protecting and empowering EU people and society

Cyprus faces a challenge in terms of digital skills, with only 49.46% of the population having at least a basic level of digital skills, with significant gaps between education levels and age groups. The revised roadmap upgraded a measure aimed at developing of digital skills through customised training for specific groups. In 2024, the share of ICT specialists in employment decreased slightly to 5.0% compared to 5.6% in 2023, although it is still at the EU average. Meanwhile, the digitalisation of public services for citizens has made progress but remains below the EU average, and online public services for businesses are stagnating. Access to e-health records, while improving, remains below the EU average. Nonetheless, the revised roadmap demonstrates Cyprus's commitment to leveraging digital health technologies with three additional measures aimed at improving e-health records.

Leveraging digital transformation for a smart greening

Cyprus is developing a broad strategy for smart cities where digital technologies will play a major role in minimising environmental impact. The national digital strategy also acknowledges the importance of reducing the environmental footprint of the digital sector. Furthermore, the Cyprus' Smart Specialisation Strategy 2030 explicitly recognises the critical role of digital technologies in supporting the green transition, promoting the development of energy-efficient digital solutions and infrastructures. However, the adjustment of the roadmap does not fully reflect the adoption of an overall approach for twinning the digital and green transition.

National digital decade strategic roadmap

Cyprus submitted an updated national Digital Decade roadmap on 13 January 2025, with 11 additional measures, 6 revised measures and an adjusted trajectory for ICT specialists that aligns with the EU 2030 target. Two missing targets and trajectories have been added for unicorns and edge nodes,

completing the set of 14 national targets and trajectories. Except for unicorns, all targets are aligned with the EU's level goals for 2030. The adjustment also includes reporting on the consultation of stakeholders. Overall, it addresses a substantial number of roadmap recommendations issued in 2024. The revised roadmap is composed of 62 measures with a budget of EUR 988.4 million, comprising EUR 738.4 million from public funds (equivalent to 2.21% of GDP). Although it sets out measures for most of the targets, there is room to further consolidate action in some areas, such as basic digital skills and the digitalisation of public services for businesses.

As Cyprus's 2020-2025 Digital Strategy comes to an end in 2025, a new comprehensive strategy (2026-2030) will be developed in line with EU wide strategic goals. It will focus notably on accelerating the digital transformation across four key pillars — digital skills, digital infrastructure, digitalisation of businesses, and digital public services — while integrating horizontal priorities such as artificial intelligence, interoperability, and data governance. It is expected to support the Digital Decade's goals, reduce the administrative burden and boost competitiveness.

Funding & projects for digital

Cyprus allocates 25% of its total recovery and resilience plan to digital (EUR 274 million)¹. In addition, under cohesion policy, EUR 113 million, representing 12% of the country's total cohesion policy funding, is dedicated to advancing Cyprus' digital transformation². Cyprus is a member of the EUROPEUM-EDIC on blockchain. It is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Cyprus is not yet active in contributing to the Digital Decade's Best Practice Accelerator³, but participated in the workshops organised in the different clusters.

Digital rights and principles

According to a support study, Cyprus has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 42 initiatives overall and 3 new initiatives launched in 2024. Cyprus is mostly active in digital education, training and skills, while less activity has been identified with regards to the interactions with algorithms and artificial intelligence systems. Measures to put people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing freedom of choice.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Recommendations

- **Basic digital skills:** Strengthen and expand targeted initiatives to enhance digital literacy among vulnerable groups. Provide accessible and tailored training programmes, and targeted awareness raising actions to bridge the digital gap.
- **Digital public services:** Accelerate the implementation of the digital transformation strategy for the public sector, prioritising seamless and inclusive access to digital services for all citizens.
- **Adoption of AI by businesses:** Sustain the efforts, with a special attention to SMEs' uptake of AI, in the design of the AI strategy.
- **Access to e-health records:** Ensure a comprehensive approach and swift implementation of on-going projects to allow access to e-health records.
- **Smart greening:** Enhance efforts to develop an integrated approach for the digital and green transition, specifically to improve the energy efficiency of digital infrastructure, and to accelerate the deployment of digital solutions to reduce the carbon footprint in other sectors.

A competitive, sovereign and resilient EU based on technological leadership

Cyprus's significant achievement in the deployment of gigabit connectivity infrastructure is a crucial asset for digital transition and economic growth. Since 2022, the country also benefits from 5G coverage in 100% of populated areas. The Department of Electronic Communications of the Deputy Ministry of Research, Innovation and Digital Policy (DMRID) continues to implement digital transformation reforms and investments, which constitutes a governmental priority to leverage the innovation and digital potential of the country.

A new National Strategy for R&I (2024-2026) has been developed to promote Cyprus as a regional hub for research and innovation entrepreneurship. In particular, it will include state-of-the-art digital technologies such as high-performance computing, cybersecurity and quantum technologies to develop solutions for agriculture, water management and smart cities. Cyprus also established a national Artificial Intelligence (AI) Taskforce to address the challenges and opportunities represented by this cutting-edge technology to enhance the economy, ensure competitiveness, and improve the quality of life for citizens.

In 2021, the R&D expenditure of businesses in the ICT sector represented 66.74% in Cyprus, the highest share by far among EU countries. At 55.91% the proportion of R&D personnel in the ICT sector is also the highest in the EU. However, this needs to be put in perspective: with the R&D expenditure relative to GDP, which in 2023 was at 0.68% for Cyprus among the lowest in the EU⁴. Despite this, the 2024 European Innovation Scoreboard ranks Cyprus as a 'strong Innovator' for the third consecutive year, underscoring the country's effective innovation ecosystem and capacity to achieve innovation outcomes.

Cyprus' start-up ecosystem is very dynamic and is experiencing rapid expansion. Its performance helped to draw attention to Cyprus as an emerging place for innovation and entrepreneurship. According to the [Global Startup Ecosystem Index](#), the Cypriot ecosystem is the fastest-growing EU start-up hub; it now has more than 400 start-ups, five times more than in 2020.

With growing demand and sovereignty becoming central to the digital transition, the deployment of a new submarine cable passing by Cyprus is of strategic importance. The BlueMed submarine cable will reinforce the country's backbone digital infrastructure, connecting Cyprus with several countries bordering the Mediterranean and beyond. Another challenge that Cyprus is addressing is the increasing prevalence of AI. According to the Digital Decade Eurobarometer 2025⁵, 91% of respondents in Cyprus consider that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

Building technological leadership: digital infrastructure and technologies

Cyprus's gigabit connectivity infrastructure roll-out is clearly accelerating with a very positive outlook to achieve the target 2030. Cyprus demonstrates strong performance in all connectivity indicators, with notable achievements in gigabit coverage (VHCN and FTTP), and in overall 5G coverage. However,

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

the country is lagging behind the EU in 5G coverage in the 3.4-3.8 GHz band which is necessary for advanced applications requiring a wide spectrum bandwidth, and in the assignment of 5G pioneer bands.

Connectivity infrastructure

Cyprus's very high-capacity network (VHCN) coverage surged to 89.05% in 2024 outpacing the EU average of 82.49%. In 2023, the percentage of households covered by fixed VHCN was 77.07%, showing a growth rate of 15.5% in one year, significantly higher than the EU's 4.9%. For households in sparsely populated areas, Cyprus's coverage was 55.70% in 2023, marginally above the EU's 55.59%, but in 2024 it grew significantly to 78.10%, faster than the EU average of 61.89%. The growth rate for Cyprus was 40.2%, compared to the EU's 11.3%.

Cyprus's fibre to the premises (FTTP) coverage of 89.05% is like VHCN, significantly surpassing the EU's 69.24% in 2024. In 2023, coverage was at 77.07% representing a growth rate of 15.5% and outperforming the EU's 8.4%. For households in sparsely populated areas, Cyprus's coverage also dramatically increased from 55.7% in 2023 to 78.1% in 2024, significantly higher than the EU's 58.78%, showing a growth rate of 40.2% compared to the EU's 11.9%.

Overall, internet take-up is high in Cyprus (94.92%), slightly above the EU average (94.09%). The share of fixed broadband subscriptions of at least 100 Mbps services (76.67%) exceeded the EU average (71.88%) in 2024, representing a growth rate of 20.5% far ahead of the EU's 9.1%. For fixed broadband subscriptions with speeds of 1 Gbps or more, Cyprus was lagging behind the EU average. In 2024, only 3.32% of subscriptions were at this speed, compared to the EU's 22.25%.

Cyprus had already reached the 2030 target of 100% 5G coverage in 2022, while the EU average stood at 94.35% in 2024. Cyprus 5G coverage in the 3.4-3.8 GHz band did not increase in Cyprus between 2023 and 2024 - it remained at 35.00% for all households - while the EU average increased from 51.06% in 2023 to 67.72% in 2024, representing a growth rate of 32.6 %. For households in sparsely populated areas, Cyprus's coverage remained at 28.00% in 2024, still higher than the EU's (26.19%), despite its sustained growth rate of 65.1%.

Cyprus's assignment of 5G pioneer bands was 66.67% in both 2024 and 2025, below the EU's 73.4% and 74.63% respectively. Cyprus's assignment of 5G pioneer bands remained unchanged between 2024 and 2025, during which EU's growth was 1.7%.

VHCN and FTTP

Cyprus remains committed to its national target to reach 100% gigabit connectivity coverage by 2030. The country is on track according to its national trajectories. The latest figure in 2024 (89.05%) is even above the forecast made by Cyprus for that year in its national trajectories for both VHCN and FTTP.

The implementation of the broad investment project for deploying VHCN in underserved areas is advancing very well. The first target of at least 10 000 premises covered was reached in March 2025. By the end of 2025, significant progress in coverage is expected across all 3 intervention areas, with full rollout scheduled for completion by mid 2026. A small share of households may remain unserved due to their location in particularly remote or geographically challenging zones, where infrastructure is generally limited. Any residual gaps will be covered through 5G FWA (100Mbps) deployment, achieving 100% coverage across all populated areas. The other major investment project supported by

the recovery and resilience plan (RRP) to incentivise the uptake of VHCN services (voucher scheme) will also contribute to digital inclusion by providing people with affordable access to secure and fast connectivity. Already 70 000 households have benefited from the scheme. The aim is to reach 82 000 households including in remote and rural areas by mid-2025. These projects coupled with planned reforms to facilitate and accelerate investments in VHCN as set out in the initial roadmap, are contributing to tangible results.

2024 recommendation on connectivity infrastructure: Maintain the pace of VHCN roll-out, with a special attention to reach the underserved areas.

Cyprus has fully addressed the recommendation, with the significant results in roll-out of fibre in 2024 confirming that the pace of VHCN roll-out is well on track. The implementation of the large investment measures, funded by the RRP and especially dedicated to roll-out of fibre in underserved areas, is progressing well.

In 2024, the national telecom regulator (NRA) continued to implement symmetric market regulation. This facilitates FTTH deployment by alternative operators. Regarding the slow progress in the uptake of fixed broadband subscriptions with speeds of 1 Gbps or more, a [consumer study of OCECPR](#) shows that 50% of consumers do not know their actual speed with pricing and network reliability being the most important reasons when choosing an ISP. As a result, consumers in Cyprus buy the entry speed, which is 200 Mbps, and don't actively purchase the upgrade.

Regarding the switch-off of copper networks, the Operator holding significant market power (SMP) plans to switch off 80% of its network by 2028 and 100% by 2030. The estimation is that about 15-18% of customers are still on copper networks. The NRA is not involved in the switching off process, other than collecting information on the progress by the SMP operators on a yearly basis according to the rules set in the market analysis in 2022. Customised campaigns targeting customers were carried out to encourage them to change to a fibre network. No fees are imposed on customers for migrating to a fibre network in an effort to motivate them and therefore accelerate the copper switch-off.

In 2024, the NRA entered into discussions with the DMRID on the future broadband strategy (2026-2030), and on establishing an action plan for the implementation of the Gigabit Infrastructure Act (GIA). Discussion includes, among other things, consideration on the involvement of local authorities regarding access to local lands and the granting of permits.

In December 2024, the decision that the BlueMed East submarine cable would land in Cyprus reinforced the resilience and security of the island's backbone connectivity infrastructure. Sparkle in partnership with the telecom incumbent in Cyprus, has been granted EUR 14.1 million by the [Connecting Europe Facility](#) programmes for the deployment of the BlueMed East cable in the eastern Mediterranean touching Greece (Crete) and Cyprus, thereby strengthening connectivity alongside the India-Middle-East-Europe Economic Corridor and putting the country on the map of the global digital communications gateway. It will contribute to responding to the growing demand for advanced Internet services and digital content in Cyprus.

The security of the submarine cables is a high priority for an island nation like Cyprus in line with the priority of the Commission. Cyprus is actively participating in the Submarine Cable Infrastructure Expert Group, composed of Member States and the EU Agency for Cybersecurity (ENISA). Cyprus also considers reinforcing the security of the submarine cables in the country's future crisis management plan, in line with NIS2 regulation.

Cyprus has already reached the EU 2030 5G coverage target, namely 100% of households covered by at least one 5G mobile network. The country is therefore on track according to its national trajectory.

Regarding the remaining unassigned spectrum 26GHz band, the regulatory authority has authorised the use in pilot mode, after reassessing the existence of a demand from operators. As the interest was limited, it was decided to grant authorisation to use this band in urban areas in experimental mode to those interested. The use and promotion by the operators will be monitored by the regulatory authority and, if deemed satisfactory, it will proceed with the auction of the 26GHz band.

2024 recommendation on connectivity infrastructure: (i) Regularly assess emerging market demand for the remaining unassigned spectrum in the 26GHz band; (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

Cyprus has fully addressed the recommendation by re-assessing the 26GHz band market opportunities. Since there was only limited interest from market operators, it was decided to initially attribute it as a pilot licence to interested operators and monitor its use in order to decide whether to proceed to auction. **On the 5G stand-alone, Cyprus made some efforts to address the recommendation through new policy actions.** It plans to ask network operators to update their multi-vendor strategies when it comes to 5G, given the planned transfer to 5G-standalone cores.

Regarding the security of 5G networks, a legal framework has been in force for some years in Cyprus for vertical sectors; the framework includes specific requirements concerning the 5G Toolbox. In 2025, the Digital Security Authority (DSA) plans to launch an on-site audit to monitor the level of implementation of the 5G Toolbox. It will start with the telecoms sector to assess whether its plans meet its obligations.

The DSA and the OCECPR continue to work on the creation of an OPEN RAN lab as part of the EU project 5G-TACTIC on 5G networks cybersecurity and trust. After a testing and evaluation phase, it may serve as a regional lab, providing interested operators and other relevant parties with opportunities to acquire knowledge and insights into OPEN RAN as well as to gain knowledge and test specific security aspects for an OPEN RAN. The project is expected to be completed by December 2026.

Semiconductors

In the adjustment of its roadmap, Cyprus did not report additional development regarding semiconductors. But measures were in preparation in 2024 under the Chips for Europe Initiative to set up in Cyprus a competence centre, which will provide access to technical expertise and experimentation in the area of semiconductors and strengthen Cyprus's role in the European semiconductor ecosystem.

2024 recommendation on semiconductors: Draw up a strategy to support research and innovation to contribute to the European semiconductor ecosystem.

No information available on measures taken to address the recommendation. Although the new National Strategy for R&I (2024-2026) could have a spill-over effect on research and innovation related to semiconductors.

Edge nodes

According to the Edge Nodes Observatory Report, Cyprus is estimated to have deployed nine edge nodes by 2024, almost double the estimated five⁶ in 2023. Cyprus emphasises that, in absence of direct survey inputs, this figure is based on extrapolated estimation generated through statistical modelling drawing on variables such as population, GDP, surface areas and investment data. It remains subject to updates as new data become available.

In its revised national roadmap, Cyprus added a target and trajectory of ten edge nodes deployed by 2030. The DMRID highlighted that this is an extrapolation, and that the projected trajectory between now and 2030 is a conservative outline considering the national advancement and the complexity of edge node deployment.

2024 recommendation on edge nodes: Continue to assess the market to develop measures or actions in the short term to contribute to the EU edge nodes target

In 2024, Cyprus continued to monitor the technological advancements in this field, but did not take any new policy actions. The DMRID follows the EU Observatory's work closely. Currently, the insights relating to Cyprus are based on extrapolated estimates, derived through statistical models that factor in various attributes including population density, GDP and surface area. It remains committed to supporting the EU's successful deployment of edge node infrastructure across the region and the broader data strategy.

Quantum technologies

Cyprus is currently developing the second phase of the Cyprus national high-performance computing (HPC) competence centre (NCC-CY) which will contribute to building research capacities in quantum technologies. Since 2020, it has operated a national HPC competence centre in the framework of the European High-Performance Computing Joint Undertaking (EuroHPC JU). The EuroCC2 project (2023-2025) focused on providing technical support to the Cypriot computational community, with a strong focus on training and industry.

In addition, the Cyprus Quantum Communication Infrastructure (CYQCI) project which started in 2023 will set the foundation for the connection with the EuroQCI network via satellite communication and the development of an optical ground station (OGS) in Cyprus.

⁶ The estimation for 2023 has been revised since the publication of the SDDR24.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Cyprus performed well achieving above-EU-average adoption rates in cloud computing and data analytics, though trailing behind in AI uptake. However, SMEs, which dominated the enterprise landscape and contributed over half of the country's economic value added, lagged behind large enterprises in the uptake of advanced digital technology. In terms of basic digital intensity, SMEs in Cyprus progressed slightly above the EU average. In Cyprus, the start-up ecosystem is very dynamic and experiencing rapid expansion.

SMEs with at least basic digital intensity

In Cyprus, 3 out of 4 (74.29%) SMEs had at least a basic level of digital intensity in 2024, up from 70.05% in 2022⁷. With an annual growth rate of 3.0%, this positioned Cyprus slightly above the EU average of 72.91%. Notably, 37.21% of all SMEs have high or very high digital intensity, surpassing the EU average of 32.66%. Overall, this demonstrated steady improvement, particularly in advanced digital engagement of SMEs in Cyprus.

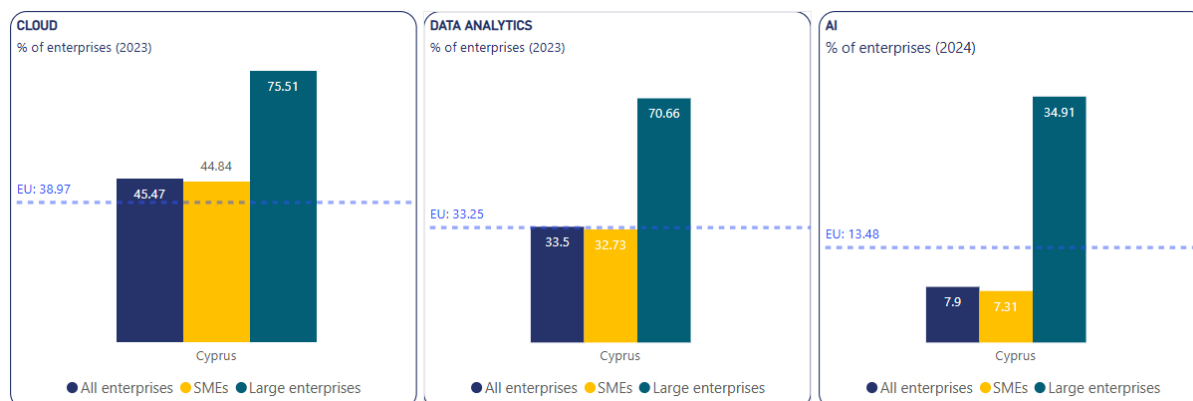
In 2022, SMEs in Cyprus produced 51.4% of the total value added in the economy, while large enterprises contributed 23.7%. SMEs with more than 10 employees constituted about 97.9% of the enterprises in the country, while large enterprises represented 2.1%.

Cyprus's national target for SMEs' digital intensity is 90.1% in line with the EU target for 2030 of 90%. The country continues to implement the 'Digital Upgrade of Enterprises' programme, which is partially funded by the RRP and partially by the 2021-2027 THALIA programme (total budget EUR 30 million). In total, the two first calls received 915 proposals. A third call was launched early 2025 with a budget of EUR 14 million, including savings from the first call. The programme is open to existing SMEs wanting to invest in digital upgrading (including e-commerce) and new SMEs planning to invest in e-commerce, online stores or uptake of advanced digital technologies, such as AI, blockchain, cloud computing and big data.

The European Digital Innovation Hub (EDIH) DiGiNN is the sole EDIH running in Cyprus and a strategic partner for the digital transformation of enterprises. Co-funded by the DMRID, it acts as a coordinated group of 16 organisations from academia, research, business and technology industry and aims to provide Cypriot businesses with a one-stop-shop for their digitisation journey: coaching and mentoring by reputable experts, access to the most advanced infrastructure and facilities, help with finding investments, networking and access to innovation ecosystems. The Hub's experience on the ground, being in contact with businesses and their needs, will also be of benefit in terms of the design of policies geared towards digital transformation of businesses. A mid-term review took place in early 2025, and the results are awaited. One issue already identified in the process of SMEs' digital transition is that enterprises in Cyprus are very small in size. It is difficult to convince them to commit to their digital transformation when they face challenges such as limited resources and investment capacities.

⁷ 2022 is the last comparable year that used a similar methodology for measuring the digital intensity of enterprises.

Take up of cloud/AI/data analytics



According to new data collected in 2024, 7.9% of enterprises in Cyprus were using AI technology in 2024, revealing a relatively low uptake compared to the EU average of 13.48%. Nonetheless, Cyprus experienced significant growth in uptake of AI (69.16%) compared to 2023 (34.5%). More specifically, in 2024 uptake among SMEs was 7.31%, while large enterprises had a higher usage rate of 34.91%. Hence, the gap between SMEs and large enterprises in Cyprus was 27.6 percentage points, in line with the EU gap.

The adoption of cloud, data analytics and the indicator measuring the three technologies together (AI, cloud and data analytics) have not been measured in 2024. But looking into the adoption rate by size of enterprises provides some additional information.

Cloud uptake in Cyprus reached 45.47% in 2023, surpassing the EU average of 38.97%. More specifically, SMEs had an adoption rate of 44.84%, while large enterprises exhibited a higher rate of 75.51% (3 out of 4). This reflects a difference of 30.67 percentage points between SMEs and large enterprises in Cyprus, which aligns with the EU gap.

As regards data analytics, according to the latest available data, 33.5% of enterprises in Cyprus performed data analytics in 2023, slightly above the EU average of 33.25%. More specifically, SMEs showed lower uptake at 32.73%, while 70.66% of large enterprises used data analytics. This reflects a gap of 37.93 percentage points between SMEs and large enterprises, which aligns with the EU gap.

When measuring the three technologies together, according to the latest available data from 2023, 57.98% of enterprises in Cyprus used AI technologies, sophisticated or intermediate cloud computing services, or data analytics, corresponding to a slightly higher uptake than the EU average of 54.7%. More specifically, uptake among SMEs was slightly lower at 57.3%, while large enterprises exhibited a notably higher rate of 90.52% (more than 9 out of 10). This indicates a percentage point difference of 33.22 between SMEs and large enterprises in Cyprus, which is in line with the EU gap.

- [Cloud](#)

Cyprus's national target is in line with the EU's 2030 target (75%). There is no specific update to report beyond what is included in the section above.

- [Data Analytics](#)

Cyprus's national target is in line with the EU's 2030 target (75%). There is no specific update to report beyond what is included in the section above.

- [Artificial Intelligence](#)

Cyprus national target is in line with the EU 2030 target (75%). The country is on track according to its national trajectory. Although it presents a relatively low uptake of AI by businesses (7.90%) compared to the EU average (13.48%) in 2024, its growth rate in one year is significant and encouraging. Furthermore, Cyprus ranks 35th out of 174 countries in the [IMF AI Preparedness Index](#) which provides an insight into the country's readiness to leverage AI for economic growth.

In January 2025, Cyprus appointed an AI Taskforce to shape the national AI strategy to leverage the potential of AI for growth. The AI Taskforce, chaired by the Chief Scientist for Research, Innovation and Technology, will provide recommendations on practical applications of AI to the benefit of the economy and the public sector. The AI Taskforce comprises AI experts from academia and industry. It will also make recommendations on how to strengthen the AI research and innovation ecosystem.

To leverage the local technology ecosystem and the existing capacities, a funding programme (EUR 5 million) will be set up to allow companies to join forces with the public sector to develop innovative AI solutions to enhance public services. The programme is currently under development in collaboration with the Research and Innovation Foundation (RIF) and in consultation with other ministries and government authorities.

Cyprus also plans to be part of the EU AI ecosystem to foster business innovation in this field by encouraging the participation of start-ups and businesses in the Greek AI factory, Pharos. The collaboration will provide stakeholders in Cyprus with end-to-end user support, from upskilling and data provisioning to AI model training and fostering business innovation.

Cyprus performed well, achieving above-EU-average adoption rates in cloud computing and data analytics, though trailing behind in AI uptake. However, SMEs, which dominated the enterprise landscape and contributed over half of the country's economic value added, lagged behind large enterprises in digital transformation. Addressing this disparity is essential for strengthening the competitiveness and productivity of smaller enterprises within the Cypriot economy.

2024 recommendation on cloud/AI/data analytics: Consider if additional targeted measures for facilitating the adoption of AI by enterprises, in particular SMEs, would be necessary to reach the target by 2030.

Cyprus made some efforts to address the recommendation through new policy actions in 2024. Cyprus started the process of updating its national AI strategy to enhance the potential for growth linked to the adoption of AI by enterprises and the public sector. It also plans to establish a funding programme dedicated to innovative AI solutions to address challenges faced by the ministries and enhance public services (as described above).

In its revised roadmap, Cyprus added a substantial budget for advanced digital technology with its membership contribution (EUR 450 000) to the European Digital Infrastructure Consortium (EDIC) EUROPEUM on blockchain of which it is a founding member. By responding to the expression of interest to participate in various EDICs, Cyprus expects to benefit from reinforcing its cooperation with other Member States in advanced digital technologies and to develop robust infrastructure and services essential for digital growth. The country is also exploring AI-related EDICs for cooperation with other Member States.

Unicorns, scale-ups and start-ups

At the beginning of 2025, Cyprus had three unicorns⁸ unchanged from 2024. In its revised national roadmap, Cyprus added a trajectory and a target of five unicorns by 2030.

Cyprus's start-up ecosystem continued to grow fast in 2024, having five times more start-ups than in 2020. It was considered the EU's fastest-growing start-up ecosystem by the StartupBlink Index in 2024, especially in the fintech and gaming sectors.

The venture capital (VC) company managing Cyprus's first equity fund started operating at the end of 2024 to boost access to finance for start-ups and scale-ups. With the support of the RRP, it represents an important step for the start-up ecosystem and for investments in pre-seed and seed-stage start-ups as access to finance remains challenging for them. The initial capital is EUR 27.5 million.

The 'Cyprus Startup Visa' scheme has been renewed until December 2026. It supports the establishment of new innovative start-ups from non-EU countries in Cyprus, or the move of high-growth potential start-ups to Cyprus. It contributes to the aim of strengthening the innovation and entrepreneurial ecosystem of the country. Additionally, in the first quarter of 2025, the updated legal framework on the establishment and operation of spin-off companies by public academic institutions, was submitted to the Cypriot Parliament.

To support this vibrant ecosystem, the DMRID has developed the new National Strategy for R&I (2024-2026) with the aim of amplifying the positive influence of R&I activities and elevating Cyprus's role as a regional hub for research and innovation entrepreneurship and high-tech. A primary goal of the R&I Strategy is to contribute to economic growth, enhancing the competitiveness of the economy, and making Cyprus an attractive destination for investment and business on the international stage. Furthermore, it emphasises building a critical mass of research capacity in priority areas identified by the Smart Specialisation Strategy 2030, including digital technologies – especially high-performance computing, cybersecurity, and quantum technologies - with a particular emphasis on developing solutions for agriculture, water management, and smart cities.

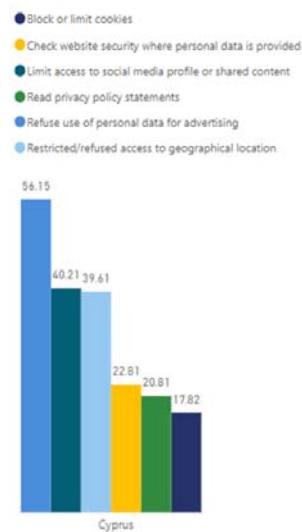
Strengthening Cybersecurity & Resilience

In Cyprus, just under 2 out of 3 (65.26%) individuals engaged in actions to protect their data online, which is slightly below the EU average of 69.55%. More specifically, 35.98% of individuals performed three or more precautionary measures (and therefore could be considered as having above basic digital safety skills). Refusing the use of personal data for advertising purposes was the most common measure (56.15%), while changing browser settings to limit cookies was the least frequent (17.82%).

⁸ Source: Dealroom (January 2025)

Enterprises in Cyprus tend to experience fewer incidents related to cyberattacks, but employees are less aware of their ICT security-related obligations compared to the EU average. The number of enterprises that experienced ICT security incidents leading to unavailability of ICT services due to attacks from outside (e.g. ransomware, denial of services attacks) decreased significantly in Cyprus from 4.59% in 2022 to 2.79% in 2024. It is well below the EU average (3.43%). The percentage of enterprises that experienced ICT security-related incidents leading to unavailability of ICT services due to hardware or software failures (9.12%) is also much lower than the EU average (17.97%). In terms of ICT security measures used, 96.35% of enterprises in Cyprus deployed some measures, well above the EU average of 92.76%. However, only 51.62% of enterprises made their employees aware of their obligations in ICT security-related issues, significantly below the EU average of 59.97%.

Type of activities to protect personal data online (% of individuals)



The adoption of new internet standards to ensure the scalability, stability and security of the internet presents a mixed picture in Cyprus. Only 1% of internet hosts in Cyprus had deployed the latest version of the Internet's main communication protocol version 6 (IPv6) for end users by Q3/2024. This is significantly lower than the EU average of 36%. The protection of servers at 4% is also much lower in Cyprus than the EU average (17%), although IPv6 is an important protocol to ensure the scalability, stability and security of the internet. However, the adoption of Domain Name System Security Extensions (DNSSEC) to protect the integrity of the Domain Name System (DNS) internet infrastructure and ensure the interoperability and security of the global cyberspace is high in Cyprus (74%), significantly above the EU average (47%).

DMRID is currently providing cybersecurity training for public sector employees, delivered both through face-to-face sessions and self-paced online courses.

In its revised roadmap, Cyprus added a measure to increase its capacity to respond to the growing cybersecurity threat with the creation of the National Cyber security Coordination Centre of the Republic of Cyprus (NCC-CY). The N4CY project for the establishment of the NCC-CY concluded in December 2024. The centre aims to concentrate and better coordinate research, technology and industrial development investments and take advantage of the European Union's funding opportunities in the field of cyber security. During this time, a EUR 1 million-scheme to support SMEs in cybersecurity was completed (19 applications were eligible out of 39 in total). Subsequently, in January 2025, the N4CY2 project was launched jointly by the DSA, the Research and Innovation Fund and the DMRID. The objective is to further develop the cybersecurity capacity of SMEs, start-ups, the tourism sector and entities falling under the NIS2 Directive. (total budget of EUR 7.67 million co-funded by the Digital Europe Programme and Cyprus).

In view of the transposition into national legislation of the NIS2 Directive by Cyprus on the 25th of April 2025 DSA is launching training seminars to enhance cybersecurity skills and awareness campaigns targeting both citizens and businesses. These initiatives aim to reduce vulnerabilities and mitigate the financial and operational impact of cyber threats in the future. It also started cybersecurity maturity checks in 2024 in view of the entry into force of the NIS2 Directive. According to the Digital Decade Eurobarometer 2025, 89% of the respondents in Cyprus think that an improved cybersecurity, better

protection of online data and safety of digital technologies would facilitate their daily use of digital technologies.

In the healthcare sector where cybersecurity is critical, Cyprus has conducted a national risk assessment in the health sector with the purpose of identifying ICT systems whose compromise could significantly impact the well-being of Cypriot citizens at a national level. Based on the findings of this assessment, the Digital Security Authority (DSA) will take appropriate measures and provide targeted support through its national cybersecurity strategy. These measures will aim to strengthen the resilience of healthcare-related digital infrastructure, ensure continuity of essential health services, and protect sensitive medical and personal data. Furthermore, as part of its ongoing efforts to enhance cybersecurity maturity in the sector, the DSA is also planning to host the ENISA e-Health Security Conference and organise a national cybersecurity exercise for the healthcare sector in 2026.

To address the cybersecurity skills shortage in the EU, Cyprus is working on the creation of a Cybersecurity Skills Coalition in collaboration with other Member States to create an EDIC. The objective is to boost capacity building and resilience for public authorities, industries, and SMEs across EU Member States.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Increasing the number of people having at least basic digital skills represents a challenge in Cyprus, although several programmes are offered. Customised programmes are designed for specific groups in collaboration with various organisations as part of the National Action Plan for Digital Skills 2021-2025. Activities cover a wide range of the population and some of them specifically targeting vulnerable groups. Upgrading basic digital among the population is a critical enabler of digital inclusion, which in turn is essential for ensuring fair access to online public services. According to the 2025 Eurobarometer, 86% of the respondents in Cyprus think that accessing public services online will be important for their daily life by 2030. The umbrella initiative 'Digital Citizen' has been designed to empower citizens. It contains a comprehensive suite of digital tools and user-centric solutions, with emphasis on service delivery, accessibility and seamless interaction between citizens and government services. To enhance online services availability and accelerate their use by the citizens, Cyprus offering 100 000 e-IDs to Cypriot citizens. Cyprus is also advancing its national Electronic Health Record (EHR) system to enhance healthcare services and facilitate seamless access to medical information. Regarding ICT specialists, while Cyprus is at the EU average, the data shows a slight decrease in ICT specialists as a percentage of total employment.

Equipping people with digital skills

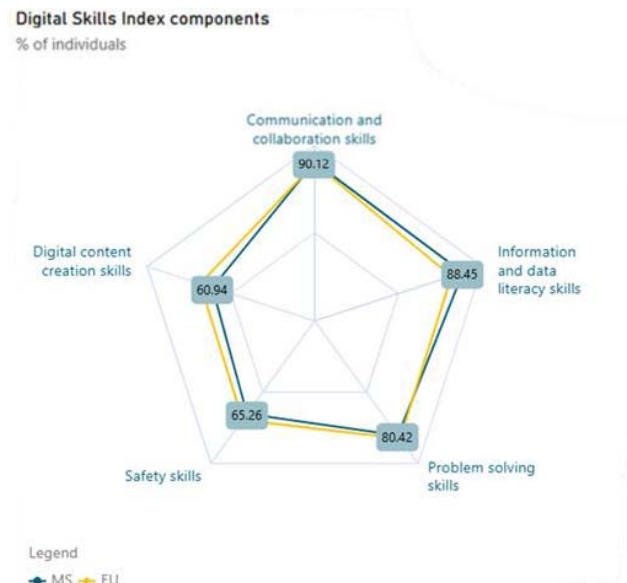
Basic Digital Skills

In 2023, Cyprus was below the EU average of 55.56% with only 49.46% of individuals holding at least basic digital skills. Despite the absence of new data for 2024, looking at demographic segments provides some additional information about people's digital proficiency:

- **Gender Gap:** Interestingly, 47.89% of men and 50.95% of women are equipped with at least basic digital skills, leading to a gap of 3.06 percentage points in favour of women. This is the opposite of what is usually observed in the EU with an average gap of 2.23 in favour of men.
- **Education Level:** Education level is a strong indicator of digital skills in Cyprus. 73.58% of those with higher education have at least basic digital skills, which is still below the EU average. The gap is stark for those with low or no formal education, where only 16.19% have at least basic digital skills, creating a substantial 33.27 percentage points difference compared to the national average, much larger than the same gap at EU level (21.95 percentage points).
- **Living Areas:** In Cyprus, the digital divide between the different living areas (48.96% for rural areas and 53.45% for towns and suburbs) is proportionally smaller than in the EU. However, the city dwellers have a low proportion of at least basic digital skills at 47.54%, compared to the EU average of 62.55%.
- **Age Groups:** The country's youth, aged 16 to 24, are the most digitally skilled at 71.82%, marginally above the EU average (69.98%). In contrast, those aged 65 to 74 have very low digital skills at 11.12%, significantly below the EU average for their age bracket (28.19%).

Digital Skills Index components: Cyprus outperforms the EU average in 2 out of 5 areas of the Digital Skills Index. Its best showing is in communication and collaboration skills, with a score of 90.12%, followed by information and data literacy skills with a score of 88.45%. However, the country faces challenges in digital content creation skills, where it scores 60.94%, well below the EU average of 68.28%.

In summary, Cyprus's digital skills landscape presents a mixed picture. While there is a gender gap in favour of women and a strong showing amongst young people, the overall proficiency is below the EU average. Notably, there is a significant opportunity for improvement in elevating the digital skills of those with lower education levels and the elderly, as well as enhancing areas like digital content creation to close the gap with EU standards.



Cyprus's national target for its population to have at least basic digital skills by 2030 is in line with the EU's 2030 target (80%). In its revised roadmap, Cyprus significantly upgraded a measure for the development of digital skills putting emphasis on designing customised trainings for specific groups. In 2024, it also continues to implement measures initially included in the roadmap.

2024 recommendation on basic digital skills: Consider, based on the current moderate results, strengthening the strategy for developing the population's basic digital skills, especially by training people over 55.

Cyprus made some efforts to address the recommendation through new policy actions in 2024. The measure 'Promotion of Digital Skills by Cyprus Productivity Centre (CPC)' included in the initial roadmap (with a budget of EUR 300 000) has been considerably upgraded for the 2024-2026 period with an additional budget of EUR 1.75 million from the RRP. Since 2024 the CPC has been collaborating with the Human Resource Development Authority (HRDA) for the implementation of customised programmes: Free Digital Skills -Programmes for people over 55; Digital Skills Programmes for All; Programmes in non-urban/mountainous and remote areas; Programmes leading to ICDL certification. By the end of 2024, 4 745 people had been trained, with a target of 5 300 by the end of 2025.

To address the digital divide and promote trainings on digital skills for vulnerable groups, the CPC also plans to provide digital equipment and upgrade facilities for digital learning and skills. This support is directed among others to elderly care homes to enable more courses in digital skills based on the current population needs. The HRDA continued to implement measures included in the initial roadmap to strengthen the digital skills of 20 210 employed and unemployed persons.

ICT specialists

In Cyprus ICT specialists account for 5.0% of total employment, matching the EU average in 2024. The country is on track according to its national trajectory even though this percentage is down falling a negative growth rate compared to the previous year. In 2023, the percentage of ICT specialists as a

share of total employment surpassed the EU average (5.6% for Cyprus compared to 4.8% for the EU average).

The share of women ICT specialists in Cyprus remained stable (23.6% in 2023 and 23.7% in 2024), and higher than the EU average in both years (19.4% and 19.5%). However, the growth rate of 0.4% is slightly lower than the EU's 0.5%.

Cyprus has a higher percentage of enterprises offering ICT training compared to the EU average. In 2022, 28.36% of Cypriot enterprises with 10 or more employees provided ICT training, exceeding the EU's 22.37%. This trend continued in 2024, with 29.94% of Cypriot enterprises offering ICT training, compared to the EU's 22.29%. The annual growth rate for Cyprus (+2.7%) outpaced the EU's negative growth rate (-0.2%).

In terms of demand from the labour market, Eurostat experimental statistics based on web scraping show that in Cyprus, the profiles of 'software and applications developers and analysts' are the most sought after, representing 48.0% of online job advertisements for ICT specialists (58.0% at EU level). Two types of profile are significantly more in demand in Cyprus than in the EU: 'information and communications technology service managers' (12.6% of online job advertisements for ICT specialists, while the EU average is 3.8%) and 'telecommunications and broadcasting technicians' (4.8% while the EU average is 1.7%). The profile of 'information and communications technology operations and user support technicians' (10.8% of online job ads) is also slightly above the EU average (10.4%).

In its revised roadmap, Cyprus updated its 2030 target to be in line with the EU's 2030 target of ICT specialists accounting for 10% of total employment. An assessment is currently being carried out on the pilot programme that was launched in 2024 in collaboration with the business sector to upskill unemployed people with a STEM background so that they may continue their career path in ICT-related jobs. No additional measures have been added in the revised roadmap. Given limited resources, more emphasis has been put on increasing basic digital skills of the population with targeted training to identified needs. Priority is also given to assess the needs and opportunities offered on the labour market by the ICT sector to encourage students to follow high-potential studies. Furthermore, the pilot programme, launched in 2023 in collaboration with the business sector for upskilling unemployed people with a STEM background to continue their career path in ICT related jobs, is currently under evaluation.

[Key digital public services and solutions – trusted, user-friendly, and accessible to all](#)

For digital public services for citizens, Cyprus scored at 77.63 in 2024, up from 73.96 in 2023, and although its growth rate (5.0%) outpaced the EU's 3.6%, it remained below the EU average of 82.32 in 2024. The country is on track according to its national trajectory. In the cross-border digital public services, the country scored 71.9 in 2024, above the EU's 71.28. In 2023, Cyprus's score of 72.74 was also above the EU's 68.37. However, compared to 2023, Cyprus's growth rate was negative in 2024 (- 1.1%) while the EU experienced a positive average growth rate (+4.3%).

For digital public services for businesses, Cyprus's score was 86.07 in 2023 - above the EU's 85.42, - but decreased slightly to 86.01 in 2024 - below the EU average of 86.23. The country is on track according to its national trajectory, yet the growth rate (- 0.1%) reflects stagnation. The EU average progressed slightly (0.9%). The reason is that one newly measured SDGR-related services (Single Digital Gateway regulation) was not found online, lowering the average score. For cross-border digital public services for businesses, Cyprus scored 77.86 in 2023, above the EU's 73.13, but dropped to 75.35 in

2024, still above the EU's 73.76. Although, Cyprus's growth rate was negative in 2024 (- 3.2%) while the EU's average experienced positive growth rate (+0.9%).

For access to e-health records, Cyprus presents a score of 75.44 in 2024 below the EU average of 82.70. The country is on track compared to its national trajectory. It presents a higher growth rate (10.7%) than the EU (4.5%).

That said, in 2024 the percentage of people having used websites or apps of Cypriot public authorities in the last 12 months (79.32%) remained above the EU average (74.71%).

e-ID

In December 2023, the National Scheme IDME.cy was notified under the eIDAS regulation with 'assurance level high'. At the beginning of 2025, Cyprus government decided to proceed to the acquisition of 100 000 e-IDs to be offered to Cypriot citizens over the age of 18. The first 30 000 e-IDs will be provided free of charge to citizens on a first-come, first-served basis, and for the remaining 70,000 e-IDs, the Government will cover a significant portion of the cost.

The adoption of e-ID use will enable access to services, such as (i) access to government systems through the 'CY Login' mechanism, using e-ID as an alternative login method; (ii) integration of an electronic signature into information systems, such as the new 'Ippodamos' system for urban planning and housing and building permits; (iii) a selection of not fully digitalized services, to be electronically submitted to governmental departments, transitioning away from paper-based processes.

Three entities from Cyprus are participating in a large pilot project for the implementation of the EU Digital Identity Wallet. In 2024, the project 'MyHealthPath' involving 31 partners across 15 Member States started developing a digital platform to test practical use cases and user centred requirements into innovative technical solutions and services in the context of the implementation of the EUDI Wallet. In addition, three entities from Cyprus continues to participate in POTENTIAL, the large-scale pilot consortium on the EU Digital Identity Wallet (reported in last year's report).

Digitalisation of public services for citizens and businesses

Cyprus still aims to reach a score of 100 for the digitalisation of public services for citizens and businesses. The revised roadmap includes three additional measures to reinforce the strategy of digitalisation of public services under the broad 'Digital Citizen' initiative focused on delivering digital tools and user-centric solutions:

- **Development of the 'Digital Citizen' mobile application.** Citizens can create, store and verify their digital documents, which hold equal legal validity to paper documents. These digital documents are suitable for any official or legal use within the Cypriot territory. The objective is to foster user-friendly government-citizen interactions, while simplifying bureaucratic processes, with a focus on convenience, security and efficiency. The application was launched in December 2024 and will continue to evolve with a focus on improving services and introducing new features.
- **Enhanced and redesigned single government portal (gov.cy).** The transformation of the public administration's online presence through a unified digital portal is continuously being enhanced and re-designed to meet users' needs. At the end of February 2025, it had 400 services online, with the aim being to reach 500 services by the end of 2025.

- **Integration of a Digital AI Assistant in the single government portal (gov.cy)**, featuring generative AI functionalities. A pilot will start in December 2024 with social insurance services, which is an area frequently generating questions from users. Further topics are being added gradually.

2024 recommendation on digital public services: Consider focused measures, after further analysis of the e-government benchmarking methodology, to ensure that the benchmarking results reflect the current status of the country's digital public services.

Cyprus fully addressed the recommendation by putting significant policy actions into place in 2024. The revised roadmap includes three additional measures to reinforce the strategy of digitalisation of public services under the broad 'Digital Citizen' initiative focused on delivering digital tools and user-centric solutions.

e-Health

Cyprus still aims at reaching a score of 100 for the access to electronic health records in line with the EU's 2030 target. Cyprus focused on the expansion of the European Health Union (EHU) aims to enhance cohesion and efficiency in healthcare systems across the EU while addressing health challenges with collective strength. The expansion of the EHU involves aligning health policies, integrating National healthcare systems, and promoting digital health solutions to create a more unified and resilient EU-wide network. Three additional measures were added in the revised roadmap contributing to develop access to e-health patient data:

- **Cyprus participates in the 'Enabling Patient Access to their Health Data' (PATHED) project.** Composed of 17 partners in 11 Member States, the project aims to deploy and use in production the elements of the mobile app toolkit developed for patient access to their health data. The partners have expertise in the cross-border exchange of Patient Summaries and ePrescriptions and several skills acquired from developing and producing components of MyHealth@EU.
- **Cyprus's entities participate in the 'eCAN' Joint Action aiming to bring the benefits of e-health to all citizens and patients across EU Member States with a focus on cancer prevention and care.** The objective is to harmonize telemedicine regulations and examining the effectiveness of teleconsultation and telemonitoring programmes in oncology. eCAN is assessing their role through three clinical trials for different cancer patient groups across 10 European countries.
- **Cyprus is participating in the European Health Data Space (TEHDAS2) to harmonise the secondary use of health data by creating a common legal framework.** 66 organisations and 29 European countries develop guidelines and technical specifications for common use by all Members States and the European Commission.

Some of the additional measures described under the digitalisation of public services will also contribute to boosting access to e-health records (e.g. the e-ID).

These developments underscore Cyprus's commitment to leveraging digital health technologies, although the implementation of some existing measures is delayed compared with the initial roadmap prevision. The launch of 'MyHealth@CY', the national eHealth mobile application is estimated to be available by May 2026 (originally to be deployed by December 2024).

However, the national e-Health Authority (NeHA) is advancing its National Electronic Health Record (EHR) system to enhance healthcare services and facilitate seamless access to medical information.

This measure was initially in the roadmap. It aims to create a unified digital repository for citizens' health data. Currently, it is implementing training programs for healthcare providers on the use of the online platform for providing cross-border healthcare services to familiarize professionals with its tools and procedures, enabling them to provide services to patients from other EU Member States as well as Cypriot citizens, enhancing interoperability and quality of care through cross-border services.

In April 2025, Cyprus will join the EU's cross-border healthcare programme enabling its citizens to access their medical records and prescriptions from other participating EU countries. Cyprus is the 16th Member State to join. European citizens from those countries visiting Cyprus will also benefit from reciprocal rights.

According to the Digital Decade Eurobarometer 2025, 83% of the respondents in Cyprus think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) during their daily life by 2030.

2024 recommendation on e-health: (i) Enhance the authentication method for logging into the online access service by using a notified e-ID; (ii) Make the data types of medical images and hospital discharge reports available to citizens through the online access service; (iii) Ensure that the online access service complies to web accessibility guidelines.

Cyprus has fully addressed the recommendation through new policy actions in 2024. Three new measures were included in the roadmap (as described above). The integration of an enhanced authentication login method through the notified e-ID scheme is being evaluated and will be scheduled for future implementation. In parallel, the continuous addition of electronic medical records is planned, with patient information summaries expected to be made available in due course. The provision of these services through the gov.cy portal follows established standards and will ensure compliance with accessibility guidelines for all citizens.

Building a safe and human centric digital environment and preserving our democracy

The data on online participation in political and civic life shows significant growth recently in Cyprus.

In 2024, 31.68% of people used digital tools to participate in democratic life, such as taking part in online consultations, voting on civic or political issues, or expressing opinions on civic or political issues on websites or in social media. This is far higher than the EU average (20.45%). It also shows a rapid upwards trend compared to 2022 (13.35%) which was below the EU average (17.59%).

At the same time the percentage of people encountering hostile and degrading online messages in Cyprus is slightly higher than in the rest of the EU. Data shows that in 2023, 35.07% of individuals encountered online messages that they considered hostile or degrading towards groups based on factors such as political views, LGBTIQ identities or religion, marginally above the EU average of 33.5%. Young people in the age group 16-24 reported higher exposure (42.94%) than adults in the age group 25-64 (37.27%). Men (34.81%) and women (35.32%) experienced very similar rates of exposure, suggesting a balanced impacts across genders.

Regarding disinformation, the percentage of people who verified data, information and digital content is significantly lower than in the rest of the EU. In 2023, 34.27% of individuals in Cyprus reported having encountered information or content on internet news sites or social media that they considered untrue or doubtful, substantially lower than the EU average of 49.25%. However, according to the survey, only 9.04% of these individuals verified its truthfulness, highlighting a very low level of engagement in assessing the reliability of the information encountered. Young people (16-24) (38.32%) reported very similar exposure to adults (25-64) (36.26%), with verification rates being practically the same at 9.77% for young people and 9.87% for adults. Males (33.92%) and females (34.59%) also reported very similar exposure rates, with verification rates following the same trend at 8.77% for males and 9.30% for females.

The data shows that while the country has a slightly higher prevalence of perceived hostile and degrading online messages compared to the EU average, a significantly lower proportion of individuals encountered potentially misleading information online. However, the data also suggests that Cypriots have not been actively engaging in verifying the accuracy of online content, with a very low proportion of individuals checking the truthfulness of information.

Cyprus has a fact check centre which is member of the European Digital Media Observatory (EDMO) network. [Fact-Check Cyprus](#) is a collaboration between people involved in the fight against disinformation from Cyprus and Greece. It joined the Social Informatics unit of the Cyprus University of Technology (CUT), a public academic institution, in November 2023. The objectives of the centre are to deconstruct fake news and educate people on digital and media literacy to effectively navigate the online world, distinguishing disinformation and fake news by applying critical thinking. According to the Digital Decade Eurobarometer 2025, people in Cyprus strongly think that the action of the public authorities is urgent to protect children online regarding the negative impact of social media on children's mental health (96% of respondents), cyberbullying and online harassment (94%) and to put in place age assurance mechanisms to restrict age-inappropriate content (96%).

Cyprus appointed its national authorities to supervise the protection of fundamental rights in relation to the use of high-risk AI systems. In November 2024, Cyprus notified the European Commission that it had appointed the Commissioner for Personal Data Protection, the Ombudsman and the Attorney General to monitor AI rights and to enforce compliance with human rights obligations in high-risk AI applications, as provided for in the AI Act. The 2025 Eurobarometer shows that 82% of respondents in Cyprus think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values, in line with the EU average of 83%.

Cyprus actively engages in international dialogues on digital rights. In 2024, Cyprus co-hosted the regional conference 'Protecting Human Rights in the Digital Age and in Social Media'. Participants discussed the development of new technologies and AI and the challenges for the ombudsmen and mediators in the field of human rights protection.

Leveraging digital transformation for a smart greening

According to the Digital Decade Eurobarometer 2025, 80% of the respondents in Cyprus consider digital technologies important to help fight climate change (above the EU average of 74%). 87% answered that ensuring that digital technologies serve the green transition should be an important action for the public authorities, also above the EU average of 80%.

Cyprus is implementing its national plan for smart cities which put digital technologies at the core of the transformation. It provides for the implementation of smart vertical solutions to mitigate the environmental impact based on digital technologies such as smart lighting, smart parking, and smart waste management and citizen app. The plan includes the adoption of necessary reforms and infrastructure to enable the creation of smart cities across the country, making them more resilient for the future. In 2025, Cyprus will be launching the project for the creation of the 'Cyprus Smart City Platform' and the above mentioned four vertical solutions.

Cyprus through its Smart Specialisation Strategy 2030 recognises the critical role of digital technologies in supporting the green transition, promoting the development of energy-efficient digital solutions and infrastructures. Specifically, it identifies 'digital technologies' as a priority area, with a focus on smart energy grids, energy management in buildings through IoT and AI, and the promotion of green data centres. The strategy also highlights the potential of the ICT sector to accelerate sustainable growth by diversifying its technological applications into low-tech sectors such as tourism and agriculture, contributing to their digital and environmental transformation. These efforts are supported through targeted funding instruments provided by the Research and Innovation Foundation.

The public administration provides collaboration tools for civil servants, aiming to minimise travelling costs, and lower carbon emissions. Although many concrete actions are in the making, the revised roadmap adjustment lacks a description of the approach for twinning the digital and green transition, notably for reducing the footprint of the digital sector.

In the telecoms sector, Cyprus's regulator, OCECPR, is monitoring the work of the Body of European Regulators for Electronic Communications (BEREC) on issues related to the green transition and sustainability. By monitoring guidelines and best practices developed at European level, it intends to ensure integration and alignment with EU-wide sustainability goals. In parallel, it is also engaging with telecoms providers to understand and assess the measures they are taking to reduce their environmental footprint and promote sustainable practices. Cyprus's telecoms operators are developing strategies for mitigating the footprint of digital infrastructure and devices, such as the electrification of base stations with solar panels, and recycling of devices.

In 2024, 27.69% of people in Cyprus considered energy efficiency to be an important characteristic when buying ICT devices, while the EU average was 19.35%. The eco-design of the device was even more important for 41.39% of consumers, well above the EU average (12.04%). However, price remains by far the most important criterion for buyers in Cyprus (87.84%) ahead of energy efficiency and eco-design. Cypriots are less likely to recycle their old desktop computer (9.99%) and laptop or tablet (7.59%) than the EU average (14.66% and 11.31% respectively), but a large majority of 73.52% either still use their old desktop computer or have never bought one, while the EU average is at 38.46%. The

same is observed for the old laptop or tablet: 48.49% of people either still use their old laptop or tablet or have never bought one, while the EU average is at 25.04%.

Regarding the awareness and preparedness of enterprises on the green aspects of their digital sector, 71.1% of enterprises of 10 or more employees considered the environmental impact of ICT services, or ICT equipment before selecting them, while the EU average is only 58.5%. The recycling of old equipment is also higher among enterprises in Cyprus (78.3%) than the EU average (77.4%).

2024 recommendation on green ICT: (i) Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular datacentres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs. (ii) monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

In 2024, Cyprus continued to implement existing measures but did not take any new measures. The implementation of the Smart Specialisation Strategy and the Research and Innovation Foundation facilitate progress through tailored funding mechanisms to support green transition

Annex I – National roadmap analysis

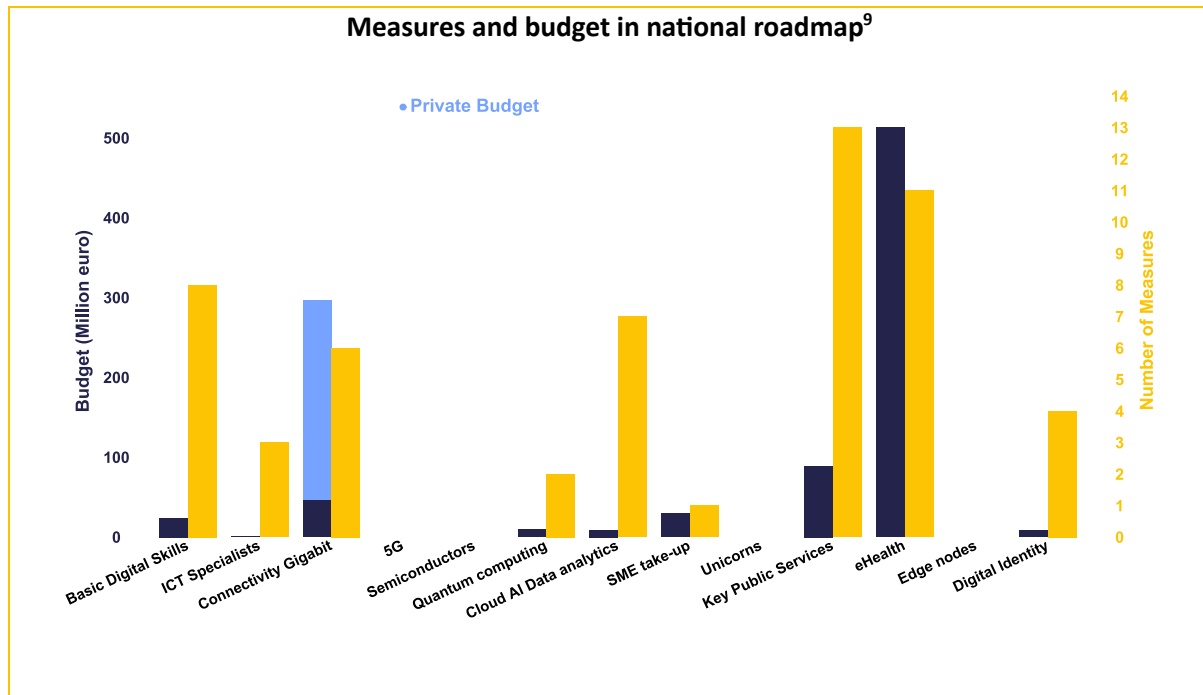
Cyprus's national Digital Decade strategic roadmap

Cyprus submitted an adjustment of its national roadmap on 13th January 2025. It includes **11 additional measures, six measures were revised, as well as one trajectory. Two targets and trajectories were added for unicorns and edge nodes.** The adjustment aligns with the current Commission's priorities such as cybersecurity and increasing the efficiency of public services using digital technologies.

The revised roadmap addresses a substantial number of roadmap recommendations issued in 2024:

- *Provide a target and trajectory for unicorns and edge nodes:* the revised roadmap includes a target and a trajectory for edge nodes and unicorns. Cyprus also revised its national target for ICT specialists to align it with the EU's 2030 target of 10%.
- *Review and strengthen measures to contribute to the targets that are the most challenging to reach, such as digital skills for all and business take-up of AI:* Cyprus significantly upgraded a programme implemented by the Cyprus Productivity Centre (CPC) for the development of digital skills, putting emphasis on designing customised training programmes for specific vulnerable groups including individuals aged 55 and above. In the initial roadmap, the budget was EUR 300 000; the revised roadmap provides for an additional budget of EUR 1.75 million for 2024-2026 period with the support of the RRP. In terms of business take-up of AI, no additional measures have been included in the roadmap, but Cyprus is working on designing a national AI strategy to leverage the potential of AI for growth, and on a funding scheme for the provision of AI solutions.
- *Provide more information on the implementation of the digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it:* while there has been no systematic contribution to the implementation of the digital rights and principles was not carried out, the revised roadmap includes additional information on some initiatives contributing directly to the implementation of digital rights and principles (e.g. Cyprus's involvement in international discussions on digital rights), and indirectly, such as the measures for digital skills helping to empower people and protect them online. Regarding the general objectives, while the adjustment of the roadmap includes a measure to boost cybersecurity capacity, the implementation of the objective of greening digital is has not been addressed.

Overall, Cyprus's revised roadmap reinforces the already mostly complete roadmap submitted in 2023. In total, the national roadmap includes 62 measures totalling EUR 988.4 million (equivalent to 2.96% of Cyprus's GDP). It remains high in ambition in terms of the targets set and the inclusion of additional measures demonstrates the commitment to reach the objectives and targets of the Digital Decade. At the same time, there is room to further consolidate the action in some areas, such as digital skills for all and digital public services for businesses. The stakeholders, included in the roadmap have been consulted.



⁹ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Cyprus is a member of the EUROPEUM-EDIC on blockchain and an observer in the Alliance for Language Technologies EDIC. It is also working towards setting up an EDIC in the area of cybersecurity skills. Cyprus is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Cyprus is not yet active in the Best Practice Accelerator.

EU funding for digital policies in Cyprus

Cyprus allocates 25% of its total recovery and resilience plan to digital (EUR 274 million)¹⁰. In addition, under cohesion policy, EUR 113 million (representing 12% of the country's total cohesion policy funding), is dedicated to advancing Cyprus' digital transformation¹¹. According to JRC estimates, EUR 320 million directly contribute to achieving Digital Decade targets (of which EUR 254 million comes from the RRF and EUR 66 million from cohesion policy funding)¹².

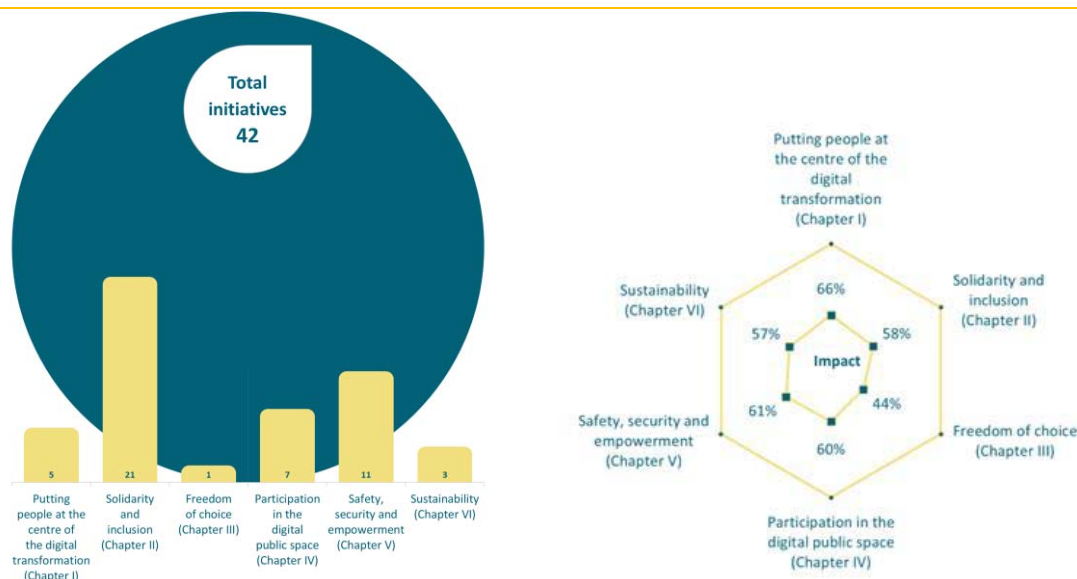
The largest investments in Cyprus's recovery and resilience plan (RRP) are dedicated to measures for the digitalisation of the public sector and public services (EUR 101 million), reinforced by support under the cohesion funds (EUR 33 million). In addition, investments to develop e-health records are also planned under the RRP and the cohesion funds. The RRP includes substantial investments dedicated to connectivity (EUR 45 million). Measures for the digitalisation of enterprises are planned in the RRP (EUR 11 million) and in the cohesion funds (EUR 5 million).

¹⁰ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹¹ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹² Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹³



Activity on Digital Rights and Principles (figure 1)

Cyprus has been relatively active in implementing digital rights and principles, with 42 initiatives overall and 3 new initiatives launched in 2024, showing limited progress towards its commitments. Cyprus is most active in the area of Digital education, training and skills (II). There is room for improvement, especially with regards to Interactions with algorithms and artificial intelligence systems (III) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Austria (mainly national government) and how these are perceived by citizens.

The indicators suggest that Cyprus is most successful in implementing commitments related to Putting people at the centre of the digital transformation (I). Cyprus should strengthen efforts in areas where the impact of digital rights initiatives appears to be limited, notably on Freedom of choice (III).

According to the Special Eurobarometer 'Digital Decade 2025', 45% of citizens in Cyprus think that the EU protects their digital rights well (a 2% increase since 2024). This is slightly above the EU average of 44%. Citizens are particularly confident about getting an affordable high-speed internet connection for everyone in the EU and getting easy online access to all key public services in the EU (59%, above the EU average of 57% and 58% respectively). They are most worried that their right to a safe digital environments and content for children and young people is not well protected (52%, above the EU average of 48%).

¹³ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
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DIGITAL DECADE 2025 COUNTRY REPORTS

Czechia

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Executive summary

Czechia benefits from a strong performance in digital skills and nationwide 5G coverage, but still lags in the rollout of very high-capacity networks (VHCNs) and the digital transformation of businesses. At the same time, its dynamic start-up ecosystem, deepening AI capabilities, and growing investments in strategic technologies like quantum and semiconductors underpin its ambition to strengthen digital sovereignty and resilience.

Czechia shows a low level of ambition in its contribution to the Digital Decade, having set 14 national targets, only 43% of which are fully aligned with the EU 2030 targets. Nonetheless, the country is following its trajectories well, with 75% of them currently on track (on the basis of the 2024 trajectories defined for all 8 KPIs analysed). Czechia addressed 82% of the 11 recommendations issued by the Commission in 2024, either by implementing significant policy changes (9%) or making some changes (73%) through new measures.

The 2024 adjustment to Czechia's national Digital Decade strategic roadmap reflects a more coherent and strategically aligned approach. It introduces new targets (e.g. for fibre to the premises (FTTP), edge nodes), strengthens SME support measures, and reaffirms the country's priorities for, semiconductors, and start-ups. Gaps remain - for instance, no explicit measures were introduced for edge node deployment or accelerating stand-alone 5G and eID uptake. Overall, the adjusted roadmap represents a meaningful improvement in terms of policy clarity, sectoral depth, and alignment with EU objectives. However, several measures could benefit from stronger financial commitment and more ambitious targets.

Digital Decade KPI ⁽¹⁾	Czechia				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	CZ	EU
Fixed Very High Capacity Network (VHCN) coverage	50.5%	53.9%	6.7%	63.7%	82.5%	4.9%	95.0%	100%
Fibre to the Premises (FTTP) coverage	36.0%	40.6%	12.6%	39.4%	69.2%	8.4%	60.0%	-
Overall 5G coverage	94.6%	99.1%	4.7%	87.3%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	10	21	110.0%	21	2 257	90.5%	144	10000
SMEs with at least a basic level of digital intensity (2)	-	70.8%	2.0%	-	72.9%	2.8%	80.0%	90%
Cloud	35.2%	-	-	-	-	-	60.0%	75%
Artificial Intelligence	5.9%	11.3%	90.8%	8.6%	13.5%	67.2%	21.0%	75%
Data analytics	19.5%	-	-	-	-	-	35.0%	75%
AI or Cloud or Data analytics	43.1%	-	-	-	-	-	60.0%	75%
Unicorns	4	4	0.0%	4	286	4.4%	6	500
At least basic digital skills	69.1%	-	-	-	-	-	80.0%	80%
ICT specialists	4.3%	4.5%	4.7%	5.1%	5.0%	4.2%	7.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	76.3	81.5	6.7%	80.2	82.3	3.6%	100.0	100
Digital public services for businesses	83.8	86.3	3.0%	87.3	86.2	0.9%	100.0	100
Access to e-Health records	51.1	77.4	51.6%	54.6	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special 2025 Eurobarometer on the Digital Decade, 73% of Czechs consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 78% consider it important to counter and mitigate the issue of fake news and disinformation online. And on competitiveness, 81% consider it important to ensure that European companies can grow and become 'European Champions' capable of competing globally.

A competitive, sovereign and resilient EU based on technological leadership

Czechia is steadily advancing in strategic digital sectors such as AI, semiconductors, and quantum technologies, backed by increased public investment and consistent national strategies. While 5G coverage is nearly universal, broadband infrastructure (FTTP, VHCN) still lags behind EU averages. Despite a vibrant start-up scene and strong R&D potential, SMEs face barriers to adopting digital technologies and securing financing. Addressing gaps in infrastructure, scale-up finance, and digital tech uptake will be key to boosting Czechia's competitiveness and digital sovereignty.

Protecting and empowering EU people and society

Digital inclusion is a strong point for Czechia, with widespread basic digital skills and minimal gender or rural-urban gaps. Reforms in digital education and support for ICT careers are progressing, with a growing focus on women and older learners. Public services are improving rapidly, particularly eHealth access and citizen-facing services. Digital civic participation and resilience against disinformation are still weak points and need stronger engagement policies.

Leveraging digital transformation for a smart greening

While Czechia has begun to acknowledge the importance of the twin green and digital transition, this area remains underdeveloped. A new energy efficiency law for data centres is a notable step, but the roadmap lacks fully-fledged digital sustainability measures. Scattered initiatives exist - in smart grids, soil monitoring, and recycling - but there is still no comprehensive national strategy for green digitalisation.

National Digital Decade strategic roadmap

Czechia submitted its adjusted national Digital Decade roadmap in January 2025, featuring strengthened targets and revised measures, particularly in the areas of enterprise digitalisation and emerging technologies. The update reflects an improved strategic alignment with EU priorities. It also addresses several recommendations issued in the 2024 State of the Digital Decade Report by introducing missing targets for FTTP and edge nodes, and clarifying uptake trajectories for AI, cloud, and data analytics. However, some targets remain relatively cautious compared to EU benchmarks - such as 60% FTTP coverage and 7% ICT specialists by 2030, but 5G targets are well-aligned. The roadmap retains national priorities around AI, quantum, and semiconductors. It consolidates the number of measures supporting the Digital Decade targets and objectives at 58 with a total budget of EUR 2.26 billion, equivalent to 0.71% of Czechia's GDP in 2024. While the roadmap demonstrates progress in depth, sectoral scope, and coherence, continued efforts are needed to improve rural connectivity, raise the level of ambition of workforce targets, and strengthen support to the digital and green transition.

Funding & projects for digital

Czechia allocates 23% of its total recovery and resilience plan to digital (EUR 1.9 billion)¹. In addition, under cohesion policy, EUR 1.9 billion, representing 9% of the country's total cohesion policy funding, is dedicated to advancing Czechia's digital transformation². Czechia is a member of the Alliance for Language Technologies European Digital Infrastructure Consortium (EDIC) and of the Local Digital Twins towards the CitiVERSE EDIC. The country is directly participating in the Important Project of Common European Interest on Microelectronics and Communication Technologies (IPCEI-ME/CT) and is a participating state in the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Czechia also contributes to the Digital Decade's Best Practices Accelerator³ through its flagship initiative, Czech Digital Week 2023, presented as part of the Digital Skills Cluster.

Digital rights and principles

According to a support study, Czechia has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 76 initiatives overall and 9 new initiatives launched in 2024. Czechia is most active in the area of digital education, training and skills. Less activity has been identified with regards to fair and just working conditions and a fair digital environment. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing participation in the digital public space.

Recommendations

- **VHCN and FTTP:** Accelerate the rollout of fibre (FTTP) and Very High-Capacity Networks (VHCN), particularly in rural areas, and streamline permitting procedures and raising awareness about gigabit connectivity benefits among businesses and households.
- **Edge computing:** Introduce concrete measures to support the deployment of edge nodes and operationalise the national 2030 target. Ensure dedicated funding and public-private coordination mechanisms are in place.
- **SMEs and advanced technologies:** Continue and expand targeted support for the digital transformation of SMEs, with particular focus on reducing the adoption gap for AI, cloud, and data analytics between SMEs and large enterprises. Increase the visibility of support tools and foster regional innovation ecosystems to diffuse digital solutions.
- **ICT specialists:** Strengthen the attractiveness and labour market relevance of ICT careers, with a special focus on boosting the number of female ICT professionals. Further align digital education and reskilling programmes with business needs, especially in cybersecurity, AI, and advanced digital technologies.
- **Cybersecurity:** Strengthen cybersecurity preparedness, particularly in critical infrastructure sectors. Finalise the new National Cybersecurity Strategy and clarify funding mechanisms to support implementation across public and private sectors.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

- **Digital and green transition:** Develop a comprehensive strategy to align digitalisation with environmental goals.

A competitive, sovereign and resilient EU based on technological leadership

Czechia's digital competitiveness is an essential component of its broader economic strength, particularly as the country seeks to leverage digital transformation to boost innovation, productivity, and global market positioning. Czechia's economy remains export-driven, with strong industrial foundations particularly in automotive manufacturing, machinery, electronics, and ICT-related products. Recently, the digital sector has gained greater prominence, supported by significant strategic investments, notably in areas such as artificial intelligence (AI), quantum technologies, microelectronics, and advanced digital services.

The updated National Artificial Intelligence Strategy 2030 represents a cornerstone of Czechia's digital ambitions. Developed by the Ministry of Industry and Trade, this strategy aligns closely with the broader [Digital Czechia Strategy](#), designating AI as a strategic technology under the TWIST programme, which boasts a substantial budget of approximately EUR 200 million (CZK 5 billion). TWIST prioritises not only AI but also quantum technologies and microelectronics, with a strong emphasis on translating research and development (R&D) into practical commercial applications. Initiatives under this programme include subsidy schemes, retraining courses, and direct support for SMEs adopting innovative AI solutions.

Quantum research also forms an important element in Czechia's push for digital competitiveness. The continued development of its National Strategy for Quantum Technologies (NKS) aims at nurturing the quantum ecosystem - from fundamental research and education to commercial applications. Despite some delays, such as postponing the deployment of the LUMI-Q quantum computer, Czechia maintains its ambitious role within the broader European quantum research landscape.

Czechia's start-up ecosystem, although vibrant, faces ongoing challenges. Currently hosting four unicorns, Czechia shows potential in scaling innovative digital enterprises. However, small and medium-sized enterprises (SMEs) and start-ups continue to encounter significant barriers, including limited access to venture capital, particularly during critical scale-up phases. To address these challenges, Czechia has intensified its efforts through multiple programmes, including the Technology Incubation initiatives supporting 250 start-ups, the EUSPA Business Incubation Centre, as well as dedicated acceleration programmes aimed at facilitating international market expansion. Efforts have also been directed at bolstering local venture capital infrastructure through a dedicated 'Fund of Funds' initiative, aimed specifically at increasing investment in deep tech and improving the availability of angel investment.

Despite considerable progress, digital infrastructure remains a mixed picture. While the coverage of high-speed broadband and 5G has experienced robust growth rates surpassing EU averages, overall penetration levels of Very-High Capacity Networks (VHCN) and Fibre remain below EU benchmarks. Similarly, the adoption by enterprise of key digital technologies, including cloud computing (35.23%), data analytics (19.49%), and AI (11.26%), trails behind EU averages. The gap between SMEs and large

enterprises in adopting these technologies further highlights structural challenges, which, if addressed, could significantly elevate Czechia's competitive standing.

From a broader economic perspective, **the ICT sector in Czechia accounted for 4.93% of Gross Value Added in 2022, standing marginally below the EU average of 5.46%.⁴** Moreover, the ICT sector significantly contributes to the country's R&D activities, accounting for 26.91% of business expenditure on R&D and employing 26.21% of total R&D personnel. This strong involvement suggests a solid foundation for further digital innovation, reinforcing Czechia's potential to grow its digital economy and reduce reliance on external technology providers.

Overall, Czechia's strategic focus on advanced digital technologies, robust investment frameworks, and targeted support for start-ups positions the country to enhance its digital competitiveness significantly. Continued policy emphasis on addressing infrastructure gaps, improving SME digitalisation, and fostering a more dynamic start-up ecosystem will be crucial for sustained progress.

According to the **2025 Eurobarometer⁵, a large majority of Czech respondents (76%) consider building efficient and secure digital infrastructures, including connectivity and data processing facilities, to be an important priority for public authorities.** While this is slightly lower than the EU average of 86%, it still reflects strong public support for investment in robust digital infrastructure.

Building technological leadership: digital infrastructure and technologies

Czechia is rapidly expanding its digital infrastructure, with strong progress in 5G coverage, which now reaches nearly all households, including in rural areas. While Fibre-To-The-Premises (FTTP) and VHCN coverage still lag behind EU averages, both are growing at above-average rates. The country is also advancing in emerging strategic technologies. It has adopted a National Semiconductor Strategy, increased investments in AI, and plays an active role in quantum computing through the EuroHPC Joint Undertaking (JU). Overall, Czechia is steadily enhancing its digital foundation while stepping up efforts to contribute to EU technological leadership.

Connectivity infrastructure

Czechia's VHCN coverage, both in total and for households in sparsely populated areas, remains among the lowest in the EU despite recent improvements. In 2023, total VHCN coverage in Czechia was 50.54%, compared to the EU's 78.64%, while in 2024, it reached 53.91%, remaining below the EU's 82.49%.

The growth rate for total VHCN coverage in Czechia stood at 6.7%, exceeding the EU's 4.9%, which signals positive momentum but has yet to compensate for the significant gap in absolute coverage levels. For households in sparsely populated areas, Czechia's coverage in 2023 was 7.22% and in 2024 it was 10.04%, lower than the EU's 55.59% and 61.89%, respectively. The growth rate for this category stood at 39.1%, outperforming the EU's 11.3%, but from a very low baseline, underscoring persistent disparities in rural access. Overall, the country is lagging behind compared to its national trajectory.

Czechia's FTTP coverage is also below the EU average. In 2023, total FTTP coverage in Czechia was 36.05%, compared to the EU's 63.87%, while in 2024, it reached 40.58%, remaining below the EU's 69.24%. The growth rate for total FTTP coverage in Czechia was 12.6%, exceeding the EU's 8.4%. For households in sparsely populated areas, Czechia's coverage in 2023 was 7.2% and in 2024 it was

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

10.04%, lower than the EU's 52.55% and 58.78%, respectively. The growth rate for this category stood at 39.4%, outperforming the EU's 11.9%. Both urban and rural areas continue to face structural challenges in Fibre roll-out, which may also constrain the digitalisation of businesses, particularly SMEs operating outside major hubs. Overall, the country is on track with its national trajectory.

Czechia's overall 5G coverage exceeds the EU average. In 2023, total 5G coverage in Czechia was 94.6%, compared to the EU's 89.05%, while in 2024, it reached 99.08%, remaining above the EU's 94.35%. The growth rate for total 5G coverage in Czechia was 4.7%, below the EU's 6.0%. For households in sparsely populated areas, Czechia's coverage in 2023 was 72.7% and in 2024 it was 95.3%, higher than the EU's 71.10% and 79.57%, respectively. The growth rate for this category stood at 31.1%, outperforming the EU's 11.9%.

Czechia's 5G coverage in the 3.4-3.8 GHz band is below the EU average. In 2023, total 5G coverage in this band in Czechia was 39.3%, compared to the EU's 51.06%, while in 2024, it reached 42.36%, remaining below the EU's 67.72%. The growth rate for total 5G coverage in this band was 7.8%, below the EU's 32.6%. For households in sparsely populated areas, Czechia's coverage in 2023 was 32.28% and in 2024 it was 32.3%, higher than the EU's 15.86% and 26.19%, respectively. The growth rate for this category stood at 0.1%, below the EU's 65.1%.

Czechia's 5G spectrum assignment for pioneer bands is below the EU average. In 2024, the percentage of harmonised spectrum assigned in Czechia was 66.67%, compared to the EU's 73.4%. It remained at 66.67% in 2025, while the EU's grew to 74.63%. Czechia saw no growth between 2024 and 2025, while the EU's growth stood at 1.7%.

Czechia's digital economy and society index shows a mixed performance. While the country excels in overall 5G coverage and growth in sparsely populated areas for VHCN and FTTP, it continues to lag behind in overall Fibre and VHCN deployment which may hinder the digitalisation of enterprises. The 5G coverage in the 3.4-3.8 GHz band and the 5G spectrum assignment for pioneer bands also need improvements.

VHCN and FTTP

In its adjustment to the national strategic roadmap, Czechia proposed a new target for FTTP coverage of 60% by 2030. This new target is a step forward from the previous roadmap, which did not define any specific FTTP goal. Although the new FTTP target is below the EU ambition, it appears realistic given Czechia's starting point and recent growth trends. Coverage stood at 36.1% in 2023, standing significantly below the EU average of 64%. However, the country has demonstrated increasing momentum with almost a 17% annual increase in installed FTTP lines during the first half of 2024 alone. Considering this accelerated pace, alongside the adoption of EU-level measures such as the Gigabit Infrastructure Act and the Action Plan to implement certain measures to support the planning and construction of electronic communications networks, designed explicitly to simplify network roll-out procedures and promote Fibre-ready constructions, the 60% target by 2030 seems attainable, though continued efforts and proactive policy support remain necessary.

On VHCN, Czechia's target of 95% remains unchanged from the original 2023 roadmap. While this target aligns closely with the EU ambition, it remains a challenging target to achieve. In 2024, VHCN coverage stood at approximately 53.91%, facing persistent barriers including slow roll-out - attributable to low consumer take-up of high-speed broadband,- and lengthy permit processes for infrastructure deployment. Further measures may be required to ensure the 95% target remains achievable within the timeframe.

In terms of market developments, 2024 saw notable consolidations with significant mergers and acquisitions impacting the competitive landscape. CETIN, the incumbent operator, undertook major acquisitions, including Nej.cz and Nordic Telecom Regional, increasing its market share.

Investments in fixed networks continue, with annual investments rising by approximately 3.7% to EUR €362 million (CZK 8.93 billion) according to the National Regulatory Authority for telecommunications. The continued deployment by both major and local operators indicates a positive market dynamic supporting the expansion of Fibre coverage.

According to Czech authorities there is currently no formal or official plan to switch-off the copper network, and no specific timeline has been established for this transition. The authorities refer to investments already made in Digital Subscriber Line (DSL) networks, which still play an important role in certain rural areas. As a result, a complete copper switch-off by 2030 does not seem to be realistic.

5G

Czechia maintains its ambitious target of 100% 5G coverage by 2030, which is contingent on satellite technology capable of delivering comparable performance to terrestrial 5G networks. Given the observed coverage of 99.08% in 2024, this target remains very realistic and aligns with the EU's ambitions for comprehensive coverage. Overall, it appears that Czechia is on track according to its national trajectory.

The national adjusted roadmap includes seven measures supporting 5G deployment, ranging from spectrum auctions to subsidies for underserved areas.

Despite recommendations from the 2023 State of the Digital Decade report, Czechia did not introduce specific measures to assign the 26 GHz band in its adjusted roadmap. Nonetheless, preparations for allocating this band have advanced, with the national regulatory authority for telecommunications, the Czech Telecommunication Office (CTU) planning a public discussion in 2025 focused on implementing an improved authorisation approach, particularly facilitating Fixed Wireless Access (FWA) and indoor applications.

Czechia has partially addressed previous recommendations by setting conditions within the licensing framework to encourage operator-driven deployment in the 3.4-3.8 GHz band. However, the roadmap still lacks specific new measures on promoting the widespread deployment of business-to-business (B2B) and business-to-consumer (B2C) applications and accelerating stand-alone 5G core network development.

In parallel, Czechia has already completed the allocation of the 700 MHz band, which was fully assigned during a spectrum auction launched in August 2020. The authorisations became effective at the beginning of 2021 and were granted to three mobile network operators (MNOs).

Investment in mobile networks saw significant growth, with total investments increasing annually by approximately 23.6% to approximately EUR 422.1 million (CZK 10.5 billion). All MNOs actively upgraded and broadened their radio access network (RAN) infrastructure to support comprehensive 5G deployment. Particular attention has been given to coverage of rail corridors, tunnels, and identified 'white spots' areas.

Despite robust overall coverage, the deployment of 5G in the critical 3.4-3.8 GHz band has progressed slowly.

2024 recommendation on connectivity infrastructure: (i) Accelerate the rollout of FTTP, among others by raising awareness on the benefits of Gigabit networks, by simplifying processes and permits for rolling out networks, and by promoting the construction of fibre-ready buildings. (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

The Czechia made some efforts to address the recommendation through new policy actions in 2024.

Czechia's adjusted roadmap introduces new policy targets and continues efforts to improve connectivity, particularly in the roll-out of Fibre networks. The adoption of a new FTTP coverage target of 60% by 2030 is a notable step forward. However, despite this progress, VHCN roll-out remains significantly below the EU average and lags behind the national trajectory. On 5G, while total coverage has nearly reached 100%, progress on the critical 3.4-3.8 GHz band remains limited, and no specific measures have been introduced to promote deployment of B2B/B2C applications or accelerate the development of stand-alone 5G core networks. Czechia plans to consult on the assignment of the 26 GHz band in 2025, but the roadmap lacks concrete new actions in this area. Overall, while some important actions have been taken, further policy efforts are needed to fully address the 2024 recommendation.

Semiconductors

Czechia aims at significantly advancing its strategic positioning in the semiconductor sector. A central pillar of Czechia's semiconductor ambitions and one of the central elements of the adjusted national strategic roadmap, relates to the implementation of the [National Semiconductor Strategy](#), adopted in October 2024.

The Strategy sets out a clear vision to substantially upscale national semiconductor production capacity - targeting a 300% increase by 2029 - and mobilise 9 000 skilled semiconductor professionals. Moreover, it sets out detailed measures to improve research, commercialisation of technologies, and international collaboration, underpinning Czechia's contribution to the European Chips Act and broader EU technological sovereignty.

The Strategy highlights the urgency of reducing dependence on global supply chains, particularly those concentrated in geopolitically sensitive regions such as Southeast Asia and seeks to reinforce Europe's - and by extension Czechia's - strategic autonomy. It builds on five strategic pillars (i) aligning with the European Chips Act through the establishment of a national competence centre and investment incentives; (ii) boosting Czech exports of advanced technologies by 200% relative to 2022 levels; (iii) supporting cutting-edge R&D and strengthening funding for applied semiconductor research; (iv) expanding the national talent pool through education and targeted migration policies; and (v) promoting entrepreneurship and the internationalisation of Czech SMEs within the semiconductor field.

The Strategy is also firmly embedded in the broader national innovation agenda, alongside the National AI and National Quantum Strategies, forming a cohesive framework for advancing emerging and key technologies. The strategy also includes a detailed implementation roadmap with measurable targets, risk assessments, and long-term budgetary impact estimates, reflecting a systemic and results-oriented approach. By focusing on enhancing human capital, improving export performance, and enabling innovation ecosystems, the National Semiconductor Strategy positions

Czechia as a growing contributor to the European semiconductor landscape and an emerging player in this sector.

Moreover, Czechia can count on a dynamic ecosystem of actors operating in semiconductors: a key actor in this area is the Czech National Semiconductor Cluster (CNSC), created in 2022. The CNSC acts as a national coordination body linking universities, major semiconductor companies, start-ups, and public institutions, focusing on joint research initiatives, innovation projects, and practical commercialisation. Czechia is also actively involved in regional collaboration through the Alliance of European Semiconductor Regions, connecting 12 key European regions to foster an integrated semiconductor value chain aligned with EU strategic objectives.

The measures adopted are well-aligned with the overarching EU objectives and are set to make a clear and direct contribution to enhancing EU technological sovereignty. Czechia's active engagement within the European Semiconductors ecosystem, combined with strategic domestic investments and coordinated research initiatives, directly contributes to reducing the EU's dependency on external semiconductor suppliers.

Edge nodes

According to the latest Edge Nodes Observatory report, Czechia has shown positive momentum in edge-node deployment, with the number of edge nodes increasing sharply from 10 in 2023 to 21 in 2024. However, it remains at an early stage of development relative to the ambitious national goal set for 2030.

Previously, Czechia had not established a specific target or trajectory for edge nodes in its original 2023 roadmap. The adjusted roadmap addresses this gap, proposing a notably ambitious target of reaching 144 edge nodes by 2030. Given the current status of 21 nodes, achieving this target will require sustained acceleration and strong commitment from both public and private actors.

While the adjusted roadmap clearly identifies the 144-node target, it does not set out specific measures or mechanisms for achieving this increase. According to Czech authorities edge-node development is currently taking place largely within private sector initiatives, notably driven by mobile network operators.

At this stage, the primary forum for policy discussion and coordination is the 5G Alliance, where Czechia plans to discuss and define further strategic actions. Feedback from mobile operators during these consultations suggests a continuing momentum, with an anticipated addition of 10-20 new edge nodes by private actors during 2025. While engagement by private sector is encouraging, the roadmap currently lacks detailed plans for public sector involvement or specific policy incentives that might be required to significantly accelerate deployments.

At present, Czech authorities have not finalised a national monitoring framework for edge-node deployment, which remains under consideration. Given the substantial planned growth, quickly establishing a clear monitoring mechanism will be essential for evaluating progress and adjusting policy interventions as necessary.

2024 recommendation on Edge nodes: as edge computing is an important component of AI, future network deployment, and the Internet of Things, Member States should consider edge-node deployment when creating investment programmes and strategies in these areas.

No information available on measures taken to address the recommendation. While the establishment of a clear and ambitious numeric target in the roadmap is commendable, Czechia has not communicated any measure to support the deployment of edge nodes across the country and the absence of explicit accompanying measures raises concerns attainability of the goal.

Quantum technologies

Czechia continues to prioritise quantum technologies as a strategic domain within its broader digital and innovation policies. Work is ongoing to finalise the National Strategy for Quantum Technologies (NKS), designed to strengthen the national quantum ecosystem across fundamental research, education, commercialisation, and application domains, including quantum computing, communication, sensors, metrology, and materials.

Czechia remains actively engaged in key European initiatives through the IT4Innovations National Supercomputing Centre in Ostrava, which operates the Karolina supercomputer and supports AI development. As reported in the 2024 Digital Decade report, Czechia is set to host one of Europe's first quantum-accelerated computers through the LUMI-Q consortium. Co-funded by EuroHPC JU and nine partner countries with a EUR 5 million budget, the system will be connected to Karolina and available to academia, industry, and public sector users. Its installation is expected by September 2025.

In addition, **Czechia has expanded its support for strategic digital technologies through the TWIST Programme, launched in December 2024 with approximately EUR 200.88 million (CZK 5 billion) budget.** The Programme targets the development and commercialisation of emerging technologies, including quantum, AI, and semiconductors.

Czechia also participates in the AI Factories initiative through the LUMI AI Factory, with IT4Innovations joining the broader LUMI consortium. The project, with a EUR 602.65 million overall budget (CZK 15 billion) and a Czech contribution of over EUR 22.10 million (CZK 550 million), aims to create a comprehensive ecosystem providing access to high-performance computing infrastructure, datasets, and AI expertise. Co-funded by the Ministry of Education, Youth and Sports and the European Union, the initiative is expected to significantly enhance AI adoption in both science and industry.

Supporting EU-wide digital ecosystems and scaling-up innovative enterprises

Czechia continues to make gradual but meaningful progress in scaling-up digital transformation across its enterprise landscape. In 2024, 70.81% of SMEs reached at least a basic level of digital intensity - just short of the EU average. As highlighted in the Draghi Report, deepening digital capabilities is essential for Europe's competitiveness, and Czechia's SME digitalisation path will be pivotal for the resilience of its export-oriented economy. While adoption of advanced technologies like AI, cloud, and data analytics has significantly improved - especially with AI use among businesses nearly doubling in 2024 - gaps remain, particularly for smaller firms.

On the innovation front, Czechia's start-up ecosystem remains active and expanding, supported by a growing range of tailored funding instruments, incubation schemes, and internationalisation initiatives. Nonetheless, challenges around scale-up financing and technology transfer persist, making continued strategic support and private investment mobilisation critical for future growth.

SMEs with at least basic digital intensity

In 2024, 70.81% of SMEs in Czechia had at least a basic level of digital intensity, reflecting a relatively modest increase from 68.02% in 2022, with a growth rate of 2% per year. This growth rate has led Czechia to fall just short of the EU average of 72.91% in 2024. Notably, among all Czech SMEs, 32.61% had a high or very high digital intensity, aligning closely with the EU average of 32.66%. Overall, positioning itself slightly below EU standards, Czechia still has room for improvement in the digitalisation of its SMEs.

Czechia's national target for SME digitalisation remains unchanged from the previous roadmap, set at 80% by 2030. Given the observed digitalisation trends and current measures in place, the target remains ambitious but achievable, provided that consistent and targeted support is maintained and expanded in the coming years.

Czechia's adjusted roadmap introduces notable measures to bolster SME digitalisation, particularly through two flagship calls under the Operational Programme Technologies and Application for Competitiveness (OP TAC), funded by the European Regional Development Fund.

- **'Digital Enterprise – Call I':** Allocating approximately EUR 39.8 million (CZK 1 billion) to support SMEs in implementing Industry 4.0 elements. The measure covers non-production digital technologies, including software, hardware, cybersecurity solutions, logistics technologies, sensor networks, and digital twins. Demonstrating high demand, 679 applications were received in 2024 requesting approximately EUR 167 million, indicating strong interest among Czech SMEs. Due to this success, a follow-up call (Digital Enterprise – Call II) with EUR 47.7 million (CZK 1.2 billion) will launch in Q4 2025, explicitly targeting SMEs outside Prague.
- **'Application – DEEP TECH – Call III':** With EUR 119 million (CZK 3 billion), this measure supports innovative industrial research and experimental development projects in advanced technological areas including AI, Big Data, 5G, and semiconductors. The expected outcome includes prototypes, validated technologies, digital solutions, and other practical innovations, targeting between 120 and 160 projects.

Both measures demonstrate an effective strategy towards achieving the ambitious SME digitalisation target. Nonetheless, continued monitoring, expanded outreach, and additional clarity on long-term funding and implementation mechanisms will be critical for maintaining momentum and fully realising these objectives.

Despite robust funding and strategic initiatives, Czech SMEs still face substantial barriers to digitalisation and scale-up. A key challenge highlighted by Czech authorities is the complex and lengthy authorisation processes for deploying digital infrastructure. Authorities have responded by preparing an Action Plan focused on simplifying permits and accelerating infrastructure deployment, aiming for its approval by late 2025.

Access to finance, particularly for digital start-ups and SMEs scaling up their businesses, is another critical issue. Czech authorities have implemented targeted programmes such as the Technology Incubation Programme, which currently supports 150 start-ups (with a total target of 250), offering funding, mentoring, and investor networking. Also, the EUSPA Business Incubation Centre provides additional tailored support. Furthermore, Czechia's 'Funds of Funds' Programme, coordinated under the Deputy Prime Minister's office, aims to improve venture capital availability and address gaps in angel investment, particularly for deep tech ventures.

2024 recommendation on digitalisation of SMEs: Continue and scale up the subsidy calls for digitalisation of SMEs to increase their capacity building through supporting services in the implementation of their project.

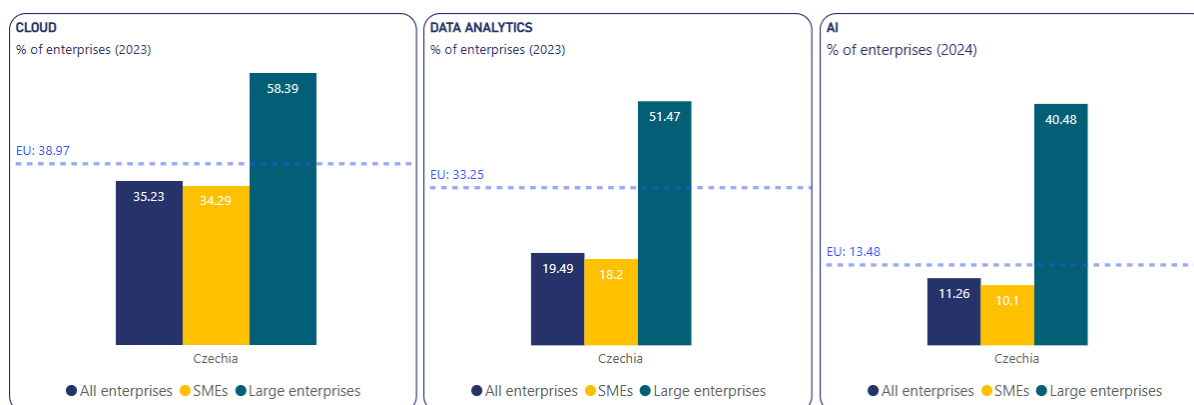
The Czechia made some efforts to address the recommendation through new policy actions in 2024. Czechia has positively responded to the 2024 recommendation by launching clearly defined, well-funded programmes, specifically designed to address SMEs' needs and enhance their technological readiness. This particularly applies to the 'Digital Enterprise – Call I' measure. While these actions directly address previous recommendations, ensuring sustained engagement and proper implementation will be essential to maintain this progress.

Take up of cloud/AI/data analytics

The latest available data reveals that in 2023, 35.23% of Czech enterprises used cloud services, slightly below the EU average of 38.97%. More specifically, SMEs had a similar uptake of more than 1 out of 3 (34.29%), while nearly 3 out of 5 (58.39%) large enterprises adopted cloud services. This indicates a gap of 24.1 percentage points between SMEs and large enterprises in Czechia, which is below the EU-level gap of 31.68.

In 2023, in Czechia, 19.49% of enterprises used data analytics, lagging behind the EU average of 33.25%. SMEs showed lower uptake at 18.2% (approximately 1 out of 5), while 51.47% (approximately 1 out of 2) of large enterprises engaged in data analytics. This indicates a gap of 33.27 percentage points between SMEs and large enterprises, which is lower than the EU gap of 39.72 percentage points.

In 2024, 11.26% of enterprises in Czechia used AI technology, only slightly lower than the EU average of 13.48%. Czechia thus experienced a **very large increase in uptake of AI by its enterprises**, almost doubling its value (a 90.85% increase) compared to 2023, when the uptake was at 5.9%. Notably, in 2024, SMEs had an uptake rate of 10.1%, while large enterprises exhibited a notably higher usage rate of 40.48%. This indicates a gap of 30.38 percentage points between SMEs and large enterprises, which is in line with the EU gap.



43.11% of enterprises in Czechia used AI technologies, sophisticated or intermediate cloud computing services, or performed data analytics in 2023, which reveals a lag compared to the EU average of 54.7%. More specifically, the uptake among SMEs was slightly lower at 41.77%, while large enterprises exhibited a higher engagement of 76.33%. This indicates a percentage point difference of 34.56 in uptake between SMEs and large enterprises in Czechia, which is in line with the EU-level gap.

In 2022, SMEs in Czechia produced 39.6% of the value added in the economy, while large enterprises contributed 37.4% to the total. Notably, SMEs accounted for roughly 96.2% of the enterprises with more than 10 employees, while large enterprises represented 3.8%.

The adoption of cloud computing, data analytics, and AI technologies in Czechia showed a mixed performance. The country lags behind EU averages in all three areas, particularly with respect to data analytics and AI adoption. In line with EU trends, a notable disparity also existed in technology adoption between SMEs and large enterprises. While large enterprises demonstrated relatively high levels of adoption, SMEs trailed behind in the adoption of all technologies. This mirrors broader EU trends, where large enterprises consistently outpace SMEs in technology adoption, with significant implications for Czechia's economy, given that SMEs account for nearly 96% of enterprises with more than 10 employees and produce nearly 40% of the country's value added.

- [Cloud](#)

Czechia's national cloud adoption target remains unchanged at 60% by 2030. The latest data shows that 35.23% of Czech enterprises used cloud services in 2023, standing slightly below the EU average (38.97%). However, significant progress is still needed to achieve the target of 60%.

To facilitate reaching the 60% cloud adoption target, Czechia has reinforced several comprehensive measures outlined in its roadmap. Notably, these include initiatives broadly targeting cloud adoption among enterprises, research organisations, and public authorities under the measure 'Reaping the Benefits of Digitalisation'. In addition, explicit support for cloud solutions among SMEs and enterprises is provided through measures such as 'Support for Industry 4.0 investments' and 'Direct support for digital transformation'. These measures are designed to significantly enhance cloud solution uptake, addressing existing barriers through targeted funding, strategic guidance, and improved access to digital infrastructure. Continued monitoring and targeted outreach, particularly towards SMEs, will be important to fully achieve the intended impact of these policies.

These measures are sufficiently broad and relevant; however, to achieve the target close monitoring in terms of their impact will be required. Additional targeted support may also be needed, particularly addressing SMEs' unique barriers to cloud uptake.

- [Data Analytics](#)

The adjusted roadmap increased Czechia's national data analytics adoption target from 25% to 35% by 2030, influenced by the expected positive impacts of the European Data Act. Currently, Czechia remains behind the EU average, with only 19.49% of enterprises using data analytics in 2023. SMEs show a low adoption rate of 18.2%, compared to 51.47% among large enterprises. However, the gap of 33.27 percentage points is lower than the EU average gap (39.72 points), indicating the potential for moderate progress.

Czechia's roadmap addresses data analytics uptake through comprehensive support measures. Notably, data analytics within enterprise digitalisation is explicitly promoted under the measures 'Reaping the Benefits of Digitalisation' and 'Direct support for digital transformation'. Furthermore, cohesion-funded initiatives such as 'Digital Enterprise – Call I & II' and 'DEEP TECH – Call III' provide significant support for advanced data analytics projects among SMEs.

In addition, the ongoing implementation of the 'RIS3 Strategy for New Technologies in Business', introduced with the 2023 roadmap, plays an important role in promoting digitalisation. Digitalisation is through formative measures and training is aimed at fostering the use of technologies such as data analytics. Its implementation between 2023 and 2027 should support the emergence of ICT-driven

firms and aims to expand digital technology uptake among businesses, particularly at regional and local levels.

Czech authorities anticipate positive impacts from the new EU Data Act Regulation, which should significantly facilitate data sharing and analytics, boosting adoption rates across enterprises.

- [Artificial Intelligence](#)

Czechia revised its national AI adoption target upwards, from 16% to 21% by 2030, in response to positive developments. The country recorded significant recent progress, with enterprise AI usage nearly doubling to 11.26% in 2024, closely approaching the EU average (13.48%). Nonetheless, the adoption gap between SMEs and large enterprises reflects EU-level disparities.

To support the ambitious AI adoption goal, Czechia introduced several targeted measures. Notably, the implementation of the 'National AI Strategy' explicitly addresses barriers such as limited SME awareness, high implementation costs, and skill shortages, providing tailored information tools, training, and affordable AI experimentation platforms for SMEs.

On AI, Czechia contributes to the OpenEuroLLM project, coordinated by Charles University, a flagship consortium funded under the Digital Europe Programme (EUR 37.4 million), which aims to develop multilingual open-source large language models. The project has received the prestigious Strategic Technologies for Europe Platform (STEP) Seal.

In addition, dedicated initiatives under 'OP TAC', including the Digital Enterprise Calls and DEEP TECH initiatives introduced by the adjusted roadmap, offer substantial incentives to support innovative AI solutions within SMEs and enterprises. Digital Enterprise – Call I targets the digital transformation of SMEs through investments in Industry 4.0 technologies, including ICT systems, cybersecurity, intra-company connectivity, and digital twins - enablers that lay the groundwork for broader AI adoption. With EUR 40.18 million (CZK 1 billion) allocated under this call and significant interest shown by over 670 applicants in 2024, the measure has proven to be particularly attractive within the OP TAC framework.

Meanwhile, 'DEEP TECH – Call III' explicitly supports AI-focused industrial research and experimental development, alongside other deep tech areas such as Big Data, 5G, and semiconductors. Backed by EUR 120.53 million (CZK 3 billion), it aims to fund up to 160 high-impact projects delivering prototypes, functional samples, or digital solutions. This initiative is instrumental in driving the uptake of AI within Czech industry, with the potential for additional funding increases depending on demand. Together, these measures reinforce Czechia's ambition to strengthen its innovation base and accelerate AI deployment across the business sector.

These measures are strongly aligned with Czechia's ambitious AI objectives and sufficiently address the barriers that have been identified. Sustained momentum and targeted SME engagement are critical for success.

2024 recommendation on AI/Cloud/Data analytics uptake: review the mix of measures to support the adoption of advanced digital technologies, including AI, Cloud and big data to understand the decline in adoption. Stimulate the adoption of next generation cloud infrastructure and services by companies of all sizes, including by liaising with the Cloud IPCEI Exploitation office and/or the coordinators and the Member States participating in the IPCEI-CIS.

Czechia made some efforts to address the recommendation through new policy actions in 2024. Czechia has taken steps to strengthen the adoption of AI, cloud, and data analytics, particularly among

SMEs, through a more coherent mix of support measures introduced in the adjusted roadmap. While the country still lags behind the EU average in all three areas, recent progress - especially in AI uptake, which nearly doubled in 2024 - is noteworthy. In response to the 2024 recommendation, Czechia introduced targeted measures such as the Digital Enterprise Calls and DEEP TECH initiatives under OP TAC, offering substantial financial incentives for projects involving AI, cloud computing, and data analytics. These calls are expected to generate high interest among SMEs and accelerate digital transformation, particularly through the adoption of Industry 4.0 technologies and support for advanced R&D. While no specific reference was made to engagement with the Cloud IPCEI Exploitation Office, measures addressing cloud uptake were clarified and reinforced within the roadmap. Overall, the actions taken in 2024 demonstrate a positive, albeit partial, response to the recommendation.

Unicorns, scale-ups and start-ups

In 2024, Czechia maintained a stable ecosystem of four unicorn companies. The roadmap sets out a realistic target aiming at the emergence of 6 unicorns by 2030. This figure reflects both the current situation and the strength of the domestic innovation ecosystem.

Over the years, Czechia's has introduced support programmes indirectly and directly supporting the reinforcement of the country's start-up environment and digital innovation capabilities. Notably, CzechInvest, the government's business and investment development agency, remains central to the country's support framework. Since 2011, CzechInvest has supported around 680 start-ups domestically and 232 abroad, providing comprehensive assistance including funding, mentoring, consulting, training, networking, and facilitating connections between local and international investors.

Under the ongoing 'Technology Incubation Programme' (2022-2027), CzechInvest is targeting to support at least 250 innovative start-ups, with an allocated budget of EUR 25.6 million. As of early 2025, the programme has already supported 137 start-ups, reflecting solid implementation progress.

At the same time, the 'Akcelerační startupů' Programme, launched in 2024 specifically aims at the expansion of start-ups. The programme has a budget of EUR 8.5 million, intended to support at least 100 companies across diverse sectors. CzechInvest further promotes sector-specific innovation, such as through the European Space Agency Business Incubation Centre (ESA BIC), and the NATO's DIANA initiative, which fosters emerging and disruptive dual-use technologies.

In response to longstanding concerns regarding access to finance - particularly the shortage of angel investors and venture capital funding - Czech authorities introduced targeted financing instruments. A notable measure is the Fund of Funds under the Recovery and Resilience Facility (RRF), launched in 2024 to catalyse private investments by reducing risks and improving access to pre-seed and seed funding, especially in strategic technology areas such as AI, Big Data, quantum computing, and Edge computing.

In addition, the 'Internationalisation Programme', launched in June 2024 under CzechInvest, supports Czech start-ups in entering international markets, providing financial resources, tailored mentoring, and strategic assistance to facilitate their global expansion.

Despite these initiatives, barriers remain prominent. Czechia continues to exhibit a relatively shallow venture capital market, limiting domestic start-ups' access to critical growth-stage financing. In 2023, total venture capital investments in Czech start-ups amounted to EUR 456 million, while the average

median pre-seed investment stood at EUR 960 000, highlighting modest initial funding levels compared to more developed ecosystems. Moreover, Czech entrepreneurs consistently identify a substantial gap between fundamental research and market-ready product development, often resulting in innovative projects remaining confined to research institutions due to insufficient early-stage funding.

The Czech start-up environment nonetheless shows strong fundamentals and attractiveness for investors. With over 3 000 active start-ups, representing about 5% of national GDP, and approximately 100 venture capital funds operating domestically, the ecosystem remains vibrant and internationally connected. According to the Startup Blink Global Ranking 2023, Czechia ranked 35th globally, demonstrating international competitiveness despite acknowledged financing challenges. Governmental efforts, supported by EU funds, regional aid programmes, and targeted initiatives such as the Technology Incubation Programme continue to enhance the business climate and investment appeal.

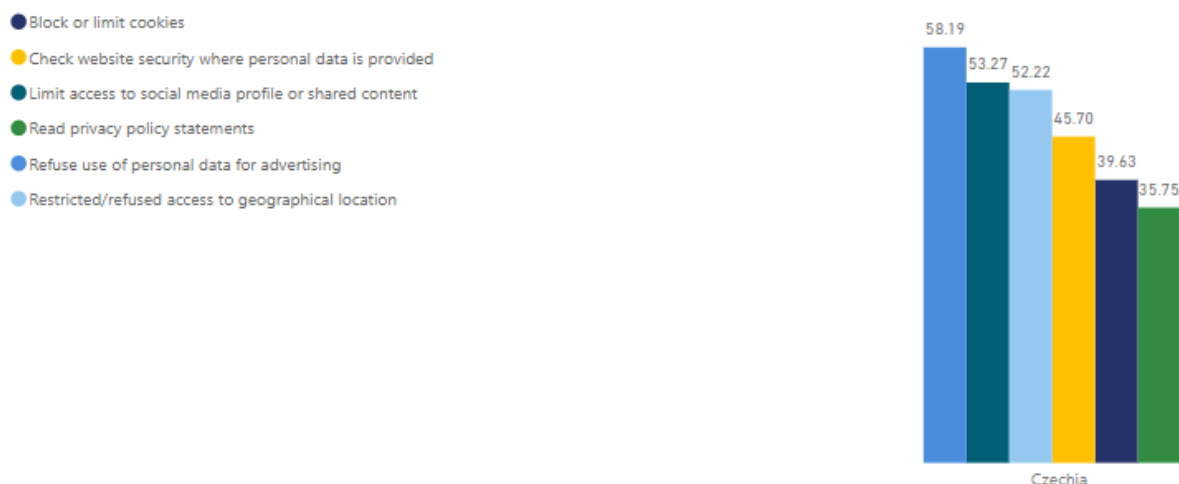
2024 recommendation on Unicorns: Support applied research for patents and ideas to be adapted to the market and create a business case for innovation; Facilitate access to capital for startups, including venture and growth capital.

Czechia made some efforts to address the recommendation through new policy actions in 2024. Czechia maintains a dynamic start-up ecosystem with solid fundamentals, though it continues to confront structural challenges, particularly related to access to scaling-up finance. Ongoing governmental measures effectively address some barriers, but continued strategic engagement, targeted support measures, and intensified efforts to attract private and international venture capital investments remain essential in achieving Czechia's full innovation potential by 2030.

Strengthening Cybersecurity & Resilience

In Czechia, approximately 4 out of 5 (81.98%) individuals reported taking at least one action to safeguard their personal data online in 2023, standing considerably above the EU average of 69.55%. More specifically, at national level, over half (57.31%) undertook three or more actions (and therefore could be considered as having above basic digital safety skills). Refusing the use of personal data for advertising purposes was the most common action, indicated by 58.19% of individuals, while reading privacy policy statements was the least common, undertaken by 35.75% of individuals.

Type of activities to protect personal data online (% of individuals)



In terms of enterprise cybersecurity, Czech businesses face a slightly higher occurrence of ICT-related security incidents compared to the EU average. In 2024, approximately 4.49% of Czech enterprises experienced ICT security incidents leading to unavailability of services due to external attacks such as ransomware or denial-of-service, compared to the EU average of 3.43%. Despite this challenge, Czech enterprises demonstrate strong awareness and preparedness. Around 92.08% of enterprises implement some form of ICT security measures (EU: 92.76%), and notably, 77.47% actively educate their employees on ICT security obligations, significantly exceeding the EU average of 59.97%. In addition, Czechia continues to make progress in deploying critical internet standards, with IPv6 deployment reaching 22% among end users and 37% on servers as of Q3-2024, demonstrating positive steps towards ensuring scalable and secure internet infrastructure.

When it comes to EU legislation, Czechia has not yet completed the transposition of the NIS2 Directive.

Czechia continues to emphasise cybersecurity as a strategic priority, particularly in the light of increased threats stemming from the geopolitical context, notably Russia's war of aggression against Ukraine. The overall cybersecurity policy framework is currently guided by the National Cybersecurity Strategy and its associated Action Plan. This strategy comprehensively targets cybersecurity resilience across public administration, enterprises, and critical sectors including healthcare and infrastructure. Recognising the evolving threat landscape, Czech authorities started work in 2023 to update the National Cybersecurity Strategy. Contributions have been gathered from both private and public stakeholders, and the strategy is currently under preparation, with adoption expected by the end of 2025. An accompanying Action Plan detailing specific measures and timelines is planned following the adoption of the Strategy.

In addition, Czechia continues the implementation of the EU 5G Cybersecurity Toolbox, identified in the 2024 report as an essential step for safeguarding digital infrastructure. This effort contributes significantly to securing resilient communication networks and mitigating risks associated with emerging technologies and threats.

The adjusted roadmap recognises the growing cybersecurity challenges Czechia faces, particularly in healthcare and critical public infrastructure sectors. Increased budget allocations signify responsiveness to the heightened risk landscape. Nonetheless, more transparent and clearly defined funding mechanisms, explicitly tied to identified priorities and threats, are necessary to ensure robust cybersecurity defences.

Czechia exhibits a strong overall cybersecurity awareness among its population and enterprises, coupled with proactive policy measures and strategic foresight. However, timely transposition of the NIS2 Directive and increased clarity regarding cybersecurity budget allocations remain critical. Continued vigilance, comprehensive stakeholder engagement in the ongoing strategy development, and alignment with EU cybersecurity initiatives will be pivotal in reinforcing Czechia's digital resilience by 2030.

The 2025 Eurobarometer shows that 71% of Czech respondents believe that improved cybersecurity and better protection of online data would significantly facilitate their daily use of digital technologies, below the EU average of 81.

2024 recommendation on cybersecurity: Continue the implementation of the 5G Cybersecurity Toolbox to ensure secure and resilient 5G networks.

In 2024, Czechia continued the implementation of existing measures but did not take any new measures.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Czechia's digital transition strategy places strong emphasis on inclusiveness, with notable progress in digital skills across most population groups and limited gender, geographic, and educational divides. While younger and formally educated individuals show high levels of digital proficiency, older populations remain underserved, prompting targeted outreach through libraries and community-based training. The adjusted roadmap continues to prioritise digital education reforms and ICT workforce development, with expanded programmes for upskilling and initiatives to boost women's participation in tech.

Digital public services are becoming increasingly user-friendly and accessible, and the eID and e-Health ecosystems are advancing, albeit from a lower base. At the same time, Czechia's digital democracy indicators remain below the EU average, with low civic participation online and limited

fact-checking of disinformation. These challenges point to the need for further efforts to foster trust, resilience, and critical thinking in the digital environment.

According to the 2025 Eurobarometer, 79% of respondents in Czechia believe that digital technologies will be important for accessing public services online by 2030 (EU average of 84%). The 2025 Eurobarometer also shows that 69% of people in Czechia believe that human support to help access and use digital technologies and services would significantly facilitate their daily digital use - compared to 77% at EU level. In line with this, **81% of respondents in Czechia consider it important that public authorities ensure proper human support to accompany the digital transformation in people's lives.**

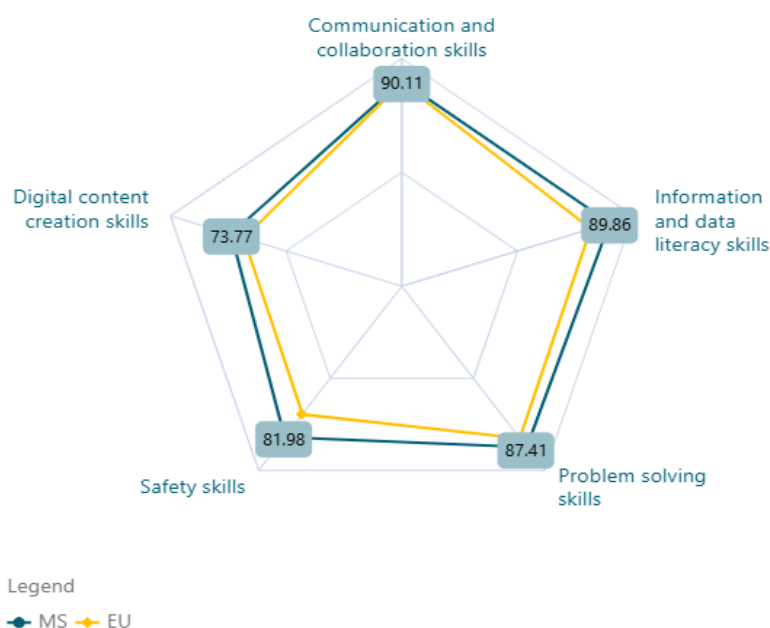
Equipping people with digital skills

Basic Digital Skills

In 2023, Czechia stood out with a robust 69.11% of its population possessing at least basic digital skills, comfortably ahead of the EU average of 55.56%. There will be no new data collection in 2024 but a closer look at the data reveals:

- **Gender Gap:** The gender gap in digital skills is remarkably narrow in Czechia, with 69.48% of males and 68.77% of females equipped with at least basic digital skills, creating a minor gap of only 0.71 percentage points. This is significantly lower than the EU average gap of 2.23pp.
- **Education Level:** Impressive strides have been made in education, as those with high formal education have a digital proficiency rate of 92.39%, which is well above the EU average of 79.83%. For those with no or low formal education, the rate stands at 58.58%, and the gap between this group and the national average is a modest 10.53pp, smaller than the EU average gap of 21.95pp.
- **Living Areas:** In rural areas, 65.52% of residents have at least basic digital skills, surpassing the EU average for rural areas of 47.50%. The difference between rural and other areas in Czechia is 3.59pp, indicating a less pronounced digital divide compared to the EU average gap of 8.06pp.
- **Age Groups:** Youth digital proficiency is exceptionally high, with 92.71% of 16 to 24-year-olds having at least basic digital skills, way over the EU average of 69.98%. However,

Digital Skills Index components
% of individuals



the older age group of 65 to 74 years has a lower proficiency at 25.63%, which is below the EU average of 28.19%.

- **Digital Skills Index Components:** Czechia's performance in the Digital Skills Index is very good, scoring above the EU average in all five skills. Communication and collaboration skills are at 90.11%, nearly on par with the EU average of 89.33%, and even the lowest score in digital content creation at 73.77% beats the EU average of 68.28%.

In summary, Czechia's digital literacy is strong across various demographics, with minimal gaps in gender and rural-urban distribution, and high levels of digital skills among those with formal education. While the older population's digital proficiency lags, Czechia's overall performance in the Digital Skills Index suggests a solid foundation on which to build even more inclusive digital competency initiatives for all age groups.

Czechia continues to demonstrate strong progress toward the Digital Decade target for basic digital skills. While the adjusted roadmap did not introduce new measures, the government has opted to continue implementing existing initiatives - particularly within the education sector - while exploring targeted solutions for digitally excluded groups.

Efforts in the formal education system remain central to Czechia's approach. A relevant overhaul of the national curricula is underway. The aim is to embed digital skills, including AI literacy, cybersecurity, and digital well-being into primary education. Czech authorities plan a compulsory introduction of the changes as of the 2027-2028 academic year.

Alongside this, teachers are being supported through methodological guidance, training opportunities, and consultations, all with the goal of fostering long-term, system-wide digital capacity in schools.

In terms of inclusion, Czechia has acknowledged the persistent digital divide affecting older age groups. To address this, new initiatives have emerged beyond the formal education system. In 2024, a memorandum of cooperation was signed between libraries, universities, and public institutions, aiming to deliver digital skills training through accessible community spaces such as public libraries. These actors are well positioned to reach older and digitally excluded populations, which are estimated to number around one million.

While these measures do not yet constitute a comprehensive new strategy, they mark a growing recognition of the need for targeted inclusion policies. This is especially the case for older people and other underserved groups. Czechia's strong baseline performance provides a solid foundation, but sustained outreach will be needed to ensure that digital proficiency becomes universal and future-proof across all layers of society.

ICT specialists

Czechia's performance in ICT training and ICT specialists shows a mixed picture when compared to the EU average.

Regarding ICT specialists, Czechia's total percentage of ICT specialists as a share of total employment was 4.3% in 2023 and 4.5% in 2024, both standing lower than the EU's 4.8% and 5.0%, respectively. However, Czechia's growth rate of 4.7% outpaced the EU's 4.2%. The percentage of women ICT specialists in Czechia was 12.4% in 2023 and 13.0% in 2024, below the EU's 19.4% and 19.5%, respectively. That said, Czechia's growth rate of 4.8% for women ICT specialists was notably higher than the EU's 0.5%.

In 2022, 23.08% of enterprises with 10 or more employees in Czechia provided ICT training, surpassing the EU's 22.37%. This trend continued in 2024, with 26.74% of Czech enterprises offering ICT training, compared to the EU's 22.29%. The annual growth rate for enterprises providing ICT training in Czechia was 7.6%, significantly higher than the EU's -0.2%.

Czechia demonstrates a strong commitment to ICT training, with a higher percentage of enterprises offering such training compared to the EU average and a robust annual growth rate. However, the country lags behind the EU in the overall percentage of ICT specialists and the representation of women ICT specialists. Despite this, Czechia's growth rates in these areas are encouraging, indicating a positive trajectory. Czechia's efforts in promoting ICT training are commendable, with a higher percentage of enterprises engaged in this activity and a strong annual growth rate.

To date, the country falls short of its national trajectory. To further enhance its ICT landscape, Czechia should focus on increasing the overall percentage of ICT specialists and, more importantly, the representation of women ICT specialists. The country's higher growth rates in these areas suggest that targeted initiatives could yield significant improvements, aligning Czechia more closely with the EU average.

Labour market demand for ICT professionals in Czechia is overall in line with the EU average across nearly all occupational profiles with some exceptions. For instance, 11% of online job postings in Czechia targeted ICT service managers, compared to just 3.8% EU-wide, indicating a high demand for leadership and strategic ICT roles. Similarly, software and applications developers and analysts accounted for 64.5% of job postings, slightly above the EU average of 58%. While demand for database and network professionals and ICT support technicians is slightly below EU averages (7.9% and 10.3%, respectively), the difference is marginal. However, Czechia has low demand for telecommunications and broadcasting technicians (0.2%) and electronics and telecom installers and repairers (0.7%).

Czechia's target for ICT specialists remains set at 7% of the employed population by 2030, below the EU-level target of 10%. While this reflects a cautious approach in the light of a relatively low starting point (4.3% in 2023), it also illustrates a missed opportunity to align with rising demand trends.

The adjusted roadmap strengthens the focus on ICT workforce development, especially in higher education. Measures aim to reduce dropout rates in ICT tertiary programmes and encourage closer collaboration between secondary schools and higher education institutions.

Furthermore, reskilling and upskilling measures have been expanded through national employment support programmes. An important initiative is the Ministry of Labour and Social Affairs' (MPSV) 'e-shop for digital skills', offering individuals direct access to certified training opportunities, from basic to specialised ICT skills. Another tool, 'NPO – Digi for a firm', supports company-level digital skills development. These programmes aim to reach at least 130 000 individuals by 2025, with a total allocation of approximately €261 million (CZK 6.5 billion). While these are promising developments, long-term success depends on systemic integration and sustained funding.

The 2024 report highlighted the need for a more ambitious approach to meet EU targets. While Czechia continues to lag in terms of target setting, it has acted on recommendations by enhancing flexibility in continuing education, deploying new training programmes, and preparing curriculum updates in regional and secondary education. These reforms are expected to show more clearly their impact closer to 2030.

The adjusted roadmap updates Measure on 'Taking into account ICT/Cybersecurity', introducing awareness campaigns and school outreach to increase women's participation in ICT and

cybersecurity. Initiatives such as summer camps led by non-profits, coordination with organisations like 'Czechitas', and events like 'Digital Czech Week' are designed to boost visibility and interest among girls and young women. Additional actions include the 'IT is for Girls' programme, where ICT professionals visit schools to inspire the next generation.

Several measures in the adjusted roadmap and ongoing programmes also target high-level digital professionals. The expansion of professionally oriented higher education programmes, including in cybersecurity and AI, and in synergy with the upcoming National Cybersecurity Strategy, which is expected to prioritise cybersecurity skills and capacity building.

Beyond the formal roadmap, Czechia is seeing a broader mobilisation of actors around ICT talent development. The establishment of regional training centres under the Czech Labour Office marks a decentralised approach to boosting digital capabilities.

2024 recommendation on ICT Specialists: increase the attractiveness of science, technology, engineering and mathematics (STEM) studies and ICT careers especially among women.

The country addressed fully the recommendation by putting significant policy actions into place in 2024. Czechia has put in place multiple initiatives specifically aimed at increasing the attractiveness of STEM disciplines, placing particular effort in targeting women.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

Czechia's digital public services and access to e-Health records have shown a mixed performance compared to the EU average, with notable improvements in growth rates across various categories. In 2023, Czechia's total score for digital public services for its population was 76.33, lagging behind the EU's 79.44. However, by 2024, Czechia's score improved to 81.46, still below the EU's 82.32. The growth rate for this category in Czechia was 6.7%, significantly higher than the EU's 3.6%. For cross-border digital public services for its population, Czechia's score was 63.78 in 2023 and 72.9 in 2024, surpassing the EU's 71.28 in 2024. Czechia's growth rate of 14.3% in this area outpaced the EU's 4.3%.

In the realm of digital public services for businesses, Czechia's total score was 83.75 in 2023 and 86.25 in 2024, slightly below the EU's 85.42 in 2023 but higher than the EU's 86.23 in 2024. Czechia's growth rate of 3.0% exceeded the EU's 0.9%. For cross-border digital public services for businesses, Czechia's score was 67.5 in 2023 and 72.5 in 2024, both standing lower than the EU's 73.13 and 73.76, respectively. However, Czechia's growth rate of 7.4% was substantially higher than the EU's 0.9%.

Regarding access to e-Health records, Czechia's total score was 51.06 in 2023 and 77.38 in 2024, both significantly lower than the EU's 79.12 and 82.70, respectively. Nevertheless, Czechia's growth rate of 51.6% was remarkably higher than the EU's 4.5%.

Czechia's digital public services and access to e-Health records have shown a path of improvement, with growth rates consistently outpacing the EU average. While Czechia's scores in these areas are generally lower than the EU average, the country's rapid growth rates indicate a promising direction. The most significant improvements are seen in cross-border digital public services for its population and access to e-Health records, where Czechia's growth rates are substantially higher than the EU's.

To further enhance digital public services and access to e-Health records, Czechia should focus on leveraging its strong growth rates to close the gap with the EU average. Policies aimed at sustaining

and accelerating this growth could lead to significant improvements in these areas. In addition, targeted investments in cross-border digital public services for businesses could help Czechia achieve higher scores in this category. Overall, Czechia's digital public services and access to e-Health records are on a positive path, with growth rates indicating a promising future.

e-ID

There have been no significant changes regarding the overall implementation approach for the EU Digital Identity Wallet (EUDIW) since the previous roadmap. However, the adjusted roadmap introduces a new measure aimed at creating a platform to support the deployment of the EUDIW across Czechia. The platform is expected to facilitate the adaptation of government systems and ensure interoperability with the EUDIW framework, with deployment planned between 2025 and 2026.

Parallel to this, Czechia continues to pilot its own national wallet solution, which currently has around 600 active users. While this application is still limited in scope - supporting only specific types of verifications - it forms the foundation for future integration with the European wallet ecosystem.

Overall, Czechia registered a negative trend in the share of e-Government users within the population, which fell from 86.02% in 2022, to 78.52% in 2024.

Digitalisation of public services for citizens and businesses

The adjusted roadmap introduces several new measures aimed at enhancing digital public services and addressing administrative complexity. The newly established Competence Centres under the Digital Information Agency (DIA) play a central role in supporting public sector bodies in their digital transformation efforts. These centres provide expert guidance, promote reusable solutions, and offer methodological and project management assistance - primarily at the central level - but open to all levels of public administration. This systemic approach is expected to improve the quality and efficiency of digital service provision.

Complementing this, the ROPIM reform (Reform for optimisation, implementation and methodological management of digitalised services including their capacity planning and communication of information to client public administration) aims to streamline service design and delivery through better capacity planning and enhanced communication with end users. Other notable initiatives include the creation of a Dataset Management System (DSMS) for improved data governance, and the Election Management Information System (ISSV), which aims to digitalise election-related administrative procedures, laying the groundwork for a common digital electoral process.

Overall, Czechia remains committed to the modernisation of its digital public services. Digitalisation is also seen as a key enabler of administrative simplification. The 'Only Once' principle and interoperable system development are actively promoted through the national legal framework and supported by the architectural planning team within the Digital and Information Agency (DIA). A growing network of 'Czech Points' provides in-person assistance across the country to promote uptake, particularly among digitally less engaged populations. In addition, efforts are underway to federate local and sectoral portals, and although not all activities are formalised in the roadmap, they contribute significantly to service accessibility and coherence.

While progress is uneven across different ministries and user groups, the strategic direction is increasingly aligned with Digital Decade goals. Continued support for local governments, broader public engagement, and further mobile access expansion - particularly via the Citizen's Portal - will be critical to maintaining momentum and fostering inclusive access to digital public services.

2024 recommendation on Digitalisation of public services: Accelerate efforts for the digitalisation of public services, also ensuring sufficient administrative resources to support these.

Czechia made some efforts to address the recommendation through new policy actions in 2024. Czechia continued its steady advancement in the digitalisation of public services in 2024, with measurable improvements in services for both businesses and citizens. Several new policy actions were introduced in the adjusted roadmap. Most notably, the establishment of Competence Centres under the Digital Information Agency (DIA) and the launch of the ROPIM reform signal a stronger institutional focus on service quality, administrative capacity, and user-centric design.

e-Health

Czechia continues to show notable progress in the digitalisation of healthcare services, albeit from a relatively low baseline. While the overall level of development in this area remains below the EU average, recent improvements - particularly in access to electronic health records - demonstrate a clear upward trajectory.

Despite this encouraging trend, challenges remain. Czechia's decentralised healthcare system, where hospitals retain responsibility for their own digital infrastructure, poses limitations in terms of interoperability and consistent data quality.

To address these remaining challenges - particularly the limitations posed by a decentralised healthcare system and fragmented data infrastructure - Czechia plans to channel part of the EU Recovery and Resilience Facility (RRF) funds to the National Health Information Portal, managed by the Ministry of Health. These funds will support both central digitalisation projects (NPO) and regional initiatives (NPO/IROP), including those led by hospitals and emergency medical services. A key focus is on strengthening interoperability and improving access to medical records for both patients and healthcare providers.

The adjusted roadmap does not introduce any new e-Health-specific measures. However, the implementation of measures focused on developing Czechia's central e-Health infrastructure is nearing completion and considered a critical enabler for broader digital transformation in healthcare. The infrastructure is expected to provide the computing power and secure data storage needed for key health data use cases. In 2025-2026, it is expected to support further digitalisation efforts across the healthcare system. Success will be assessed through operational indicators such as system responsiveness and integration capacity.

Looking ahead, Czechia's rapid growth in e-Health metrics - particularly in cross-border services and e-Health Records access - signals a positive direction. To sustain this momentum, continued investment, stronger system interoperability, and user-friendly access for citizens will be essential.

2024 recommendation on e-Health: Expand the coverage of the online access service to ensure that all citizens can access their electronic health data online. Expand the data types made available to citizens through the online access service. Increase the supply of health data by onboarding more categories of healthcare providers.

In 2024, Czechia continued the implementation of existing measures but did not take any new measure. Czechia has demonstrated notable progress in expanding access to electronic health data. While no new e-Health-specific measures were introduced in the adjusted roadmap, key implementation steps are underway to enhance system-wide access to e-Health records.

Building a safe and human centric digital environment and preserving our democracy

In terms of digital participation, Czechia shows relatively limited engagement compared to the EU average. In 2024, 8.64% of Czechs took part in online consultations or voted to define civic or political issues - such as urban planning or signing petitions - compared to 10.05% across the EU. This marks a slight increase from 8.10% in 2023 but remains well below the EU average. When it comes to expressing opinions on civic or political matters via websites or social media platforms like Facebook or X, only 8.02% of Czechs engaged in such activities in 2024, significantly below the EU average of 16.48%. This continues a downward trend from 9.00% in 2022 and 7.88% in 2023.

As a result, overall online civic or political participation in Czechia - defined as the combination of these two forms of engagement - stood at just 12.43% in 2024, substantially lower than the EU average of 20.45%. While participation has remained relatively stable in Czechia over the past three years (12.16% in 2022 and 11.87% in 2023), the widening gap with the EU average points to the need for stronger national efforts to foster digital civic engagement, particularly among underrepresented groups.

According to the 2025 Eurobarometer, a strong majority of Czech respondents believe that protecting children online is a matter of high urgency. Specifically, 89% consider urgent action necessary to address the negative impact of social media on children's mental health, and 87% say the same regarding cyberbullying and online harassment. Furthermore, 86% support urgent action to implement age assurance mechanisms to restrict access to age-inappropriate content.

At the same time, 75% of Czech respondents consider it important for public authorities to shape the development of artificial intelligence and new digital technologies in a way that respects fundamental rights and values (EU average of 83%).

In 2023, 61.44% of individuals in Czechia reported having encountered untrue or doubtful content online, a figure well above the EU average of 49.25%. However, only 23.75% of these individuals fact-checked the information. Therefore, according to the survey, although quite a significant share of Czechs came across dubious content, their efforts to verify it were relatively low. Young people (16-24) (67%) and adults (25-64) (66.42%) had the same likelihood of identifying untrue or doubtful content, though their verification rates varied, at 35.98% for young people and 25.28% for adults.

In conclusion, the 2023 data on online interactions in Czechia reveals a high prevalence of potentially misleading information, with a significant proportion of individuals encountering perceived untrue or doubtful content online. However, despite this, most individuals did not verify the accuracy of the information, highlighting a gap in critical thinking and digital literacy skills.

Leveraging digital transformation for a smart greening

Czechia has increasingly recognised the need to link the green and digital transitions. While the topic is gradually gaining visibility, it has yet to become a clearly prioritised dimension across national digital policy. A dedicated section has been added under the general objectives of the Digital Decade

roadmap, but the adjusted roadmap does not introduce fully-fledged measures in this area. Efforts remain fragmented, and no structured or coherent strategy specifically addresses the environmental impact of digitalisation, as already recommended in the 2024 Digital Decade report.

One key development is the adoption of new energy efficiency obligations for data centres, which entered into force in 2024. These obligations, outlined in Act No 469/2023 Coll. (Energy Act), introduce differentiated requirements for data centres based on their power input. Facilities over 500 kW must report data on energy and water consumption and the reuse of waste heat, while those exceeding 1 MW are required to ensure the recovery of waste heat for district heating or other energy purposes. These provisions represent an important step towards aligning digital infrastructure with sustainability goals. Their implementation will help generate the first consistent datasets on the environmental footprint of digital infrastructures in Czechia. However, there are no dedicated studies or observatories tracking the digital sector's full environmental footprint, leaving room for more systematic assessments.

At the level of households, Czechia ranks significantly above the EU average in recycling ICT equipment. According to the 2024 data, 23.27% of individuals reported recycling old desktop computers (compared to the EU average of 14.66%), while 17.81% recycled mobile phones or smartphones (EU: 10.93%), and 15.07% recycled laptops or tablets (EU: 11.31%). These figures suggest a relatively strong culture of device recycling among Czechs, an important trend given that most the digital sector's carbon footprint stems from the production and disposal of devices.

Despite these positive signals, the adjusted roadmap does not include any new policy measures or targets related to digital sustainability. Czechia has yet to adopt a structured policy to monitor emissions, energy use, or life cycle impacts of digital technologies beyond the newly introduced obligations for data centres.

That said, **several initiatives highlight the potential of digital technologies in supporting the green transition.** These include the 2025-2030 National Action Plan for Smart Grids, which promotes the integration of ICT into energy systems to enhance efficiency and integrate renewables, as well as AI mapping tools to identify optimal locations for renewable infrastructure. Digital tools are also being used to improve environmental monitoring. For instance, the SoilPAss knowledge portal simulates expert surveys to assess soil hygiene, and a new interactive database developed by the Czech University of Life Sciences will support climate adaptation planning based on geospatial data and risk assessments.

Although promising, these examples remain scattered. To fully leverage the twin transitions, Czechia will need to put into practice these initiatives through a comprehensive digital sustainability strategy and ensure that digitalisation is systematically integrated into the green transition, as recommended in the 2024 Digital Decade report.

According to the 2025 Eurobarometer, **62% of Czech respondents believe that digital technologies will play an important role in helping to fight climate change** - such as through apps tracking personal emissions or supporting online meetings compared to the EU average of 74%. At the same time, 70% of Czech respondents believe that ensuring digital technologies support the green transition should be an important priority for public authorities, as compared to 80% of the EU average.

2024 recommendation on Leveraging digital transformation for a smart greening: Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres; Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs. Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

Czechia made some efforts to address the recommendation through new policy actions in 2024. Czechia adopted binding energy efficiency obligations for data centres in 2024, marking a first step towards aligning digital infrastructure with sustainability goals. However, the adjusted roadmap does not introduce a coherent set of measures to operationalise the twin transition. Efforts remain fragmented, with no systematic monitoring of the environmental footprint of digital technologies or support measures to scale green digital solutions across sectors, as recommended.

Annex I – National roadmap analysis

Czechia's national Digital Decade strategic roadmap

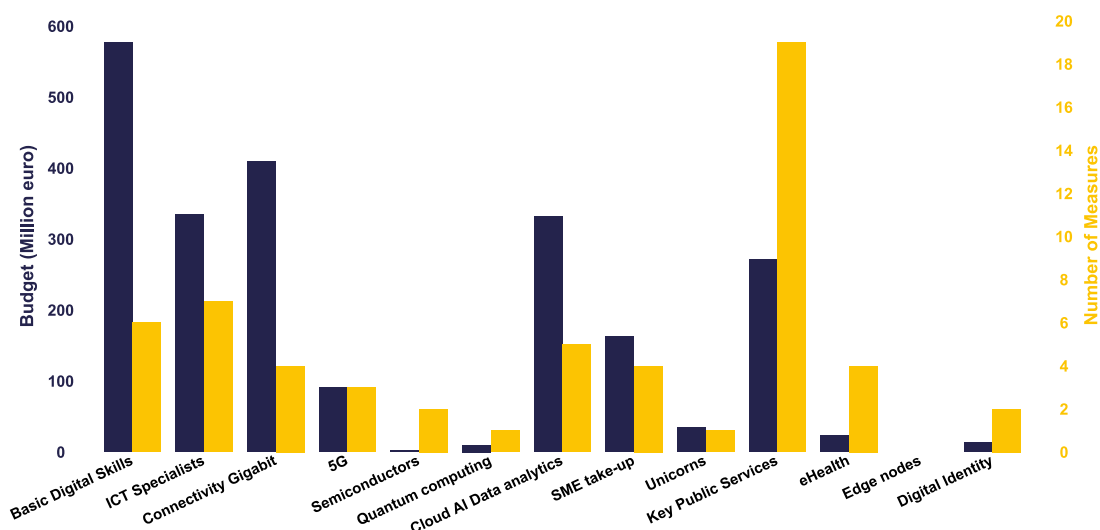
Czechia's 2025 roadmap adjustment presents a more mature and strategically grounded approach compared to the 2023 version. It introduces new and revised targets, strengthens measures across key areas such as enterprise digitalisation and emerging technologies, and shows improved alignment with EU strategic priorities including the Digital Decade and broader sovereignty objectives. While not all gaps are closed, the update marks clear progress in terms of policy depth, sectoral coverage, and political commitment.

The adjusted Czech roadmap demonstrates tangible progress in addressing several key recommendations outlined in the 2024 State of the Digital Decade Report, particularly in the areas of target setting, SME digitalisation, and support for advanced technologies. **Czechia has now formalised important missing targets such as for FTTP and edge nodes, directly responding to the recommendation to clarify trajectories and better align ambitions with EU goals.**

The roadmap also strengthens its support for the digitalisation of enterprises - especially SMEs - through the introduction of substantial and well-targeted funding measures.

In terms of ambition, some new or adjusted targets remain relatively cautious when compared to EU-level objectives. For instance, the FTTP coverage target is now set at 60% by 2030 - well below the EU ambition of full gigabit coverage - but appears realistic given Czechia's relatively low starting point and recent acceleration in roll-out. Similarly, the ICT specialists target remains modest at 7% of the workforce (versus the EU's 10%), reflecting a pragmatic view of national constraints but also signalling limited ambition in this area. By contrast, the targets related to 5G (100% coverage by 2030), shows stronger alignment with the EU benchmark.

Overall, Czechia can count on 58 measures introduced by 2023 and adjusted version of its national strategic roadmap, representing a total financial commitment of EUR 2.26 billion (0.71% of Czechia's GDP in 2024).

Measures and budget in the national roadmap⁶

In terms of adequacy, the roadmap shows important strengths, notably the strong alignment with EU objectives in emerging technologies (AI, quantum), and a reinforced support structure for SME digitalisation. However, several weaknesses persist. There is insufficient coverage of lagging areas such as FTTP in rural zones, the ambition remains low in key targets like ICT specialists and additional efforts could be made in supporting the twin digital-green transition. While most measures are well designed, their successful implementation will hinge on sustained funding, inter-ministerial coordination, and strong local engagement.

⁶ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Czechia is a member of the Alliance for Language Technologies EDIC and of the Local Digital Twins towards the CitiVERSE EDIC. Czechia is also working towards setting up an EDIC in the area of genomics. Czechia is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Czechia is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Czechia also contributes to the Digital Decade's Best Practices Accelerator through its flagship initiative Czech Digital Week 2023, presented within the Digital Skills Cluster. The nationwide event mobilised over 120 public activities across all 13 regions, including lectures, workshops, and seminars tailored to different audiences - ranging from youth to seniors. Focusing on topics such as AI, internet safety, and women in ICT, the initiative demonstrated a strong commitment to digital inclusion, empowerment, and civic participation.

EU funding for digital policies in Czechia

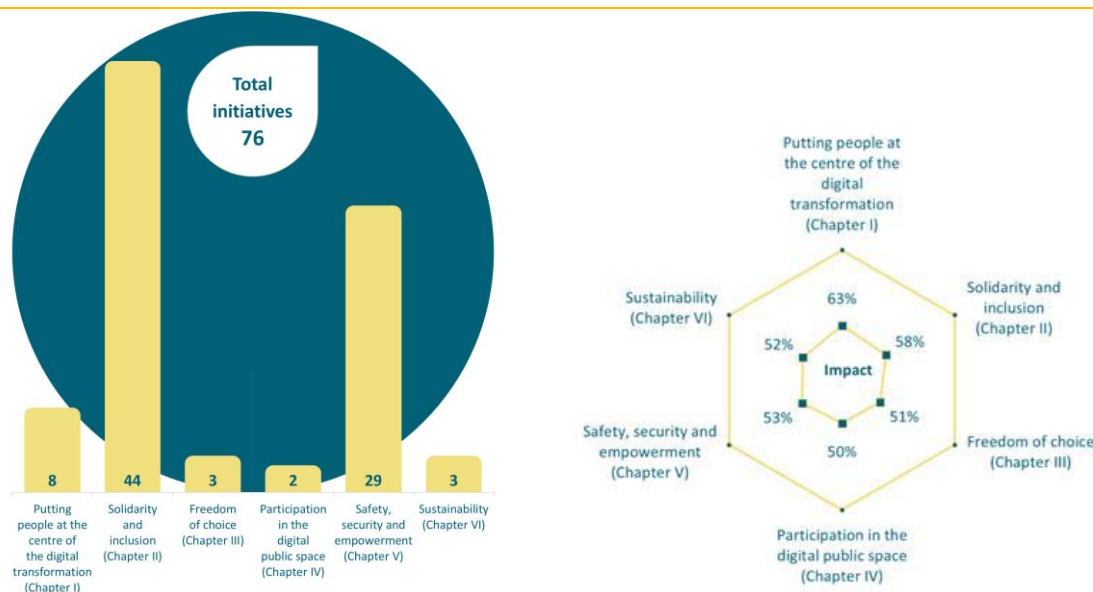
Czechia allocates 23% of its total recovery and resilience plan to digital (EUR 1.9 billion)⁷. In addition, under cohesion policy, EUR 1.9 billion (representing 9% of the country's total cohesion policy funding), is dedicated to advancing Czechia's digital transformation⁸. According to JRC estimates, EUR 3.2 billion directly contribute to achieving Digital Decade targets (of which EUR 1.9 billion comes from the RRF and EUR 1.3 billion from cohesion policy funding)⁹. **This funding is relatively well distributed across key priority areas.** Notably, the largest investments support digital public services (EUR 758 million), followed by measures supporting digital late adopters and the development of unicorns and scale-ups (each receiving EUR 411 million). Significant contributions also target basic digital skills (EUR 276 million), ICT specialists (EUR 184 million), and gigabit network coverage (EUR 409 million), supporting both infrastructure and human capital development. Meanwhile, smaller but strategic allocations support cloud computing, AI, and data analytics, as well as e-Health records.

⁷ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

⁸ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

⁹ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹⁰



Activity on Digital Rights and Principles (figure 1)

Czechia has been relatively active in implementing digital rights and principles, with 76 initiatives overall and 9 new initiatives launched in 2024, showing notable progress towards its commitments. Czechia is most active in the area of Digital education, training and skills (II). There is room for improvement, especially with regards to Fair and just working conditions (II) and A fair digital environment (III) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Czechia (mainly national government) and how these are perceived by citizens.

The indicators suggest that Czechia is most successful in implementing commitments related to Putting people at the centre of the digital transformation (I). Czechia should strengthen efforts in areas where the impact of digital rights initiatives appears to be limited, notably on Participation in the digital public space (IV).

According to the Special Eurobarometer 'Digital Decade 2025', 44% of citizens in Czechia think that the EU protects their digital rights well (no evolution since 2024). This corresponds to the EU average of 44%. Citizens are particularly confident about getting basic and advanced digital education, training and skills and getting more freedom of expression and information online (55%, below the EU average of 60% for both). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (52%, above the EU average of 48%).

¹⁰ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).

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PART 7/27

COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
{SWD(2025) 292 final} - {SWD(2025) 293 final} - {SWD(2025) 295 final}

DIGITAL DECADE 2025 COUNTRY REPORTS

Denmark

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Executive summary

Denmark benefits from a robust digital infrastructure, which provides the conditions for developing its high-quality public services and innovation. However, the country struggles with a shortage of skilled workers and widening gaps between small and large enterprises' adoption of key digital technologies. Denmark is emerging as a leader in digital inclusivity, trust and security.

The country shows a high level of ambition in its contribution to the Digital Decade, with 10 national targets, 90% of which are aligned with the EU 2030 targets. It is following its trajectories moderately well, with 67% of them being on track (based on 2024 trajectories established for 3 KPIs out of 8 analysed). Overall, Denmark addressed 70% of the 10 recommendations issued by the Commission in 2024, either by implementing significant policy changes (10%) or making some changes (60%) through new measures.

In 2024, Denmark maintained strong broadband and 5G coverage, advanced in quantum technology and saw growth in its semiconductor sector. However, challenges remain, including a digitalisation gap between small and large companies, especially in Artificial Intelligence (AI) adoption, and an ICT talent shortage. Digital public services improved further, with initiatives like the Social Media, Tech and Democracy Centre enhancing online safety, especially for children. The creation of a Ministry of Digitalisation marked a key step in unifying efforts across telecom, AI and emerging technologies, positioning Denmark to lead in the digital transformation.

Digital Decade KPI ⁽¹⁾	Denmark				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	DK	EU
Fixed Very High-Capacity Network (VHCN) coverage	97.2%	96.8%	-0.4%	-	82.5%	4.9%	-	100%
Fibre-to-the-Premises (FTTP) coverage	84.0%	87.2%	3.7%	-	69.2%	8.4%	-	-
Overall 5G coverage	100.0%	100.0%	0.0%	100.0%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	24	46	91.7%	-	2 257	90.5%	-	10000
SMEs with at least a basic level of digital intensity ⁽²⁾	-	90.5%	0.9%	-	72.9%	2.8%	95.0%	90%
Cloud	66.2%	-	-	-	-	-	77.2%	75%
Artificial Intelligence	15.2%	27.6%	81.8%	24.6%	13.5%	67.2%	76.6%	75%
Data analytics	49.5%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	77.4%	-	-	-	-	-	-	75%
Unicorns	9	9	0.0%	-	286	4.4%	-	500
At least basic digital skills	69.6%	-	-	-	-	-	80.0%	80%
ICT specialists	5.9%	5.8%	-1.7%	6.4%	5.0%	4.2%	7.7%	~10%
eID scheme notification		Yes						
Digital public services for citizens	84.2	79.5	-5.6%	-	82.3	3.6%	100.0	100
Digital public services for businesses	88.7	87.5	-1.3%	-	86.2	0.9%	100.0	100
Access to e-health records	97.9	97.9	0.0%	-	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics
(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special Eurobarometer on the Digital Decade 2025, 81% of Danish citizens consider that the digitalisation of daily public and private services is making their lives easier. Moreover, 94% consider it important that public authorities counter and mitigate the issue of fake news and disinformation online. Finally, regarding competitiveness, 88% deem it significant that European companies can grow and become 'European Champions' able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

Denmark's infrastructure indicators are all above the EU average, although the extension of coverage to smaller towns and remote areas could still be improved. The country also excels in research and innovation, with some noteworthy initiatives aimed at advancing its semiconductor and quantum technology ecosystems. However, despite a strong R&D community, technological innovations and ideas tend to be concentrated within a limited number of universities and innovation hubs. Similarly, R&D activities and investments are predominantly focused on large companies, which risks restricting the widespread adoption of key technologies across the broader business landscape. This divide is particularly evident in the digitalisation gap between large companies and Small and Medium-sized Enterprises (SMEs), with many SMEs facing challenges in adopting cutting-edge digital technologies. The revised roadmap attempts to address this challenge with a new strategic initiative on AI. With regard to cybersecurity, the Danish government is applying new security measures to protect online public services. It also continues to raise awareness of online dangers and to provide tools to help businesses improve their cybersecurity practices.

Protecting and empowering EU people and society

There are generally high levels of digital skills across different categories of Denmark's population, enabling individuals to use and take advantage of the country's highly digitalised public services. The revised roadmap also includes measures to further improve the understanding of digital solutions and technology in primary and secondary education. With regard to digital public services, the government's 'digital-by-default' approach has been instrumental in delivering user-centric and efficient public services both to citizens and businesses. The focus now is on further strengthening inclusivity and public trust, ensuring that no one is left behind in the digital transformation.

Another key priority for Denmark is to protect and enhance online wellbeing, particularly for vulnerable groups like children. Despite being on a strong digital footing, Danish companies – especially smaller enterprises – continue to face significant challenges in finding and retaining qualified ICT specialists, while also struggling to keep pace with upskilling and reskilling practices. Moreover, there is still a gender disparity in employed ICT specialists. The revised roadmap focuses on improving ICT-related courses in higher education, improving teachers' competencies in the field, continuing training activities for people in IT jobs and retaining international students in the ICT labour market. Nonetheless, at present, the country is lagging behind its national trajectory point for 2024.

Leveraging digital transformation for a smart greening

Danish public and private sector organisations are increasingly leveraging digital solutions to monitor energy consumption, which drives greater efficiency and sustainability. The revised roadmap sets out several measures that demonstrate this. Awareness of the importance of sustainable digital technologies is also growing, but it remains a developing area that requires further attention.

National digital decade strategic roadmap

Denmark submitted a revised national Digital Decade roadmap on 7 January 2025, containing 12 additional measures and four revised targets and trajectories. The revised roadmap addresses a substantial number of roadmap recommendations issued in 2024. The country has not presented any formal targets for FTTP coverage, edge nodes and unicorns, while the Very High-Capacity Networks (VHCN) trajectory and target ends at 2025 (98% coverage). Apart from ICT specialists, which remains slightly below the EU target (at 7.7% as the proportion of the total employed population working as ICT specialists instead of 10%), all the other national targets are aligned with the EU targets. Some targets (i.e. 95% of SMEs having a basic level of digitalisation, 77.2% of SMEs adopting cloud services and 76.6% adopting AI) are more ambitious than the EU's.

The revised roadmap continues to focus on AI and the digitalisation of SMEs, while also boosting basic digital skills in education and supporting ICT specialists. These efforts are clearly aligned with the new Commission's priorities for AI and digital skills. The revised roadmap has **67 measures with a budget of EUR 1.07 billion, of which EUR 832 million come from public budgets (equivalent to 0.21% of GDP)**. The roadmap covers a diverse range of Digital Decade objectives, with strengthened digital and green commitments, as well as a renewed focus on promoting a human-centred digital space and protecting society online.

Funding & projects for digital

Denmark allocates 27% of its total Recovery and Resilience Plan to digital (EUR 382 million)¹. In addition, under cohesion policy, EUR 63 million, representing 14% of the country's total cohesion policy funding, is dedicated to advancing Denmark's digital transformation².

Denmark is a member of the 'Alliance for Language Technologies' European Digital Infrastructure Consortium. It is also a participating state of the European High-Performance Computing Joint Undertaking (JU) and of the Chips JU.

The country contributed to the Digital Decade Best Practice Accelerator³ by sharing one best practice in the 'Business Uptake' cluster (i.e. the 'SME:Digital' initiative).

Digital rights and principles

According to a support study, Denmark has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 52 initiatives overall and two new initiatives launched in 2024. The country is mostly active in ensuring people remain at the centre of the digital transformation, while less activity was identified with regards to digital solidarity and inclusion. Nonetheless, measures in the latter area appear to have most impact on the ground, in contrast to efforts addressing freedom of choice.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Recommendations

- **SMEs' take-up of advanced digital technologies:** continue to raise SMEs' awareness of digital solutions to improve productivity and competitiveness. Help them to use and integrate key digital technologies into their business models.
- **ICT specialists and advanced skills:** monitor the new measures for improving advanced digital skills in higher education and for upskilling and reskilling ICT specialists already in the workforce. Find new ways of increasing young people's interest in ICT and STEM, including among women. Continue attracting foreign talent in ICT companies, while also retaining international students in ICT-related degree programmes.
- **Innovation ecosystems:** enhance collaboration between universities and businesses to improve the commercialisation of research. Consider targeted knowledge and financial support for SMEs, start-ups and scale-ups in key strategic sectors, so that more companies can contribute to the country's digital innovation.
- **Cybersecurity:** support cybersecurity measures in view of evolving threats, building capacity in both enterprises and public administrations.
- **Green transition:** continue to use digital tools to monitor the green transition and focus more on actions to make digital solutions more energy efficient through public-private collaborations.

A competitive, sovereign and resilient EU based on technological leadership

Denmark is highly competitive in digital, thanks to its strong research community, in areas like quantum, semiconductor and nanotechnology, with a **good level of digitalisation and a solid digital infrastructure**. The country generally performs very well in digital research and development (R&D), with both public funds and private partnerships playing a role in supporting research with a high innovation potential. The establishment of Gefion, a High-Performance Computing (HPC) system, is just one recent example of an exciting development in the country's research and innovation landscape. Overall, the [2024 European Innovation Scoreboard](#) defines Denmark as an innovation leader, with an index of 149.3 and performance at 135.7% of the EU average. This environment is fully supported by high broadband coverage and integral 5G connectivity, as well as a generally high level of digitalisation of both Danish businesses and their workforce.

Despite a robust R&D community, there is room to enhance the **cooperation between universities and businesses**, as technology innovations and ideas mostly revolve around a selected number of universities and innovation hubs. Moreover, **R&D activities and investments tend to concentrate in large companies**, which can create a digitalisation gap and limit the diffusion of key technologies to all companies. Although the Danish ICT sector has shown promise, there is still room for growth and improvement. Notably, in 2022, the sector accounted for 3.81% of the country's gross value added, marking a decline from 4.60% in 2018⁴. This percentage falls short of the EU average, which stood at 5.46% in 2022, indicating an opportunity for Denmark to strengthen its ICT sector. The recent agreement reached on the Entrepreneurship Package represents a positive turning point in this regard. The government's main focus areas include:

- improving access to risk capital;
- improving cooperation between businesses and universities to deliver relevant skills to the market;
- expanding entrepreneurial opportunities to areas around universities and innovation hubs, and improving technology transfer between universities and businesses;
- streamlining administrative processes and introducing measures such as regulatory sandboxes and a 'red carpet' initiative to reduce burdens on companies;
- encouraging more women to start businesses, with initiatives such as mobilising risk capital for diverse entrepreneurs.

On key digital technologies, Denmark aims to establish itself as a world leader in Artificial Intelligence (AI) within the public sector, while also strengthening the foundations for responsible development and use of AI by people and businesses. Over the past year, the country has made significant strides by launching a new [Strategic Approach to Artificial Intelligence \(2024-2027\)](#). Key objectives include establishing the Digital Taskforce on AI, aiming to expand the use of AI solutions within the public sector; establishing the Centre for AI in Society, which will provide interdisciplinary

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

research and advice on how authorities and companies best use the technology, as well as conduct independent research and practice-oriented evaluations and monitoring of generative AI; introducing a secure platform for developing transparent Danish-language models; and making Danish text data freely accessible and open-source, to foster the creation of innovative AI solutions.

Finally, Denmark has a thriving start-up culture, with access to venture and growth capital showing signs of improvement over the last 10 years. However, some companies still face some **difficulties in scaling up because of limited access to venture capital**.

Building technological leadership: digital infrastructure and technologies

Denmark's digital infrastructure remains robust, with high coverage rates across multiple metrics. The rollout of Very High-Capacity Networks (VHCN) continued in 2024, with strengthened efforts in smaller towns and rural areas. Although the country is nearing the 100% target, achieving complete coverage of remote areas, including small islands, will be more difficult and costly. By 2023, 100% of households already had 5G coverage. Overall, the country's strong connectivity serves as the backbone for its cutting-edge digitalisation and seamless integration of technology into everyday life. Notably, as the Special Eurobarometer report on the Digital Decade 2025⁵ reveals, a staggering 91% of Danish citizens consider the development of efficient and secure digital infrastructures to be a crucial priority for public authorities, underscoring the significance of investing in a reliable and resilient digital foundation.

Connectivity infrastructure

Denmark's digital infrastructure continues to outperform the EU average in several key areas. In 2023, Denmark's total VHCN coverage stood at 97.19% (the 2025 national target is 98%), significantly higher than the EU's 78.64%. This figure slightly decreased to 96.82% in 2024. For households in sparsely populated areas, VHCN coverage has had a growth rate of 1.3% since 2023, covering 91.98% of households in 2024. Despite providing an intermediate national target for 2025, **the country did not provide a national trajectory point for 2024.**

Denmark's Fibre-To-The-Premises (FTTP) coverage also exceeded EU averages, with 84.04% in 2023 and 87.19% (+3.7% growth) in 2024, compared to the EU's 63.87% and 69.24% respectively. For households in sparsely populated areas, Denmark's FTTP coverage also improved, covering 91.52% of households in 2024 (up from 90.33% in 2023). **The country did not provide a national trajectory point for 2024, nor a 2030 national target.**

The country has already achieved 100% overall 5G coverage (the 2030 national target is 100%) and is therefore on track according to its national trajectory. 5G in the 3.4 – 3.8 GHz band was estimated to cover 87.50% of households in 2024, largely above the EU's 67.72%. For households in sparsely populated areas, Denmark's 5G coverage in that band was estimated to be at 27.84% in 2024, comparable to the EU's 26.19%. Denmark's 5G spectrum assignment in pioneer bands was 99.17% in both 2024 and 2025, significantly higher than the EU's 73.4% and 74.63% respectively.

VHCN and FTTP

Denmark does not have a specific VHCN target for 2030. However, as outlined in the initial roadmap submitted in 2023, it aims to make sure that 98% of household and businesses achieve 1 Gbps coverage by the end of 2025. The country has not yet established a national target for FTTP coverage.

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

The Danish authorities explain that they have adopted a more comprehensive approach to broadband mapping, which goes beyond mere household coverage. Their national broadband mapping initiative assesses coverage at individual addresses, using data from internet service providers, as well as public buildings, using publicly available registries. Specifically, they are monitoring coverage for both households and businesses with access to speeds of at least 100 Mbps download and 30 Mbps upload, as well as those with access to networks offering 1 Gbps download speeds. This broader focus demonstrates Denmark's commitment to a more extensive and inclusive digital infrastructure. The question of updating the national broadband targets is currently under debate, in connection with the preparation of a new telecommunications strategy. This will be integrated into the Digital Decade roadmap and will potentially pave the way for further improvements to Denmark's digital landscape.

With both VHCN and FTTP deployment being well advanced, Denmark is currently focusing on covering the remaining addresses, strengthening connectivity with its outermost regions, improving penetration and take-up and maintaining good competition. The expansion of fast broadband access continues to rely mainly on a market-based roll-out. The National Broadband Fund also remains a key initiative. In 2024, the Fund received approximately EUR 6.7 million, on top of the EUR 5.3 million from unspent funds in previous years. These funds were mainly used to connect 473 individual addresses in remote areas to broadband and support 93 small rollout projects covering 1 135 addresses. Looking ahead, the National Broadband Fund will receive another EUR 6.7 million in 2025. Additionally, a new Municipal State Aid scheme was introduced in July 2024, allowing municipalities to provide financial support for deploying fixed broadband networks in market failure areas. So far, no municipalities have provided aid under this scheme. The Danish Government is also working on a new telecommunications strategy, which is expected to be finalised around the summer of 2025. The strategy aims to enhance broadband coverage, address the resilience and security of Denmark's digital infrastructure and maintain a regulatory framework that encourages investment in high-speed broadband networks. Meanwhile, the Agency for Digital Government is exploring the potential of satellite technology to connect the most remote areas to broadband.

Denmark's broadband take-up indicators also show strong performances. The demand for high-speed internet remains stable in Denmark, with a general trend showing an increase of high-speed subscriptions, in particular fibre subscriptions, and a decrease of xDSL (Digital Subscriber Line) and cable subscriptions. In 2024, 86.36% of fixed broadband subscriptions in Denmark were at speeds of 100 Mbps or higher, slightly up from 81.83% in the previous year and higher than the EU's 71.88%. 33.69% of broadband subscriptions had speeds of 1 Gbps or higher in 2024, also showing a slight increase since 2023, when there were 28.72% of subscriptions. Telecom operators are now focusing on simplifying the fibre customer journey to ensure that networks are being used to their full potential.

Through the deployment of submarine cables, Denmark is contributing to strengthening international connectivity also beyond its borders. The most prominent project currently being funded under the Connecting Europe Facility programme is the TUSASS Connect. Denmark has received three grants ([Tussas Connect 1](#), [Tussas Connect 2](#) and [Tussas Connect 3](#)), which are part of a larger vision to establish an open-ended submarine cable system from the towns of Qaqortoq to Aasiaat (Greenland), ready to connect to any third-party submarine cable systems to the North (to Alaska), West (Canada), South (St. Pierre et Miquelon) and East (Europe). The goal is to establish a backbone for modern high-speed connectivity between Europe, its international partners and remote Arctic communities.

Overall, the Danish telecom market is competitive, with several active key players. Nonetheless, the problem of scale may sometimes hamper smaller operators in terms of infrastructure costs, customer

acquisition and innovation, particularly given the relatively small market. In this regard, the [Danish Open Fibre Network Platform \(Open-Net\)](#) represents a model of telecom network infrastructure where network providers open up their infrastructure for access by a pool of service providers. Ultimately, this facilitates connection to networks for newer and smaller operators, increases service availability and quality for customers, incentivises service providers to offer more innovative solutions and encourages competition.

Recently, there has been a notable trend toward market consolidation. In 2024, for instance, [Telia Denmark sold its operations](#) to Norlys, a provider of fibre broadband and electricity. This move highlights how even major players are adapting their strategies to enhance scale and refocus on services where they can remain more competitive.

5G

With 5G coverage at 100%, Denmark has already reached the 2030 EU target. 5G networks are gaining traction, with mobile operators advertising ‘5G internet to the home’ as a competitive product to fixed broadband, leveraging its easy installation and convenient prices. In 2024, Denmark’s 5G SIM card penetration rate reached 103.95%⁶ of the population, well above the EU’s 35.56%, and increasing since 2023 (when the penetration rate was 81.73%).

As reported in the [2024 Digital Decade report](#), a telecom equipment provider and a major operator launched Denmark’s first 5G standalone (SA) network in the summer of 2023. In June 2024, they [broadcasted a football match](#) using the 5G SA network with mmWave technology. This was the first trial of its kind in Denmark, showcasing how 5G SA can support live sports broadcasts with low latency, high-speed data transfer and reduced production costs using 5G and drone cameras.

2024 recommendation on connectivity infrastructure: ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

In 2024, Denmark continued the implementation of existing measures but did not take any new measures. In line with the country’s strategy for high-speed broadband, the Agency for Digital Government supervises the mobile operators’ fulfilment of coverage obligations on the 3.5 GHz spectrum band to meet coverage goals. By the end of 2025, operators must cover 75% of the population with this band, following the 60% target set for 2023. This is part of the country’s efforts to accelerate the national rollout of 5G and 5G standalone networks.

Semiconductors

Denmark’s semiconductor ecosystem continues to grow, with selected actors focusing on chip design and research, production and quantum chip development. Despite Denmark’s strong R&D community, the country does not foresee to develop a broader, long-term national strategy on semiconductors.

Key research institutions, like Aarhus University, the Technical University of Denmark (DTU) and the University of Southern Denmark (SDU). **are driving innovation in chip design and playing a crucial role in shaping the next generation of engineers in the field.** As highlighted in the 2024 Digital Decade

⁶ Note that the percentage of the population with 5G SIM cards can exceed 100% because people can have more than one SIM card.

report, **Denmark also continues to expand its chip production capabilities**, notably through the [DTU Nanolab](#) (the National Centre for Nano Fabrication and Characterisation), which is expected to become the largest cleanroom facility for micro- and nanofabrication in Northern Europe by 2026/2027. **Additionally, the country is strong in developing quantum chips, with a focus on technology nodes such as photonics, superconducting and semiconducting.** Quantum Foundry Copenhagen, a major initiative launched in 2023 and progressing in 2024, involves the Niels Bohr Institute and the Novo Nordisk Foundation in developing tools and processes for quantum chip manufacturing.

To strengthen collaboration between the different actors in the semiconductor ecosystem, Denmark established a national microchip competence centre in 2024. This centre focuses on reinforcing the entire community of chip production, from research to design, fabrication, development and small-scale prototyping. The national centre will support start-ups, small and medium-size enterprises (SMEs) and educational initiatives, aiming to attract and inspire the next generation of chip designers and fabricators, ultimately strengthening Denmark's position in the global semiconductor industry.

Another key development in the Danish semiconductor industry in 2025 was the Danish Government's allocation of an additional EUR 18.7 million to support the country's participation in the European Chips Joint Undertaking (the European initiative focusing on R&D in semiconductors, microchips and nanochips).

Edge nodes

According to the Edge Node Observatory, Denmark is estimated to have deployed a total of 46 edge nodes by 2024, almost double from the 24 in 2023.

2024 recommendation on Edge nodes: (i) strengthen the measures contributing to targets where Denmark has the potential to do more, including on edge nodes; (ii) consider integrating the deployment of more edge nodes at national level, as well as investment programmes, factoring in the innovation that edge nodes will bring in the areas of AI, the Internet of Things (IoT) and networks rollout.

In 2024, no measures were taken to address the recommendation. The country did not include any national target or additional measures in the roadmap adjustment, underlining that the topic of edge nodes is still very much unexplored and that it will consider evaluating a realistic target for the next roadmap update.

Quantum technologies

Denmark continues to hold an international strength position in the field of quantum technology, particularly because of its developed research community and clear national strategy driving activities across different sectors.

The first part of the National Quantum Strategy focuses on research. The Danish quantum research community is spread out across the country, including the University of Copenhagen (KU), the Technical University of Denmark (DTU), Aarhus University (AU), the University of Southern Denmark (SDU) and Aalborg University (AAU). As part of a coordinated national effort to strengthen talent development, the institutions have jointly established a national quantum summer school. Through the [Danish e-Infrastructure Consortium \(DeiC\)](#), universities have access to powerful supercomputing resources and participate in national strategic decisions and investments both in the field of quantum and high-performance computing. As part of the national quantum strategy, DeiC has been allocated

approximately EUR 6.7 million from the research reserve in 2023, EUR 5.4 million in 2024 and in 2025 respectively. In this context, **one of the most prominent developments in 2024 was the inauguration of Gefion, Denmark's first AI supercomputer.** Providing researchers with unprecedented access to computational power, this infrastructure will support advancements in quantum computing, but also large-scale projects in AI research, biotechnology, sustainable energy and others. The supercomputer is housed in an AI-ready facility powered entirely by renewable energy.

The second part of the National Quantum Strategy focuses on the commercialisation of quantum technologies, security and international cooperation. In November 2024, Denmark inaugurated its international quantum centre (Quantum Denmark), which aims to create an ecosystem for collaboration among various stakeholders involved in the quantum landscape. The centre is a physical environment with access to offices, test and measurement equipment, as well as support for business development. The first companies will move into the offices by June 2025. The test centre will be a dedicated facility providing the infrastructure and resources for testing and validating quantum technologies. The advanced equipment in the test centre will be made available to researchers and businesses, including start-ups and spinouts from universities. Finally, the government has established an inter-ministerial quantum hub to strengthen national, regional and European strategic quantum cooperation. In November 2025, Denmark will be hosting the European Quantum Technology Conference (EQTC).

Different actors from science, industry and government in Denmark, together with counterparts in other Nordic and Baltic Member States, **are raising awareness of quantum research and application across sectors ranging from life science to logistics, defence and telecommunications** as part of the 'Mapping of Nordic Quantum Ecosystem' initiative. In December 2024, the Danish Quantum Community and the Danish Business Authority published a [catalogue of 16 Danish quantum use cases](#) to illustrate the potential applications and commercial opportunities of three key quantum technologies: quantum sensing (to measure, for instance, gravity, pressure and magnetic fields with a high degree of precision); quantum communications (to enable encryption that cannot be hacked); and quantum computing (which represents a new computational approach that can solve problems beyond the reach of traditional computers).

Beyond the more classic uses of quantum, the Danish Government sees the technology as having great potential to improve security and satellite services. In this regard, it released its first strategy for space research and innovation in November 2024. The strategy includes a new national programme under the Innovation Fund Denmark to strengthen Danish research and innovation in quantum technologies and space-based communication, support partnerships between the public and private sectors, invest in talent and real-world applications. At EU level, the Danish Government committed funding for its participation in the EuroQCI initiative with the [Danish Quantum Communication Infrastructure project](#). As part of the Danish quantum strategy, Innovation Fund Denmark is also facilitating a strategic programme that supports collaborative quantum research between national and international research institutions and companies. This dedicated pool of funds contributes to maintaining and further developing Denmark's position of strength in quantum technologies, paving the way for enhanced cooperation with strategically important international partners.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Enterprises in Denmark have a high overall digital maturity, with most companies focusing on data-driven decision-making and cloud adoption. However, **SMEs still lack the resources, expertise and budget to invest in digital technologies,** with the risk of being left behind. The gap between the pace

of adoption of larger companies and SMEs is particularly visible with AI. Supporting SMEs' digitalisation is key to Denmark's growth and competitiveness, given they account for a significant portion of the country's economy (97.2% of enterprises in 2022) and are crucial for both innovation and job creation.

[SMEs with at least basic digital intensity](#)

Denmark continues to be one of the EU countries with the largest share of SMEs having at least a basic level of digital intensity. Positioning itself significantly above the EU average (72.91%), the vast majority (90.47%) of SMEs (the 2030 national target is 95%) in Denmark had at least a basic level of digital intensity in 2024 (+0.9% annually from 2022). This share increased from 88.80% in 2022 (2022 is the last comparable year that used a similar methodology for measuring the digital intensity of enterprises). Moreover, zooming in on more digitally engaged SMEs, 57.93% had a high or very high degree of digital intensity, surpassing the EU average of 32.66% by a wide margin.

Denmark's target for SMEs' digital intensity remains at 95%, above the EU target by 2030, as initially reported in the 2023 roadmap. The country slightly adjusted the national trajectory to reflect the correct recent DESI values.

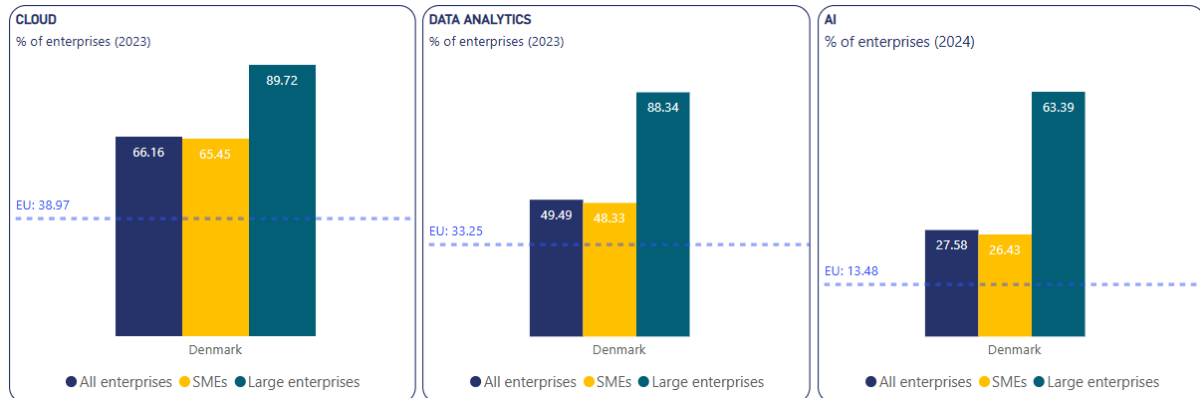
2024 recommendation on digitalisation of SMEs: focus on supporting and raising smaller enterprises' awareness of digital solutions to improve their businesses and learn how to better use them.

Denmark made some efforts to address the recommendation through new policy actions in 2024. Specifically, the country added a new measure in its national roadmap: the SME:Robot initiative (2024-2026), a scheme that very closely resembles the existing [SME:Digital](#) initiative (which features in the 'Business Uptake' cluster of the Digital Decade Best Practice Accelerator). With EUR 2.4 million from the Digitalisation Strategy and EUR 6.7 million from the Danish Board of Business Development, the goal is to support around 500 SMEs by 2026 with the opportunity to borrow a robot for a limited period and to access a collective outlet of knowledge, resources and advice on how to integrate robots in their businesses. The most common uses include automatising processes and reducing physical strain. The expected outcome is to have around 80% of these SMEs adopting robotics permanently to increase their production capacity and efficiency.

On top of the above measure, the country introduced a [Danish Business Development Strategy \(2024-2027\)](#) to foster the growth of Danish companies and SMEs and reduce administrative burden. This will be achieved by supporting the adoption of digital technologies and sustainable practices, enhancing innovation and improving the regulatory landscape. Launched in 2024 and running until 2026, the ['MyBusiness' initiative](#) also aims to reduce the reporting burden for companies by mapping and streamlining the data they submit to public authorities, with a focus on automation and integration.

A number of European Digital Innovation Hubs (EDIHs), including the [AI-Boost](#), [EDOcobot](#), [TechCircle](#) and [AddSmart](#), **are also actively supporting SMEs to become more digitalised and competitive.** Specifically, the hubs provide SMEs with technical expertise and training, the possibility to test digital solutions before investing in them, as well as networking opportunities. Overall, Denmark is involved in the network of EDIHs with five hubs funded under the Digital Europe Programme.

Take up of cloud/AI/data analytics



Denmark demonstrated a strong overall performance in the adoption of cloud computing, data analytics and AI technologies, consistently surpassing EU averages across all three domains. Taking the three technologies together, 77.36% of enterprises in Denmark engaged with either AI, cloud computing services or data analytics in 2023, far surpassing the EU average of 54.7%.

However, significant disparities in technology adoption continue to be observed between SMEs and large enterprises, with large enterprises consistently showing higher levels of uptake. Uptake of the three technologies among SMEs was slightly lower at 76.75%, while almost all large enterprises (97.63%) adopted AI technologies, cloud services or data analytics. These disparities reflect a broader EU level trend. Adoption of cloud, data analytics and the three technologies together were not measured in 2024.

- [Cloud](#)

Despite achieving a strong level of cloud uptake compared to the rest of the EU, a significant gap persists between the cloud adoption rates of SMEs and large enterprises. As already reported in the 2024 Digital Decade country report, the level of cloud uptake in Denmark in 2023 stood at 66.16% (the 2030 national target is 77.2%), which shows a strong lead compared to the EU average of 38.97%. However, while a big majority (89.72%) of large enterprises adopted cloud services, this was the case for more than half (65.45%) of SMEs. Still, this difference of 24.27 percentage points (pp) between SMEs and large enterprises is lower than the EU level gap of 31.68 pp.

With the 2024 adjustment, Denmark changed its national target for cloud uptake by enterprises slightly from 78% to 77.2%, explaining that this reflects a more realistic target according to an adjusted trajectory. With no new measures in the roadmap to support the adoption of cloud services by SMEs, it is unclear how the country will achieve a national target that is higher than the EU one by 2030.

2024 recommendation on cloud: stimulate the adoption of next generation cloud infrastructure and services by companies of all sizes.

In 2024, Denmark continued the implementation of existing measures but did not take any new measures. The country continues to participate in the Distributed Open Marketplace for Europe (DOME) project, which [launched](#) the first version of its cloud and edge services marketplace in July 2024. The government also reported that the Danish Competition and Consumer Authority has begun an investigation regarding competition problems with cloud services.

- [Data Analytics](#)

Denmark's enterprises are ahead of the curve when it comes to data analytics. However, a closer look at the data again reveals a substantial gap between SMEs and large enterprises. With 49.49% of businesses performing data analytics in 2023 (the 2030 national target is 75%), Denmark leads at EU level, compared to the EU average of 33.25%. The difference between SMEs and large enterprises is nonetheless substantial, with 88.34% of large companies using data analytics and less than half of SMEs (48.33%) adopting this practice, resulting in a disparity of 40.01 pp.

With the 2024 adjustment, Denmark aligned its national target for the take-up of data analytics by enterprises with the EU target of 75%. The national trajectory for this KPI was also adjusted according to the latest DESI figures.

- [Artificial Intelligence](#)

Danish enterprises generally perform well on AI adoption. However, like other EU countries, Danish SMEs are slower to adopt the technology compared to large enterprises. The country leads the EU in terms of AI adoption with 27.58% of Danish enterprises employing AI technology in 2024 (the 2030 target is 76.6%), after a progression of +81.8%, approximately double of the EU average of 13.48%. Again, when looking closely at the size of enterprises, SMEs had an uptake rate of 26.43% in 2024, whereas large enterprises demonstrated a much higher rate of 63.39% (which is more than double that of SMEs). Differently from the case of cloud adoption and the use of data analytics, the gap of 36.96 pp is higher than the EU gap of 28.53 pp. Overall, **the country is on track according to its national trajectory.**

Looking closer at how companies used AI, the [2025 Report on the State of Digital](#) by the Danish Ministry of Digitalisation highlights that the most common uses in 2024 were the production of written or spoken language and textual analysis.

2024 recommendation on AI: review the mix of measures to support the adoption of advanced digital technologies by businesses, particularly those targeting the adoption of AI by enterprises.

Denmark made efforts to address the recommendation by putting new policy actions into place in 2024. Specifically, the country introduced the Strategic Approach to Artificial Intelligence (2024-2027) with the overall ambition to strengthen the foundations for the responsible development and use of AI in Denmark, and to spread the adoption of AI in the private and public sectors. The approach includes a Danish vision for AI with three guiding principles for using and developing AI in the country:

- developing and using AI must be centred on citizens' fundamental rights and in accordance with Danish values;
- ensuring that Danish companies remain globally competitive and have strong opportunities—including within the EU—to develop, implement and sell solutions and business models that are based on the responsible use of AI.

Moreover, the strategic approach introduces four specific initiatives to help pave the way for responsible AI:

1. **The Digital Taskforce on Artificial Intelligence (2025-2027):** made up by representatives from the government, municipalities and regions, the AI Taskforce will help roll out AI solutions (both existing and new) on a large scale in the public sector. As some of these AI solutions will be developed with the help of the private sector, public-private partnerships

are also expected to arise. The government, Local Government Denmark and Danish Regions will provide the necessary funding for the Taskforce's work and the implementation of specific solutions in the state, municipalities and regions.

2. **Centre for Artificial Intelligence in Society (2024-2027):** the centre for AI in Society is a physical centre established at the University of Copenhagen. Its task will be two-fold: on the one hand, it will provide advice and guidance to both authorities and companies on how to make responsible use of AI in society, based both on technical knowledge and social, political, cultural and ethical considerations. On the other hand, the centre will also be responsible for conducting independent research, practice-oriented evaluation and monitoring of generative AI. The allocated budget for this initiative is EUR 2.77 million (until 2027) and a EUR 4 million research reserve for 2025.
3. **Secure Platform for developing transparent Danish-language models (2024-2027):** with a budget of EUR 2.77 million until 2027 and a EUR 1.34 million research reserve for 2025, this measure focuses on developing a secure platform for developing and training Danish language models (i.e. chatbots). These models can be accessed and used free-of-charge by both the public sector and the business community to improve citizen-centred services, free up labour or address gaps in the workforce.
4. **Danish text must be freely accessible (2024-2027):** with a budget of EUR 2.8 million until 2027 and EUR 4 million spent annually to purchase public data, the aim of this initiative is to make Danish text data freely available to support the development of AI solutions.

Denmark's AI strategy is comprehensive and demonstrates clear, well-defined goals and principles to be respected when using and developing AI. This aligns very well with what was revealed in the Eurobarometer on the Digital Decade 2025, which shows that a vast majority of Danish citizens (87%) believe it important for public authorities to take an active role in shaping the development of AI and new digital technologies, ensuring they respect EU rights and values.

Beyond companies' adoption, AI solutions are also gaining traction among local government representations and the general public. The association of Danish municipalities (Local Government Denmark, KL) developed a [map](#) of how different municipalities across the country are using AI to improve public services, with the goal of inspiring other municipalities to adopt similar solutions. Among the 188 municipal AI projects, the most frequently reported solutions are public chatbots and digital assistance to improve services and interface with citizens. In 2024, KL also introduced the [Municipalities' Technology Radar](#): a digital tool where municipalities can get an overview of the digital maturity of certain digital technologies and how these are being used by municipalities in specific sectors (i.e. employment, day care and schools, business and tourism, climate mitigation and more). The goal of the technology radar is to help local representatives make investment and prioritisation decisions, with the extra support of the [Knowledge Centre Meetup](#). On the use of generative AI tools by Danish citizens, a 2024 [report](#) by the Agency for Digitalisation highlights that 37% of the population used generative AI, with more than half (69%) of those aged 16-24 having used it the last three months of 2024.

Although the above data shows that the pace of AI adoption is positive, the potential for AI to drive broader economic growth and innovation in Denmark still remains largely untapped. The four measures launched under the Strategic Approach to Artificial Intelligence (2024-2027) focus on strengthening the foundation of a responsible AI, within a safe operating environment. The measures also aim to expand some of the uses that can be made of the technology. However, AI as it is being used now is still in its early phases, with still more to be done both in terms of investments to support

specialised AI applications and to enhance AI skills. Although the technology is being used more and more, integrating it in a longer-term public strategy or in a company's business model is more difficult. This is particularly true for smaller companies, who often lack the knowledge, skills and time to understand and test AI for the purpose of their business activities. A [2024 research study](#) shows that, among 265 surveyed companies, a majority experienced positive effects in their work when using generative AI (58% said AI helped them to complete tasks faster; 32% said there is more creativity in task-solving when using generative AI; 30% of companies also experienced an increase in the quality of task-solving; while 29% of companies found their work easier or less extensive thanks to AI's help). However, one in four companies say employees need to spend a lot of time in learning and experimenting with the technology. The same study shows that 49% of leaders in businesses lack insight into the real potential of generative AI, with 17% of leaders not having the time to drive it forward. Only 8% of surveyed companies reported having ongoing evaluations of the impact of generative AI on productivity. Also important are the regulatory uncertainty and compliance costs that SMEs often struggle with when faced with the choice of adopting the technology.

Unicorns, scale-ups and start-ups

At the beginning of 2025, Denmark had nine unicorns. The number has been stable since 2021. The country does not provide a formal target for unicorns by 2030, explaining that, although generally agreeing with the EU target's ambition, having a target that follows only the number of unicorns can create a one-sided focus on the valuation and current headquarter of certain types of high-growth companies.

Denmark is committed to creating a supportive environment for entrepreneurs, including those in the digital technology sector. The recent agreement on the [Entrepreneurship Package](#) (in June 2024), for example, aims to improve access risk to capital, which is essential for companies to grow. The access to venture and growth capital in Denmark has improved significantly over the last decade and the government is making further progress in increasing access to risk capital, with the Entrepreneurship Package expected to further enhance this through tax incentives, public co-financing and special funding for early-stage innovators. Private companies like Novo Nordisk, with its venture arm Novo Holdings, are also actively investing in start-ups and early-stage companies. Novo Nordisk's digital investments have mostly focused on health start-ups using digital technologies to improve patient outcomes and streamline operations.

While the Entrepreneurship Package was received as a positive milestone by many stakeholders, **some worry that the removal of the possibility for immediate deduction of investments in IT, know-how and patent rights might discourage start-ups in their early stages.** Despite the improvements in Danish venture and growth capital market, and the creation of Denmark's Export and Investment Fund in 2022, stakeholders also report that accessing coherent venture capital remains a key barrier for small companies and start-ups, along with recruiting skilled staff. By promising to improve business framework conditions, the recently Entrepreneurs Package will also make it easier for entrepreneurs to start a business in the country, with the capital deposit requirement for establishing a private company being halved to approximately EUR 2 500. Moreover, the strategy aims to make it more attractive for people to invest, having increased the tax threshold.

Aside from the funding and tax element, **Denmark shows some difficulties in translating good research into new business ideas, partly due to structural and cultural reasons.** [Denmark's 13 national clusters](#), which are networks of companies, research institutions and organisations spread across the country, are playing a key role in promoting innovation and competitiveness in specific

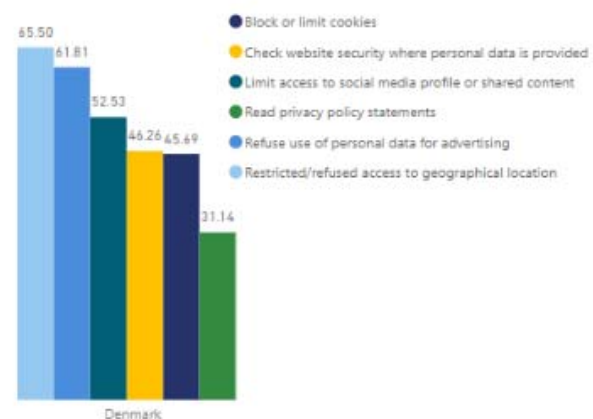
industries. In particular, the [DigitalLead](#) cluster, co-financed by the Danish Agency of Higher Education and Science, the Danish Board of Business Development and the European Regional Development Fund, aims to develop and implement digital solutions with a focus on areas like AI, blockchain and cybersecurity. The national accelerator programme [Beyond Beta](#), for instance, is still open for applications from start-ups who need help to grow and scale their business through additional resources and expertise. In early 2025, with the appointment of a new acting CEO, DigitalLead announced its three new areas of focus: green, efficient and secure software development and data management.

Strengthening Cybersecurity & Resilience

Danish citizens generally seem to have a high level of awareness of digital threats and how to act upon them. According to [EUROSTAT data](#), 83.95% of individuals took at least one action (see the six types of digital safety actions in the graph's legend below) to protect their personal data online in 2023, considerably surpassing the EU average of 69.55%. More than half of the population (61.16%) can be considered as having above basic digital safety skills (i.e. engaging in three different digital safety actions). The most common action taken was restricting or denying access to geographical location, with 65.5% of individuals doing so, while reading privacy policy statements was the least frequent action, reported by only 31.14% of individuals. According to the Eurobarometer on the Digital Decade 2025, Danish citizens overwhelmingly recognise the importance of enhancing cybersecurity, with 89% believing that protecting online data and ensuring the safety of digital technologies is significant to facilitate their daily digital interactions. Despite awareness and public perceptions, the 2024 Information Security report shows that 76% of Danes have been exposed to digital fraud attempts during the past year, which is an increase of almost 20 pp since 2022. Phishing attempts are still the most common digital threat to citizens, experienced by 68% of the population.

In 2024, the number of Danish enterprises experiencing ICT security incidents due to outside attacks (e.g. ransomware, denial-of-service attacks) slightly decreased from 4.78% in 2022 to 3.85% in 2024. Nonetheless, this number remains slightly above the EU average (3.43%). Moreover, [19.02% of enterprises](#) experienced ICT-related incidents leading to the unavailability of ICT services, the destruction or corruption of data or the disclosure of confidential data, while 15.74% of them experienced ICT incidents leading to the unavailability of ICT services due to hardware or software failure.

Type of activities to protect personal data online (% of individuals)



When it comes to cybersecurity measures, Danish enterprises are taking significant steps, but there is still room for improvement in terms of employee awareness and perception of cybersecurity as a strategic added value rather than just technical necessity. In terms of preventive measures taken, 97.53% of enterprises deployed some ICT security measures (above the EU average of 92.76%), but a smaller percentage of enterprises (70.07%) made their employees aware of their obligations in ICT security-related issues (still above the EU average of 59.97%). The Danish Industry Foundation (*Industriens Fond*), who also recently published a [2024 Cyberbarometer report](#), highlights that most of

the surveyed SMEs implemented special technical solutions to protect against malware, network security and automatic backups. **The report also examines how investments in cybersecurity actions among SMEs can lead to competitive advantages.** Results show that, in 2024, 69% of companies experienced at least one competitive advantage after investing in cybersecurity, brought about by increased efficiency (through the implementation and use of new technologies) and enhanced trust (i.e. increasing the confidence of customers and investors). Although there is a general positive trend of SMEs implementing more cybersecurity actions in 2024, around one in three of surveyed SMEs still see cybersecurity merely as a necessary protection against threats rather than a competitive parameter. This may be explained by their lack of knowledge or limited resources, with the conviction that cybersecurity measures are just another expense.

Recently, Denmark has made significant strides in its public cybersecurity measures. The Danish National Coordination Centre for Cybersecurity (NCC-DK) launched the Cybersecurity Community in January 2024, which has recruited more than 100 members and held several webinars and meetings to raise awareness of cybersecurity. The NCC-DK also allocated EUR 2.3 million in 2024 and 2025 for grants to support cybersecurity development projects, with 19 large projects currently in progress. In 2024 and 2025, a total of EUR 2.3 million was allocated to the grants. In November 2024, the Ministry of Digital Affairs and the Ministry of Industry, Business and Financial Affairs, in collaboration with the Telecommunications Industry Association in Denmark, Finance Denmark, DaneAge Association and the Danish Consumer Council, launched a package to counter digital fraud in telecom networks. The package includes: SMS filtering (i.e. a firewall to block SMS messages with signs of fraud); enhanced spoofing protection (i.e. stronger safeguards against scam calls on fixed and mobile phones; and extra phishing protection in the MitID, the country's digital identification system (i.e. an extra layer that will, for instance, warn users if they try to log in to a fake version of MitID on a phishing website).

Additionally, the Danish Government has put in place a new tool, [Systemoverblikket](#) (System Overview), on the [Sikkerdigital.dk](#) website to help SMEs improve their cybersecurity practices. The tool, which is free of charge, helps companies build an overview of their systems and data, and supplies them with tailored recommendations on how to better protect their IT systems. The Danish government has introduced several other tools to support SMEs and inspire their continuous interest in cyber security, including tabletop cyber games and services (e.g. the notification services and cyber hot line).

In terms of cybersecurity in healthcare, Denmark has a well-established approach, in line with the [new European Action Plan on the Cybersecurity of Hospitals and Healthcare Providers](#). The Danish Health Data Authority is responsible for the healthcare sector's cybersecurity unit, which focuses on improving cybersecurity capabilities and collaboration within the healthcare sector. The sector has a long history of collaboration, with a [strategy](#) to address shared cybersecurity challenges soon coming to an end. The Danish Health Data Authority is also working with international organisations, such as the European Union Agency for Cybersecurity (ENISA) and the European Health Information Sharing and Analysis Centre (EH-ISAC), to share knowledge and best practices and collaborate at operational and technical level.

Concerning the deployment of secure internet standards, Denmark leads in the roll-out of the Internet Protocol version 6 (IPv6) on the server side (with an adoption rate of 44%, above an EU average of 17% in Q3 of 2024). IPv6 is the newest version of the Internet's main communication system, helping the Internet to remain scalable, stable and secure. It is deployed by Internet providers to address capacity, route data and connect networks. While the server-side rollout (including upgrading servers and routers) of the IPv6 is advancing well, the deployment of this new version by

end-users still needs to improve (with an 11% adoption rate against an EU average of 36% in Q3 of 2024). Adopting the Domain Name System Security Extensions (DNSSEC) is also an important standard, as it introduces security features for the Domain Name System. In Denmark, the DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology) was 94% in Q3 of 2024, much above the EU average of 47%.

Overall, **with the recent governmental reshuffle, the topic of cyber and information security** is no longer scattered among several different ministries, including the former Ministry of Digital Affairs and Equality and the Ministry of Defence. Rather, as of August 2024, **the topics have been transferred to the newly established Ministry of Resilience and Preparedness**. This change is expected to positively affect the country's commitment to improving its cybersecurity measures.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Digital inclusion and digital trust are key to Denmark's digital transformation. The country excels in fostering basic digital skills, which are crucial for accessing and using its highly digitalised public services, widely regarded as some of the best globally in both quality and availability. Even with this high level of digital proficiency, Denmark places significant emphasis on ensuring that online public services remain inclusive. The government actively monitors which groups face the greatest challenges when navigating online services. Denmark is also taking firm steps to address digital risks and hold harmful content accountable to increase public trust. A prime example of this commitment is the recent creation of the Centre for Social Media, Tech and Democracy. A particular area of focus is the protection of children online.

Despite the high level of basic digital skills and robust digital public services, gaps remain in the ICT labour market. Companies face challenges in finding and recruiting ICT specialists, ultimately affecting their growth and productivity. To address this shortage, Denmark is working to increase the number of skilled professionals in the workforce through targeted labour market reforms.

Equipping people with digital skills

Basic Digital Skills

In 2023, a solid 69.62% of Denmark's population were equipped with at least basic digital skills (the 2030 national target is 80%), which is impressive compared to the EU average of 55.56%. Although no new data is available for 2024, a detailed breakdown by different demographic factors can help examine the country's strengths and challenges:

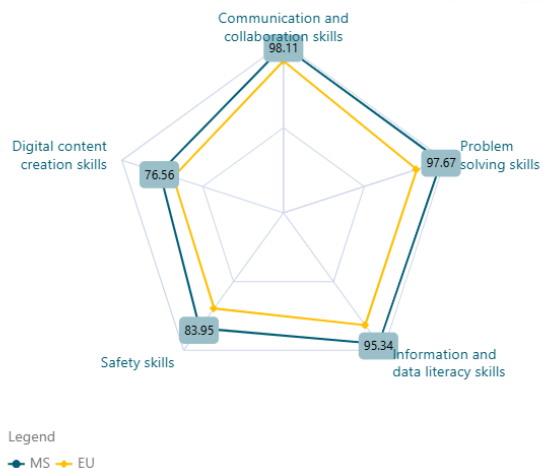
- **Gender gap:** the digital skills gap between genders is average, with 71.16% of men and 68.07% of women proficient in basic digital skills. The gap stands at 3.09 pp, slightly above the EU average of 2.23 pp.
- **Education level:** 83.47% of those with higher education levels have basic digital skills, which is better than the EU average of 79.83%. For people with lower levels of formal education, the proficiency rate is 58.07%, and the gap between this group and the national average is 11.55 pp, much smaller than the EU average gap of 21.95 pp.
- **Living Areas:** in Denmark's rural areas, 64.14% of residents had basic digital skills in 2023, which is quite high when compared to the EU average of 47.50%. The difference between rural and national averages in Denmark is a slim 5.48 pp, showing a small digital divide (8.06pp for the EU).
- **Age Groups:** young Danes aged 25 to 34 are the most digitally advanced, with a high proficiency rate of 81.51%, outdoing the EU average of 70.18%. The older generation, 65 to 74-year-olds, have a lower rate at 47.22%, but they are still doing better than the EU average of 28.19%.

- **Digital Skills Index Components:** looking at the Digital Skills Index components, Denmark shines across the board, scoring above the EU average in all five skill areas (see graph below). They are especially good at communication and collaboration, with a whopping 98.11% proficiency. Their lowest score is in digital content creation at 76.56%, which still surpasses the EU average of 68.28%.

Denmark is therefore on a strong digital footing, with high skill levels across the board. While there is a slight gender gap and some differences in basic digital skills between the younger and older generations, the overall picture is one of a country that is well ahead of the curve in basic digital skills.

The country's target for the basic digital skills of the population remains at 80%, as reported in the 2023 roadmap and fully in line with the EU target by 2030. The country slightly adjusted the national trajectory to reflect the recent DESI values.

Digital Skills Index components
% of individuals



2024 recommendation on basic digital skills: (i) strengthen the measures contributing to targets where Denmark has the potential to do more, including on digital skills; (ii) focus on integrating basic digital skills in primary and lower-secondary education at national level, to ensure there is an equal level of basic digital skills among the Danish population, paying particular attention to the existing urban-rural divide and gender gap.

In 2024, Denmark addressed the recommendations by introducing new measures. In line with the plans outlined in the 2023 national roadmap, Denmark officialised two new initiatives in the roadmap adjustment, with the goal of making technology comprehension a more integral part of the Danish education system, both for students and for teachers. One of the initiatives is part of a larger reform of the country's primary and lower secondary school launched in March 2024 (i.e. the Quality Programme for Primary and Lower Secondary School). The other initiative originates from the Digitalisation Strategy. The two agreed initiatives, under the umbrella of 'Equipping Danes for a Digital Future' are:

1. **Technology Comprehension in Primary and Lower Secondary School:** with EUR 21.5 million, the goal is to integrate (digital) technology comprehension into primary and lower secondary school education as of the school year 2027/2028. A committee has been established to prepare a subject plan for technology comprehension as an elective subject, which will focus on creative and practical dimensions of working with digital technologies contributing to students' digital empowerment, as well as supporting its full integration in some existing subjects (i.e. Danish 1st – 9th grade; mathematics 1st – 9th grade; nature and technology 4th – 6th grade). This process is expected to be finalised by August 2027.
2. **Technology Comprehension as a new competence for Teachers (2024-2025):** with EUR 1.34 million, the goal is to develop this new competence in teacher education, including professional development for teacher training instructors.

With regards to implementation, Denmark underlined that, as a result of a decentralised education system, each municipality is responsible for primary and lower secondary schools within their area

of remit. This means that introducing a new subject is the responsibility of local authorities. It thus remains to be seen how this reform will be implemented in practice in the next few years.

In its 2023 roadmap, Denmark had also mentioned the intention to improve the skills of people who generally have a low level of digital skills. According to the data, the target group would most likely be the older generations. However, the 2024 adjustment did not introduce any specific measures focusing on this particular section of the population.

ICT specialists

Denmark's total percentage of ICT specialists as a share of total employment was 5.8% in 2024 (the 2030 national target is 7.7%), higher than the EU's 5.0%. However, the country is lagging behind compared to its national trajectory, showing a growth rate of -1.7% since the 2023 value (5.9%).

In terms of employed female ICT specialists, Denmark showed a higher percentage compared to the EU, nonetheless experiencing a negative trend. In 2023, 22.6% of ICT specialists in Denmark were female, compared to the EU's 19.4%. This figure slightly decreased to 21.2% in 2024, while the EU's share increased to 19.5%. Gender differences also remain, with 78.80% employed male ICT specialists in 2024 (much higher than the 21.20% reported for females).

Despite having ICT employment rates that are generally above EU averages, the shortage of ICT specialists remains a pressing concern for companies in Denmark. In 2022, a significant 10% of companies reported struggling to fill ICT vacancies, far exceeding the EU average of 6%. The most in-demand professionals were software and applications developers and analysts, who accounted for nearly half (47.5%) of all online job postings for ICT specialists in 2024.

Denmark's still aims at reaching around 7.7% of ICT specialists in employment by 2030, below the 10% EU target. The country does not expect to change its national target before seeing the potential effects of current initiatives. Moreover, Denmark emphasises that the lack of ICT specialists is just one out of many other skills lacking in the labour market, with sectors like healthcare showing worrying shortages. According to the government, this calls for a balancing of different demands.

2024 recommendation on ICT specialists: follow up on the plans set out in the new digitalisation strategy to upskill and reskill ICT specialists. Design schemes to improve young people's interest in ICT, including among women, and retain international students in ICT-related degree programmes to increase enrolment rates.

In 2024, Denmark partly addressed the recommendation by taking new measures. Specifically, it put forth two new measures to stimulate the increase of IT specialists in the future and offer continuous education and training to those already in the workforce.

1. **Digital Advancement in Higher Education:** with EUR 4.7 million allocated for 2024, this initiative focuses on competence development for educators and curriculum development in higher education (including AI, IT simulation in healthcare, cybersecurity). This aims to strengthen digital knowledge and skills among graduates and the general workforce. The initiative was executed in 2024. Eight projects were selected and will run from 2025 to 2027.
2. **Continuing Education and Retention of IT Specialists (2024-2026):** with a total of EUR 4 million allocated for the three years. One part of the initiative focuses on continuing education and training activities for people in IT who are already in the workforce. An annual call took place in 2024 (with five projects funded) and more will come in 2025 and 2026. While some project activities will be one-off (for instance pilot voluntary courses to better identify demand and specific needs among employers, employees, teachers and students),

other projects and pilot courses might become mandatory parts of study programmes. The second part of the initiative focuses on retaining international computer science students in Denmark through part-time master programmes for working professionals.

On top of the measures outlined above, Denmark is in the process of implementing a major reform of university education. One of the changes involves introducing a new kind of Master programme, focused on combining theory and practical skills through relevant employment during studies. The aim is to better prepare students for the evolving job market. Another important part of the reform is to introduce a limit on the number of study places in university Bachelor programmes to strengthen the number of students in education outside universities, e.g. such as in education programmes for teachers, nurses or pedagogues. However, this has been met with some criticism from employers, who are worried that introducing a cap for universities offering only STEM courses will be detrimental to the number of students applying to these disciplines.

To attract international talent, the government has recently introduced a [strategy](#) featuring 41 new initiatives aimed at enhancing the framework conditions for businesses and talent acquisition. Among these initiatives, one key focus is reducing salary requirements for hiring foreign talent in companies that are less than five years old. This measure is designed to help young businesses tap into global talent, addressing labour market shortages and supporting growth.

To support upskilling and reskilling, Denmark primarily relies on EU funding through the European Social Fund Plus (ESF+) and the Recovery and Resilience Facility (RRF). However, some companies express concerns that these resources may not be sufficient, highlighting the need for additional investments in training to address ICT skills gaps. In 2024, 85.13% of large enterprises (with 250 persons employed or more) and 35.23% of enterprises with 10 or more employees (compared to the EU's 22.29%), reported providing training opportunities for their employees. However, only 29.06% of SMEs (with 10-49 persons employed) had the resources and capacity to offer similar support, suggesting differences in resources between companies of different sizes.

[Key digital public services and solutions – trusted, user-friendly, and accessible to all](#)

Denmark's digital public services, including access to e-health records, are robust and designed with a digital-by-default approach, with a notable 92% of citizens considering digital technologies as important to access public services (according to the Eurobarometer on the Digital Decade 2025). **In 2024, Denmark's score for citizens' digital public services dropped by -5.6% to 79.49 (the 2030 national target is 100), falling below the EU's 82.32. In the realm of digital public services for businesses (the 2030 national target is 100), Denmark's total score was 88.69 in 2023 and 87.5 in 2024 (-1.3%), above the EU's 86.23.** The Danish National Statistical Institute explains that the decline was due to false positives in the Cross-border Online Availability being corrected this year. Some websites, that were previously considered compliant last year, were found to not have a Cross-border e-ID system in place.

Regarding access to e-health records, Denmark's total score was 97.92 in both 2023 and 2024 (the 2030 national target is 100), higher than the EU's scores of 79.12 and 82.70 respectively. Denmark saw no growth between 2023 and 2024, which does not necessarily indicate stagnation. Rather, it may suggest that some measures have not yet been fully implemented or launched, meaning their impact has not yet had its effects on the ground or is reflected in the score. Of the 13 data categories investigated in this study, only data about medical images is not yet available to citizens. Denmark has reached full maturity on the other aspects of the e-health framework.

e-ID

MitID still remains the main digital identification system in Denmark. As of January 2025, the number of active MitID users was approximately 5.5 million. A recent user survey conducted in 2024 shows that 83% of users were overall satisfied when using MitID and that 87% of respondents used MitID at least once a week. Users' confidence levels remain high, at 89%. Despite a high overall use of MitID, [recent data from the Agency for Digital Government](#) also highlights that still 3.4% of the Danish population (15+ years-old) did not have an active MitID in January 2025, with most of this group belonging to the senior population (75+ years-old). This means that digital challenges persist, and individuals without access to digital identity in Denmark still require support.

Based on the existing MitID system, the country recently [announced](#) the upcoming launch, expected in early 2026, of a new mobile app that will allow users to digitally verify their identity for various services, such as online shopping, logging in to public services and more. Denmark highlights that users should be able to share only necessary personal information (i.e. declaring they are 18+ years old without disclosing their full date of birth). The app should be usable across the EU.

Denmark remains committed to implementing the EU Digital Identity Wallet. Their priority lies in ensuring that the tool can contribute to easier and safer daily life for Danish citizens and enterprises. The country sees a positive potential in the use of the wallet, particularly for the purposes of age verification.

Digitalisation of public services for citizens and businesses

Denmark still aims at reaching a score of 100 for the digitalisation of public services for citizens and businesses. The country did not lay out national trajectory points for 2024 and no adjustments of the national roadmap were provided in 2024. Although Denmark set out a significant number of measures to digitalise key public services in the original 2023 roadmap and it is participating in several EU projects to improve their interoperability and accessibility, it appears to have reached a point of stagnation. This means some more efforts and a close monitoring may be needed to ensure the targets are met.

The share of people using government internet websites or apps has remained very high and stable throughout the years, at 98.50% in 2024, which is very similar to the 98.86% reported in 2022 and much higher than the 2024 EU average of 74.71%. In this context, **Denmark's digital public sector was reported to be the best worldwide by the [United Nations E-Government knowledgebase](#)**. The country ranked first in terms of digital government among the 193 UN Member States, with an e-government development index of 0.98 (out of 1) and an e-participation index of 0.98 (which had grown from 0.88 since 2022). The former index reflects the government's ability to leverage technology for providing services to citizens, businesses and other stakeholders, based on the availability and quality of online government services, the level of infrastructure available to citizens (such as internet connectivity) and the overall level of education, skills and knowledge of the population. The e-participation index focuses on how the government engages citizens in decision-making processes using ICT through online consultations, online voting and e-participation platforms.

The government's efforts to increase the use of digital public services go hand-in-hand with ensuring digital inclusion and building citizens' trust in these services. In mid-2024, the Agency for Digital Government, Local Government Denmark and Danish Regions established [six principles for digital inclusion](#) in the public sector, which include supporting citizens' rights, designing accessible solutions for all and offering both digital and non-digital alternatives. To help implement these principles, a

[website](#) was set up with tools, use cases and resources. The [Nordic Digital Government project](#) (Nordic DigiGovLab, 2024-2026) also aims to foster a more human-centric and inclusive digital government across the Nordic-Baltic region. This project seeks to ensure that citizens can easily navigate life events digitally by exploring governance strategies, initiating automatic data exchange in life events like death and inheritance, and developing AI trust concepts. In support of digital inclusion efforts, the Danish government ran a [campaign](#) in 2024 to encourage digitally skilled citizens to volunteer and assist others with digital public services, with grants available for related projects. A [report](#) published in 2024 reveal that approximately 279 000 people (mostly aged 74+) were exempt from Digital Post in Q2 of 2024, and many refrain from using MitID (Denmark's digital identity) because of skills gaps or security concerns.

Developing citizens' trust in digital public services is pivotal for digital inclusion. A 2024 [survey](#) reveals that 82% of the population feels confident in digital public services, reflecting a 4-percentage-point increase from 2023. However, trust varies by age, education and socio-economic status. For instance, only 71% of those aged 75 and older trust digital public services, and citizens with lower educational levels or in retired/pre-retirement categories tend to have less confidence. PostNord's recent [announcement](#) (March 2025) to end all letter deliveries by the end of the year raises concerns about exacerbating the digital divide, particularly for those who are digitally illiterate, lack internet access or rely on physical mail, potentially leaving vulnerable groups more excluded. As revealed by the Eurobarometer on the Digital Decade 2025, 94% of Danish citizens consider ensuring proper human support to be significant for accessing and using digital technologies and services.

With regards to public data, the new Entrepreneurship Strategy includes a component to improve access to public data for businesses with a total allocated budget of EUR 24 million from 2025-2030. Although there is still limited knowledge regarding what datasets are the most valuable to make accessible, the government wants to ensure that citizens' rights and privacy are always protected.

e-Health

Denmark still aims at a score of 100 for the access to medical records, in line with the 2030 EU target. The country did not provide a national trajectory point for 2024, but recent progress (see State of the Digital Decade report 2024) hint that this target is realistic.

Like for many other public services, health-related services are commonly accessed online. According to [data from the Danish National Statistical Institute](#), more than two out of three citizens (aged 15-89) have been in digital contact with their general practitioner in the past year, with citizens aged over 75 having the lowest share of digital contact with their general practitioner. Four out of five citizens said they felt safe in this digital contact, with still 2% of citizens in the same age range reporting they felt either less or not safe at all in using e-Health services. 62% of the population saw great advantages in using online tools for health purposes, while only 5% perceived the use of digital tools for health purposes as a disadvantage, highlighting the importance of direct, physical contact.

2024 recommendation on e-health: make the data type of medical images available to citizens through the online access service.

In 2024, Denmark continued the implementation of existing measures but did not take any new measure. As mentioned above, the country's composite maturity score remained the same as last year and data about medical images is not yet available to citizens (although medical imaging reports – including descriptions of X-rays and scans done at public hospitals – are available through the Danish health platform [Sundhedsportalen](#)). The country is still committed to ensuring patients

have access to a comprehensive overview of their medical pathway and access to health data. As reported in the 2023 roadmap, solutions, pilots and tests are being carried out to share more information with citizens about their course of action with regards to, for example, treatment plans and diagnoses. Moreover, Denmark highlights its intention to further develop the health record with new health data until end of this year. It is still to be seen how these measures will influence the e-health indicator in the future.

In 2024, the Danish Government presented a [healthcare reform](#), including initiatives to expand digital health services and more possibilities for citizens to access their health data online. Several measures in the Danish Recovery and Resilience Plan (RRP) also support the digitalisation of the Danish healthcare system by promoting the adoption of digital solutions in patient treatment and enhancing data management practices to improve monitoring of shortages and supply issues related to critical medical products.

Building a safe and human centric digital environment and preserving our democracy

For Danish people, digital technologies are not only used to access public services but also to participate in political and civic life. In 2024, 28.31% of people used the internet to participate to consultations, for voting or communicating opinions online. This share is above the EU average (20.45%) and trending upwards (25.79% in 2022). Like in most EU countries, however, the online space in Denmark is not free from harmful activities like disinformation. In 2023, 64.64% of individuals indicated having seen untrue or doubtful content online, notably higher than the EU average of 49.25%. This high percentage may also reflect a generally strong awareness among citizens about online disinformation. Indeed, there appears to be a commendable effort to verify potentially misleading content, with 28.8% of individuals having checked the accuracy of such material. A majority of the younger respondents (74.98%) of the survey (16-24 years old) were more likely than adults (25-64 years old) (66.89%) to report encountering such misleading content. Their verification rates also differed to a notable extent, with 38.92% of youth verifying content compared to 29.27% of adults.

Recent data on online interactions in Denmark reveals another concerning picture, with a high prevalence of perceived degrading online content, particularly affecting young people. Almost half of the population (47.9%) reported encountering hostile or degrading messages online in 2023. Young people (16-24 years old) were particularly affected, with 67.20% reporting such experiences compared to 48.53% of adults (25-64), showing a clear age-related disparity. The share of young people encountering these kinds of messages is one of the highest in the EU. This aligns with the strong public sentiment among Danish citizens revealed in the Eurobarometer on the Digital Decade 2025, where a striking 93% believe that urgent action by public authorities is needed to address the negative consequences of social media on children's mental health, as well as to combat cyberbullying and online harassment.

A new centre for Social Media, Tech and Democracy was established in 2023, under the Ministry of Digital Affairs. The centre's task is to explore tech regulation, support policy development and strengthen oversight of social media. The centre will monitor the impact of tech giants on democracy, social cohesion and well-being, promote data access for researchers and collaborate with independent experts. With a special eye on children and the younger population, in June 2024 Denmark established an alliance of prominent organisations – including Save the Children Denmark, Børns Vilkår (Children's rights and helpline organisation), Local Government Denmark and the Danish Youth Council – with the aim of enhancing online safety for children and teenagers. Moreover, following its establishment in

2023, the Commission for the Well-being of Children and Young People recently [published](#) 35 recommendations for the government, including six recommendations on the need to achieve a balanced digital life. The digital recommendations focus on ensuring stronger digital regulations for children and young people, including prohibiting addictive design features, implementing age verification (with 88% of Danish citizens viewing this as an urgent action to be taken to restrict age-inappropriate content) and banning advertising to minors. They also emphasise adults as role models, the need for smartphone-free schools, firewalls in educational institutions and the protection of children's privacy by halting the live streaming of sports activities with children and young people. Additionally, the [2024 agreement](#) to integrate technology literacy into primary and lower secondary schools also represents a good measure to make students more aware of the risks of the online space.

Alongside the measures implemented by the government, there are numerous other initiatives that are helping to enhance mental health and well-being online. One of the most prominent examples is [Mindhelper.dk](#), which attracts approximately 1 million visitors annually. As a free and open digital platform, it offers a wide range of tools and support to individuals, making mental health resources more accessible to everyone.

Leveraging digital transformation for a smart greening

The synergy between the green and digital transition is becoming an important part of Denmark's strategy for sustainable development. Both public and private entities are increasingly making use of digital solutions to save and optimise energy consumption, while also becoming more aware of the importance of having more sustainable digital technologies. Similarly, the Eurobarometer on the Digital Decade 2025 highlights the strong support among Danish citizens for leveraging digital technologies to combat climate change, with 77% recognising their potential to make a positive impact through tools such as emission-tracking apps, car-sharing platforms and virtual meetings. Moreover, a significant majority (87%) believe that public authorities have a crucial role to play in promoting and facilitating the use of digital solutions to address environmental challenges.

Recycling old ICT equipment is more of a common practice in Denmark than in other EU countries, with 24.57% of people recycling their old desktop computers, 17.39% recycling their mobile phones and 19.44% recycling their laptops or tablets in 2024. This is much more than the EU average of 14.66%, 10.93% and 11.31% respectively. When purchasing ICT devices, 22.47% of people considered energy efficiency to be important (compared to an EU average of 19.35%). These kinds of considerations are most common among young people aged 16-24. Nonetheless, the criterion of energy efficiency still takes on less importance for buyers than the price (58.62% of buyers considered it as important), brand and design of the ICT device (49.43%).

2024 recommendation on green ICT: continue developing a coherent approach to twinning the digital and green transitions, including by supporting relevant pilots.

- First, continue to promote energy and material efficiency of digital infrastructures, particularly data centres.
- Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors.

Build on existing measures to monitor and quantify the emission reductions of the deployed digital solutions, as well as attracting relevant financing.

In 2024, Denmark partly addressed the recommendations by introducing new policy actions. In its adjusted roadmap, Denmark presents three additional measures contributing to improving data and data sharing practices to green other sectors:

1. **Establishment and Operation of a Supply Digitalisation Programme:** the programme aims to create frameworks and regulations for how data in the utilities sector is collected, structured and made accessible through a public-private partnership between authorities, the utilities sector and data users. Initially, the programme will focus on data within the electricity, heating and water sectors. A total of EUR 9.58 million will be allocated to the initiative for 2024-2027.
2. **Monitoring groundwater and ensuring clean drinking water:** the initiative aims to enhance knowledge about groundwater and drinking water resources based on validated data. This is crucial for maintaining a future supply of drinking water and for planning climate adaptation efforts. A total of EUR 3.2 million will be allocated to the initiative for 2024-2027, focusing on modernising the national database for groundwater and drinking water data.

3. **Improved transition to electric vehicles and alternative fuels through open and standardised data:** the initiative aims to develop an IT solution to store and distribute data from public vehicle charging points and fuelling stations in Denmark. A total of EUR 1.62 million will be allocated to the initiative for 2024-2027.

On top of the three measures mentioned above, digital tools and data are being used in many ways to support the green agenda. 'Climate and resources' is the title of one of the subsections of the [Municipalities' Digitalisation Programme \(2021-2025\)](#), which focuses on making data on climate, buildings, infrastructure and geography more readily available to support the work of municipalities and local representatives in climate change mitigation. The subprogramme focuses on three projects: data-supported climate change adaptation, strengthening efforts on digital waste data and data-based energy management.

While most government measures focus on the use of digital tools to support the green transition, awareness of the need to make digital technologies and infrastructure greener is also starting to take centre-stage in a range of initiatives. The Agency of Digital Government has recently published a report about calculating the climate impact of its solutions, presenting a model for calculating the annual climate footprint of IT solutions for companies and public organisations. The report showcases the use of the model, calculating the annual climate footprint of two large public IT solutions.

Another [recent report](#) from the DigitalLead cluster and the Danish Technological Institute explores **ways in which companies can make software solutions and data processing more energy efficient.** Among the concrete steps to take, the report mentions:

- choosing energy-efficient software solutions by design;
- using techniques like eliminating dead code and open-source libraries to reduce energy consumption;
- developing algorithms that run processes in parallel to optimise energy consumption;
- avoiding unnecessary data transfers and processing;
- postponing data loading until necessary and choosing energy-intensive times wisely;
- moving tasks to the cloud.

By following these measures and principles, the report highlights that companies can not only reduce the energy consumption of their digital practices, but also gain important competitive advantages.

Another important instrument in speeding up the green and digital transition is public procurement of IT services and products. In 2023, updated central government procurement rules introduced new requirements for government entities to actively support this transition. One key measure is the mandated use of green procurement criteria embedded in existing government framework agreements covering a wide range of digital products and services, including those related to data centres. Many of these criteria are based on recent national testing and evaluation of the EU's Green Public Procurement standards for data centres, server rooms and cloud services.

Annex I – National roadmap analysis

Denmark's national Digital Decade strategic roadmap

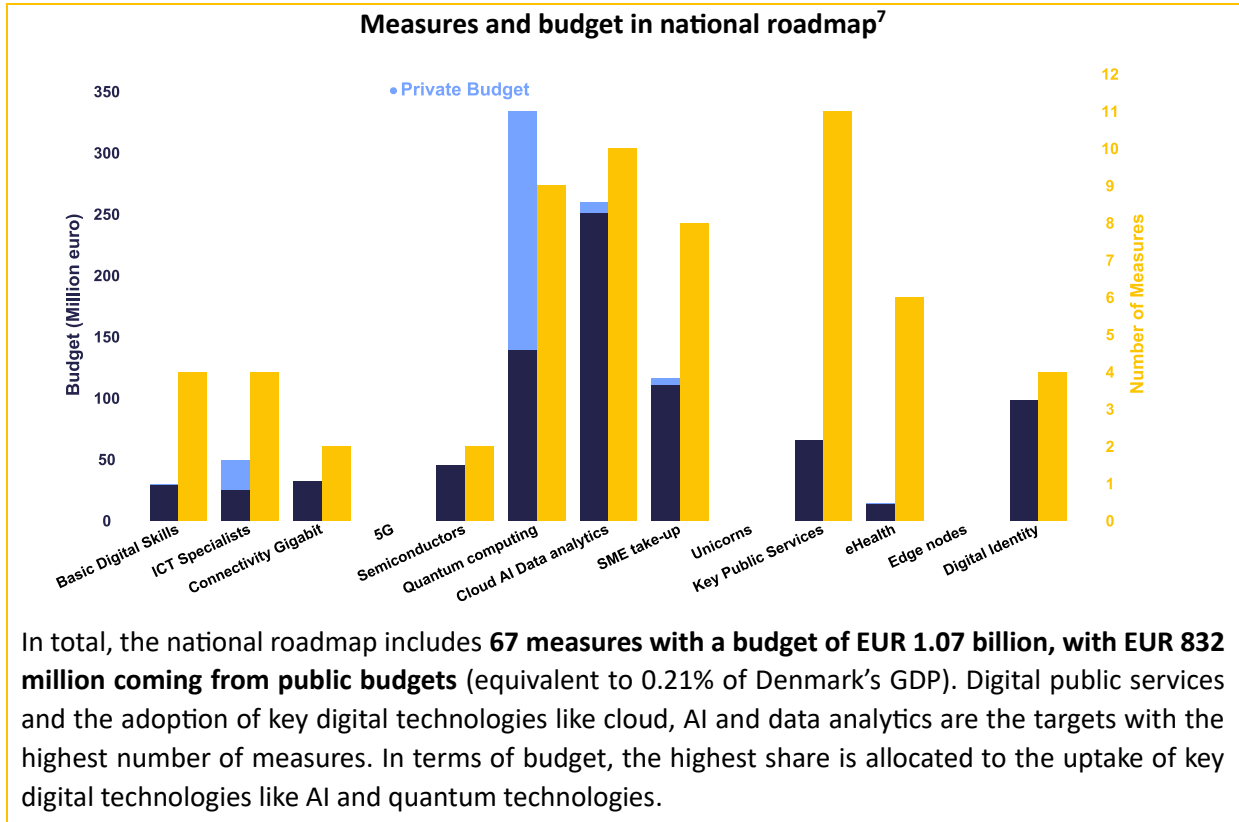
Denmark submitted an adjustment of its national Digital Decade roadmap on 7 January 2025. As part of the adjustment, Denmark introduced 12 new measures and revised four targets and trajectories, clearly aligning with the new Commission's priorities on AI and digital skills. None of the existing measures from the 2023 roadmap saw a budget change or additional qualification.

Overall, Denmark addressed a substantial number of roadmap recommendations issued in 2024.

With regards to targets, Denmark raised the ambition of its national target for the take-up of data analytics by enterprises (75%) and slightly revised downward its national target on the take-up of cloud by enterprises (77.2%), arguing it is a more realistic target. It nonetheless remains above the EU ambition of 75% adoption. It did not provide a target and trajectory for FTTP and edge nodes, mentioning potential plans to evaluate them in Spring 2025. The country also refrains from including a target for unicorns, despite underlining its broad agreement with the EU-level target. The VHCN trajectory was not revised to provide a path until 2030. Denmark's national target for ICT specialists remains the same as the one proposed in the 2023 roadmap (7.7% of the employed population versus a 10% at EU level), with the country emphasising high demands for labour in many other sectors. Denmark notes that they plan to keep the target as it is until more is known on the effects of current measures under implementation.

With regards to the additional measures introduced, two new measures were added to support basic digital skills and ICT specialists respectively, totalling four measures for digital skills. On basic digital skills, the focus is to integrate technology comprehension into primary and lower secondary school curricula. On ICT specialists, the focus is to offer continuous education and training in ICT and attract more international students in the field. One measure was added to support the digitalisation of SMEs and four new measures focus on different aspects of AI and data analytics (i.e. adoption of AI solutions by the public sector, developing advice and knowledge on responsible AI, developing transparent and secure Danish language models and making Danish text data freely available to support AI solutions).

Measures included in the roadmap were linked to the relevant parts of the declaration on **digital rights and principles** and the **Digital Decade general objectives**. The adjustment also includes some more details on the **consultation with stakeholders** with respect to the original roadmap.



⁷ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Multi-country projects (MCPs) and funding

Multi-Country Projects and Best Practices

Denmark is a member of the Alliance for Language Technologies EDIC and is also working towards setting up an EDIC in the area of genomics. Denmark is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

The country contributed to the Digital Decade Best Practice Accelerator by sharing one best practice in the frame of the 'Business Uptake' cluster (in the framework of the SME:Digital initiative).

EU funding for digital policies in Denmark

Denmark allocates 27% of its total Recovery and Resilience Plan to digital (EUR 382 million)⁸. In addition, 14% of the country's total Cohesion policy funds (EUR 63 million) is dedicated to advancing its digital transformation⁹. According to JRC estimates, EUR 329 million directly contribute to achieving Digital Decade targets (of which EUR 292 million come from the RRF and EUR 37 million from cohesion policy funds)¹⁰.

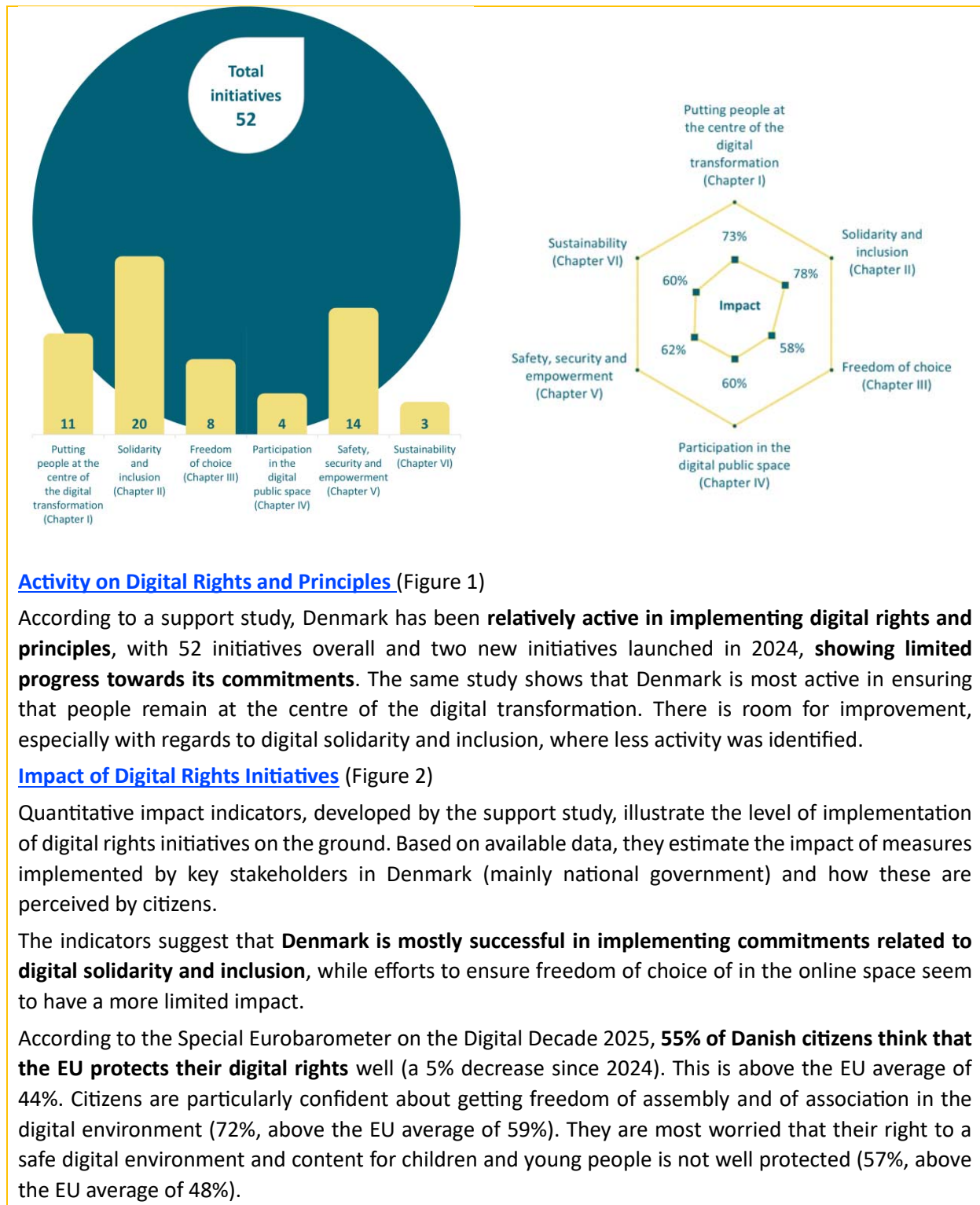
Key digital measures in the Danish Recovery and Resilience Plan (RRP) include supporting the digitalisation of public services through the continuous modernisation of the public digital infrastructures and equipping the country to face future challenges in areas such as cybersecurity and AI. The Danish RRP also includes important reforms and investments incentivising companies to increase their overall R&D spending, extending very high-speed broadband coverage to rural areas through the National Broadband Fund, and promoting the digital transformation of SMEs through the SME:Digital initiative.

⁸ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

⁹ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹⁰ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹¹



¹¹ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
{SWD(2025) 292 final} - {SWD(2025) 293 final} - {SWD(2025) 295 final}



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DIGITAL DECADE 2025 COUNTRY REPORTS

Estonia

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Executive summary

Estonia is positioning itself as a leader in the digitalisation of public services. However, the country lags EU average in connectivity and the digitalisation of SMEs, while has achieved full access to e-Health records before 2030.

In its national roadmap adjustment, Estonia shows a high level of ambition in its contribution to the Digital Decade having set 14 national targets, of which 93% are aligned with the EU 2030 targets. The country is following its trajectories very well with 100% of them being on track (considering 2024 trajectories defined for 8 KPIs out of 8 analysed). Estonia addressed 100 % of the 12 recommendations issued by the Commission in 2024, either by implementing significant policy changes (8%) or making some changes (92%) through new measures.

Estonia focuses on digital sovereignty, through its emphasis on government resilience. The country has put measures in place to ensure that it can continue to be digitally governed beyond its geographical borders in various disaster scenarios. Estonia's roadmap recognises that the country's current challenges require not only introducing new digital measures, but also making sure that well-established digital services function well and are secure. Although Estonia lags behind the EU in terms of overall very high capacity (VHCN) and 5G coverage, it excels in 5G coverage in sparsely populated areas. Cybersecurity continues to be important, as demonstrated by the country's new National Cybersecurity strategy 2024-2030. This strategy prioritises safeguarding digital infrastructure, protecting the country from cyber threats and increasing cybersecurity cooperation.

Digital Decade KPI ⁽¹⁾	Estonia				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	EE	EU
Fixed Very High Capacity Network (VHCN) coverage	76.9%	76.3%	-0.9%	77.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	76.9%	76.3%	-0.9%	77.0%	69.2%	8.4%	100.0%	-
Overall 5G coverage	87.5%	91.5%	4.6%	90.0%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	5	10	100.0%	0	2257	90.5%	5	10000
SMEs with at least a basic level of digital intensity (2)	-	71.2%	3.1%	-	72.9%	2.8%	90.0%	90%
Cloud	52.6%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	5.2%	13.9%	167.6%	14.0%	13.5%	67.2%	75.0%	75%
Data analytics	25.6%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	60.6%	-	-	-	-	-	-	75%
Unicorns	2	2	0.0%	-	286	4.4%	5	500
At least basic digital skills	62.6%	-	-	-	-	-	80.0%	80%
ICT specialists	6.7%	7.2%	7.5%	7.0%	5.0%	4.2%	10.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	95.8	96.1	0.3%	99.0	82.3	3.6%	100.0	100
Digital public services for businesses	98.8	97.5	-1.3%	100.0	86.2	0.9%	100.0	100
Access to e-Health records	97.5	100.0	2.6%	99.0	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics
(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special Eurobarometer on ‘the Digital Decade’ 2025, 79% of Estonian citizens consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 88% consider it important to counter and mitigate the issue of fake news and disinformation online, and on competitiveness, 69% consider it important to ensure that European companies can grow and become ‘European Champions’ capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Estonia is falling behind the EU average in infrastructure indicators (VHCN, 5G), but shows impressive 5G coverage in sparsely populated areas. It is one of the Member States that experienced the biggest expansion of coverage in the 3.4-3.8 GHz band in 2024. Estonia has relied on Recovery and Resilience Facility (RRF) measures to expand VHCN coverage (to be completed in 2025). The country is taking initiatives to increase rural coverage by completing the identification of their white areas (areas without connectivity), which will serve as the foundation for a public consultation (expected to be launched mid-2025). The adoption of advanced technologies by Estonian enterprises paints a mixed picture: the share of those taking up cloud or AI is higher than the EU average, but the share of those taking up data analytics is lower. Across the three technologies, large enterprises consistently reported higher levels of uptake compared to SMEs.

Protecting and empowering EU people and society

Estonia is prioritising the development of its citizens’ digital skills through its Digital Agenda 2030. The country performs well in basic digital skills, with small gaps in gender and education levels, and notable digital skills among rural residents and younger generations. Estonia has developed an action plan to equip people with basic digital skills and has focused on educating civil servants and increasing digital skills training, particularly in rural areas. Estonia has identified that managers who lack an understanding of their responsibilities in cybersecurity and risk assessment, and who do not sufficiently align their digitalisation initiatives with the strategic aims of their respective areas, can hinder overall digital transformation. The country’s share of ICT specialists in employment is one of the highest in the EU, and its share of female ICT specialists is the highest in the EU. Estonia is well on its way to achieving its digital transformation goal with initiatives such as research on future digital skills needs and collaboration with the University of Tartu to ensure future ICT specialists are enrolled in relevant training. However, the demand for ICT professionals continues to grow, and there is a lack of highly skilled and advanced digital specialists across sectors. Estonia’s performance on digital public services and access to e-Health records continues to surpass the EU average, and has reached the Digital Decade 2030 target. Despite this, Estonia will face the challenge of ensuring its digitalised services are up to date with the latest technologies.

Leveraging digital transformation for a smart greening

According to Estonia’s Digital Agenda 2030, the country aspires to become the world’s greenest digital government; however, it currently lacks a systematic approach or strategy to achieve this goal. Estonia launched a Sustainability Reporting Tool and relies on private sector initiatives that aim to increase the lifespan of ICT devices and to reduce overall energy consumption.

National digital decade strategic roadmap

Estonia submitted a fully revised national Digital Decade roadmap on 27 March 2025. It reports on the consultation of stakeholders and addresses a limited number of the roadmap recommendations

issued in 2024. In the updated roadmap, Estonia includes 13 new targets and one revised target, all in line with the EU's level of ambition. Although it provides some information on planned activities to achieve the country's targets, it lacks detailed information on the budget allocated to each area and the specific aims and scope of the different activities. The roadmap puts a strong emphasis on quantum computing, EU-level cooperation and digital skills and puts a new emphasis on high-performance computing, resilience and security. However, the green transition is reflected less in the roadmap.

Funding & projects for digital

Estonia allocates 24% of its total recovery and resilience plan to digital (EUR 208 million)¹. In addition, under cohesion policy, EUR 373 million, representing 11% of the country's total cohesion policy funding, is dedicated to advancing Estonia's digital transformation².

Estonia is a member of the Local Digital Twins towards a CitiVERSE European Digital Infrastructure Consortium (EDIC). The country is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Estonia has not yet presented any measure in the framework of Digital Decade's Best Practice Accelerator³.

Digital rights and principles

According to a support study, Estonia has shown rather limited activity in implementing the [European Declaration on Digital Rights and Principles](#), with 39 initiatives overall and 6 new initiatives launched in 2024. Estonia is most active in the area of protected, safe and secure digital environment. Less activity has been identified with regards to fair digital environment. Measures in the area of freedom of choice appear to have most impact on the ground, in contrast to those addressing Participation in the digital public space.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Recommendations

- **Connectivity:** Continue and establish new measures that target enhancing VHCN, and 5G coverage.
- **Digital skills:** Introduce digital skills measures targeted to mid-level managers to be able to lead the digitalisation process for their employees and enterprises.
- **ICT specialists:** Continue to implement measures to educate ICT specialists to fill the current gap.
- **SMEs:** Sustain and complement activities to improve digitalisation and uptake of advanced technologies and give special attention to SMEs.
- **Digitalisation for public services:** Improve the useability of the digital public services to ensure that they are accessible to all as well as to ensure that its services are up to date.
- **Green:** Implement a coherent green digitalisation strategy to be able to keep up with the country's ambition of being the world's greenest digital government.
- **Cybersecurity:** Continue efforts in cybersecurity to address the evolving and increasing threats. Ensure continuation in the implementation of cybersecurity classes.

A competitive, sovereign and resilient EU based on technological leadership

Estonia is progressing beyond mere digitalisation. To remain competitive Estonia recognises that the country's current challenges require not only introducing new digital measures, but also making sure that digital services that are already well-established function well and are secure. To continue offering high-quality digital services Estonia intends to introduce a management model that will ensure continuous updates and maintenance of its digital services (it is currently attempting to achieve this with the latest national e-services design system, VEERA).

Government resilience has become a clear priority for Estonia. The majority of Estonia's services are digitalised and this has also created a mutual interdependency between different (non-digital and digital) services. It has raised new challenges: what is the cause of action if the digital solutions fail? As a result, **Estonia is analysing disaster recovery scenarios** (including low-probability and high-impact scenarios) and improving understanding of operational issues. Based on this, Estonia is looking how to provide critical services and ensure safe digital infrastructure from beyond its geographical borders to its citizens both within the country and abroad. To promote its government resilience Estonia is setting up data embassies in foreign countries to store critical information, including back-ups, outside the country in case its critical infrastructure is compromised.

The Estonian ICT sector represented 5.97% of GDP in 2022, which is a decrease from 6.72% in 2020⁴. R&D personnel in the ICT sector represented 45.29%, making them a leader in the EU despite a decline compared to the previous year measured (49.42% in 2021).

The use of AI among Estonia's businesses more than doubled in 2024 from the previous year (from 5.19% in 2023 to 13.89% in 2024). Estonia relies on AI start-up accelerators which have launched 30 enterprises; more than 19 new AI-based products/enterprises have entered the market. In addition to accelerators numerous workshops, tech validations, demos and awareness raising activities have been carried out to foster the uptake and development of AI in the private sector. Estonia is also promoting the use of AI in the public sector.

Estonia has a very strong start-up scene but in 2024 it saw a decline in funding, fewer people establishing start-ups and fewer people employed by start-ups; which can be attributed broader macroeconomic challenges like inflationary pressures and rising interest rates that have raised the price of money, including venture capital (VC). Europe has overall witnessed venture capital pullback and the trend of becoming more conservative as well as focusing on some specific tech domains. The situation is aggravated by a talent shortage in the sector. On the other hand, VC investments into deep tech including AI is showing promising trend. Deep Tech now accounts for 28% of all VC funding in Europe, a record high, novel AI, LLMs, AI chips etc being the leading tech domains. Estonia is the leader in deep tech VC investments in the Baltic states.

According to the 2025 Eurobarometer⁵, 86% of Estonians think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>.

Building technological leadership: digital infrastructure and technologies

Estonia lags behind the EU in total very high capacity networks (VHCN) and overall 5G coverage, yet it excels in 5G coverage in sparsely populated areas and 5G spectrum assignment. Estonia's growth rates in these areas are generally lower than the EU's, except for 5G coverage in the 3.4-3.8 GHz band. Estonia has a very active communication.

Connectivity infrastructure

Estonia is at 76.27% of VHCN and fibre to the premises (FTTP) coverage for all households (its national target is to reach 100% by 2030) and stands below the EU average for VHCN (82.49%) and above the EU average for FTTP (69.24%). In Estonia VHCN coverage equates to FTTP coverage. The country is on track according to its national trajectory. Estonia showed a decline of -0.9% for VHCN and FTTP coverage. This decline can be attributed to drops in DSL, VDSL, VDSL 2 vectoring caused by network decommissioning. For households in sparsely populated areas, Estonia's FTTP coverage was 67.79% in 2023 and 71.84% in 2024, both higher than the EU's 52.55% and 58.78%, respectively. Estonia's growth rate of 6.0% for this category is lower than the EU's 11.9%. For households in sparsely populated areas, Estonia's VHCN coverage was 67.79% in 2023 and 71.84% in 2024, both higher than the EU's 55.59% and 61.89%, respectively. Estonia's growth rate of 6.0% for this category is lower than the EU's 11.3%.

Estonia's 5G coverage is at 91.50% (with a national target of 100% by 2030) after growth of 4.6% in 2024; it is below the EU average (94.35%). The country is on track according to its national trajectory. Estonia's growth rate of 4.6% for total 5G coverage is lower than the EU's 6.0% in 2024. For households in sparsely populated areas, Estonia's 5G coverage was 86.99% in 2023 and 92.31% in 2024, both higher than the EU's 71.10% and 79.57%, respectively. Estonia's growth rate of 6.1% for this category is lower than the EU's 11.9%.

Estonia's 5G coverage in the 3.4–3.8 GHz band for all households was 43.68% in 2023 and 69.53% in 2024, with the latter being higher than the EU's 67.72%. Estonia's growth rate of 59.2% for total 5G coverage in this band is higher than the EU's 32.6%. For households in sparsely populated areas, Estonia's 5G coverage in the 3.4–3.8 GHz band was 40.62% in 2023 and 49.24% in 2024, both higher than the EU's 15.86% and 26.19% respectively. Estonia's growth rate of 21.2% for this category is lower than the EU's 65.1%.

Estonia's 5G pioneer bands spectrum assignment was 99.17% in both 2023 and 2024, higher than the EU's 73.4% and 74.63% respectively. Estonia had no growth between 2023 and 2024, while the EU's growth was 1.7%.

Estonia's broadband take-up indicators show a mixed picture. In 2023, only 35.5% of fixed broadband subscriptions were at speeds of 100 Mbps or higher, compared to the EU's 65.9%. By 2024 this figure had risen to 48.29%, still below the EU's 71.88%. However, Estonia's growth rate of 36.0% outpaced the EU's 9.1%. For subscriptions at speeds of 1 Gbps or higher, Estonia's share was much lower than the EU's. In 2023 it was 0.17%, rising to 0.31% in 2024, compared to the EU's 18.47% and 22.25% respectively. Estonia's growth rate of 82.4% was higher than the EU's 20.5%. The share of 5G SIM cards in the population in Estonia was 6.64% in 2023, rising to 23.42% in 2024, both lower than the EU's 21.7% and 35.56% respectively. Estonia's growth rate of 252.7% was higher than the EU's 63.9%.

Estonia's broadband take-up indicators are below the EU average, but the country is showing strong growth in all areas. The share of 5G SIM cards in the population and the share of fixed broadband subscriptions at speeds of 100 Mbps or higher, and 1 Gbps or higher, are all lower than the EU average. However, Estonia's growth rates in these areas are higher than the EU's.

The Estonian Consumer Protection and Technical Regulatory Authority (ECPTA) addresses competition in the telecoms market by implementing *ex ante* regulation. According to its last round of market analysis, ECPTA regulates the market for physical infrastructure access (PIA) at national level and the markets for wholesale local and central access (WLA/WCA) at subnational level, with one telecom operator enjoying significant market power. The ECPTA plans to deregulate the fixed call termination rate (FTR) and mobile call termination rate (MTR) markets in 2025 (currently *ex ante* regulated).

VHCN and FTTP

In its adjusted roadmap Estonia proposed a new target and trajectory for VHCN, and FTTP in line with the EU target of 100%.

In Estonia, the main measures to support VHCN development have been the RRF support scheme (2022-2025), and the Local initiative village networks (2023-2025). The RRF support scheme received EUR 23 million to cover 11 184 addresses (598 addresses were covered during 2024), and the Local initiative village network received EUR 800 000 for 5 projects and 100 addresses (1 project with 25 addresses was finalised).

In 2024 Estonia did a **mapping of white areas** (in collaboration with the national regulatory authority and telecom operators) and prepared the launch of its new support VHCN support scheme. This scheme will have a budget of EUR 45 million (funded by the ERDF) and will launch a public consultation with operators to define white areas; it will have its first calls for proposals in May-June 2025.

Estonia also launched a study of the cost of broadband infrastructure in market failure areas. The study identified that 122 990 addresses were without 100 Mbit/s fixed network coverage, and that to cover them all with fibre would cost EUR 828 million (EUR 6 730 per address), while covering them with 5G fixed wireless, using 4 987 towers, would cost EUR 1.5 billion (11 881 per address). The study put forward an optimal scenario to cover 85 349 of the addresses (69%) with fibre (costing EUR 403 million, or EUR 5 000 per address) or with 5G fixed wireless only at efficient sites covering 109 079 addresses (88.69%), requiring 665 new towers for a total EUR 215 million, or EUR 1 897 per address. In both scenarios, 31% (FTTH) or 15% (5G FWA) would not be covered.

2024 recommendation on connectivity infrastructure: (i) Continue the ongoing efforts to support VHCN, FTTP and 5G rollout, including by fostering private investment and by stimulating take-up. (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

Estonia made efforts to address the recommendation through new policy actions in 2024. Estonia has made progress through its mapping, the study and the RRF measures mentioned above. However, there is still work left to do to continue efforts to ensure spectrum access for innovative B2B and B2C applications.

The ECPTRA reported that it will not be involved in the **copper switch-off** process. The low-capacity wholesale market is not regulated and the switching-off process will be a decision for the incumbent operator. However, it is expected that the technical switch-off will be achieved by 2030, with the copper areas that have been upgraded to vectoring being the last to be switched off.

The ECPTRA reports a competitive market with 4 active operators, one of which is dominant. The largest operator's cable internet subscriber base is declining, while the second largest operator's is increasing. Adjusted for purchasing power, the price of Estonian internet access is below the average in the EU (despite a general increase of 6% in telecom service prices, driven by general inflation). From the low number of complaints to the ECPTRA (around 100) it can be inferred that the quality is quite high.

Estonia relies on several **submarine connectivity cables**. In 2024 it experienced 3 incidents with these cables, but none led to any lasting disturbance.

5G

In its adjusted roadmap Estonia proposed a new target and trajectory for 5G in line with the EU target of 100%. Despite Estonia's below EU average performance, the growth in its progress makes it likely that it can reach its target by 2030.

The ECPTRA reports a competitive market with 3 active operators, each with a similar market share.

Estonian operators are on track to close their **3G networks**. One operator closed 3G in 2023, a second in 2024, and the last operator is expected to close its 3G network in 2025. It is expected that 2G will be closed in 2030.

All main 5G spectrum licences have been issued. The ECPTRA reports that there will be an increase of private networks in the 3.8 GHz and 26GHz bands.

The ECPTRA reports that there are no concrete plans to launch 6G.

2024 recommendation on connectivity infrastructure: (i) Continue the ongoing efforts to support VHCN, FTTP and 5G rollout, including by fostering private investment and by stimulating take-up. (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

Estonia has made efforts to address the recommendation through new policy actions in 2024. The 5G stand-alone networks are undergoing testing and development, and the groundwork has been laid (including the deployment of edge nodes for latency-sensitive applications). Operators estimate that stand-alone networks will be deployed within 2 years.

Semiconductors

In its adjusted roadmap Estonia does not report on semiconductors.

2024 recommendation on semiconductors: Develop strategies and measures for semiconductors.

Estonia has made effort to address the recommendation through new policy actions in 2024. Estonia follows a market-driven approach and therefore does not intend to develop a national strategy on semiconductors. March 2025 Estonia launched a semiconductor competence centre, based in a state-owned company, but the centre composes of a consortium of partners. The project

will finish in 2029. The centre's target audience will be beneficiaries of all kinds of technical product developer that use semiconductors in their products. The centre will verify compliance with technical requirements for semiconductors and provide testing. The project budget over the next four years is EUR 2.4 million and is 50% funded by the State budget and 50% from the Digital Europe Programme.

Edge nodes

According to the Edge Node Observatory, Estonia is estimated to have deployed a total of 10 edge nodes by 2024, an increase of 100% since 2023. This is a doubling (5 additional edge nodes) of the amount estimated for 2023 (which was 5; this number has been revised since SDDR 2024).

In its new roadmap, Estonia states that it is monitoring the development of data centres to report on the progress of edge nodes. The country reports to have three operational sites in Tallinn, Suurupi, and Hüüru. At this stage country keeps monitoring the situation, additional national initiatives are not planned to allow for organic market development.

2024 recommendation on edge nodes: As edge computing is an important component of AI, future network deployment, and the Internet of Things, consider edge node deployment when creating investment programmes and strategies in these areas.

Estonia made some efforts to address the recommendation through new policy actions in 2024 (see also the section on 5G). In 2024 Estonia completed a study on the topic, researching how and where to deploy edge nodes. The study determined that due to Estonia's size and geographical location, edge nodes would only be necessary in 2 or 3 bigger cities within the next 5-6 years.

Quantum technologies

For the next three years Estonia will prioritise increasing access to high-performance computing (HPC), improving user training and advancing computational capacity to support the country's scientific, technological and economic goals. In its new roadmap Estonia states that investing in the development of HPC capacity and the academic network is an important goal for the upcoming years. As a consequence, Estonia intends to enhance the societal and economic impact of research, development and innovation by supporting progress with modern data infrastructure, to increase awareness and skills related to HPC services among public and private sector stakeholders, to bring service to end-users, to expand HPC in the public and private sectors, and to combine international resources with Estonia's local infrastructure.

2024 recommendation on quantum: Develop strategies and measures for quantum computing.

In 2024, Estonia continued the implementation of existing measures but did not take any new measures. Estonia continues to be an active member of the EuroQCI initiative to build a pan-European quantum infrastructure, a partner in the Nordic-Estonian Quantum Computing e-Infrastructure Quest (NordiQuest), and a participant in the Estonian Scientific Computing Infrastructure (ETAIS). Estonia has adopted a cybersecurity strategy that sets out goals for the adoption of quantum technologies and the development of a supporting ecosystem.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

In Estonia, digital transformation among small and medium-sized enterprises (SMEs) has been steadily advancing. However it still does not match the overall EU performance. Estonia is ahead of the EU average in the uptake of cloud but lags behind in AI and data analytics. Improving the overall take-up of AI, cloud, and data analytics could give Estonia its competitiveness an edge and have a spillover effect on the digitalisation of its businesses.

SMEs with at least basic digital intensity

In Estonia, 71.2% of SMEs showed at least a basic level of digital intensity after growth of 3.1% annually between 2022 and 2024; this figure is slightly below the EU average of 72.91%. Estonia has an annual growth rate of 3.1% (2022 is the last comparable year that used a similar methodology for measuring the digital intensity of enterprises). This uptick positioned Estonia marginally below the EU average of 72.91% in 2024. However, 35.42% of SMEs in Estonia reached a high or very high digital intensity, a figure somewhat higher than the EU average of 32.66%. This indicates solid progress in advanced digital engagement.

In its new adjusted roadmap Estonia proposed a new target and trajectory for the digitalisation of businesses in line with the EU target of 90%. The digitalisation of businesses in Estonia is showing a positive trend, putting it slightly above its EU peers. Based on its current progress and performance it seems likely that Estonia will reach its target.

The **Estonian Research and Development, Innovation and Entrepreneurship Strategy 2021—2035** and the Estonia 2035 report lay the framework for the future digitalisation of businesses. The Estonian Research and Development, Innovation and Entrepreneurship Strategy 2021—2035 has the objective to dedicate 1% of its GDP to R&D.

The Estonian digital innovation hub AI and Robotics Estonia (AIRE) continues to play a relevant role in supporting the digitalisation of businesses. AIRE provides a test-before-invest service to the Estonian manufacturing sector and its value chain. It receives EUR 2 million annually (combined national State and EU funding), has 270 clients and impacts 15% of the total Estonian industry turnover.

Estonian government focuses on providing grants for businesses to achieve economic impact through strategic digitalization and accelerate their digitalisation process. The Digital Action Plan grant helps companies create strategic plans for digital transformation. Applications for Digital Action Plan grants began in 2024. Since the launch of the measure, 210 companies (110 micro and small enterprises, 59 medium-sized enterprise and 41 large enterprises) have prepared a digital action plan with the help of grants in total of 1,5 million euros. According to the initial assessment, the support measure should remain open until 2027 with the total budget of 2,5 million euros. Digital Transformation Support assist automating and integrating advanced technologies and robotics with the total budget of 56 million euros. The support is available for all sectors, but the focus is on industries such as manufacturing, mining and logistics. The main beneficiaries of the grant scheme are SMEs. Approximately 220 SME digital investments have been financed under the measure. The grants scheme was terminated in May 2025 due to the budget running out. The eCMR Development grant promotes the creation of electronic consignment notes for logistics, improves efficiency and compliance. Grant focused on both software platform development and service delivery. In 2022, six SMEs were supported with a total of €1 million to develop electronic consignment note (e-CMR) data exchange platforms. The e-waybill integration support has been available since 2024, and so far, 120 companies have been supported with a total of €1.8 million. The call for applications is open until September 2025. The Real-Time Economy Solutions for Piloting grant support large scale pilots and

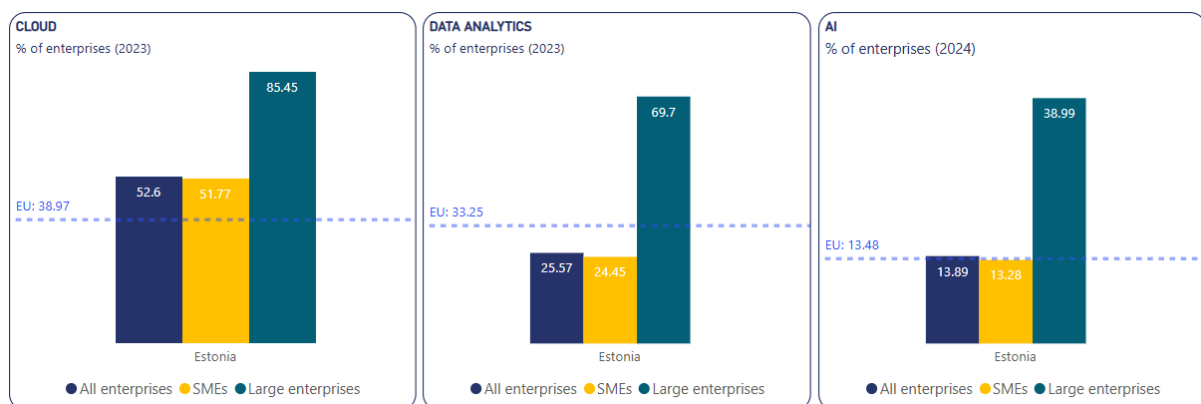
software development, enabling business to create innovative, real-time digital solutions tailored to their needs. Piloting grant was closed in the end of 2024 and 41 companies were supported in total grant of 3,4 million euros.

A new support measure covering real-time economy solutions will be launched in the second half of 2025 to promote innovation and digitalisation among businesses of varying digital maturity. With a total budget of approximately €11 million, the measure targets both SMEs and larger companies. SMEs will receive support for adopting and implementing their first digital solutions, with the help of digitalisation mentors. For mid-level digitally capable companies, the focus is on process digitalisation and automation. Larger companies or companies with higher digital maturity will be supported in developing interoperable integrated solutions within and between companies. Software and service providers will be supported in creating and deploying new business software solutions. The measure also supports data-driven reporting tools as well as the development and application of data economy use cases.

2024 recommendation on digitalisation of SMEs: Continue work on digitalising SMEs especially for data analytics and AI.

Estonia made some efforts to address the recommendation through new policy actions in 2024
For the digitalisation of SMEs, and increased uptake of data analytics and AI, Estonia relies on policies and measures previously introduced, many of which were completed in 2024. See each separate section for more detail.

Take up of cloud/AI/data analytics



According to the latest data available (2023), 3 out of 5 enterprises (60.59%) in Estonia used AI technologies, cloud computing services or data analytics technologies, exceeding the EU average of 54.7%. Drilling deeper into the figures, the uptake among SMEs was slightly lower, at 59.83%, while large enterprises had a significantly higher adoption rate of 90.3%. This indicates a difference in uptake of 30.47 percentage points between SMEs and large enterprises in Estonia, which is in line with the gap at EU level.

The adoption of cloud and data analytics was not measured in 2024 and nor was there a figure available for the three technologies combined in that year.

In 2023, Estonia recorded a cloud uptake of 52.6%, significantly above the EU average of 38.97%. Among SMEs, a little more than one in two enterprises (51.77%) used cloud services, whereas a much higher share of large enterprises, 85.45%, adopted such services. This accounts for the gap in uptake

of 33.68 percentage points between SMEs and large enterprises in Estonia, which is consistent with the EU level gap.

The latest available data shows that 25.57% of enterprises in Estonia adopted data analytics in 2023, which is below the EU average of 33.25%. However, there was a relatively discrepancy between the adoption rate among SMEs (24.45%) when compared with large enterprises (69.7%). This resulted in a difference of 45.25 percentage points between SMEs and large enterprises, which was higher than the EU gap of 39.72 percentage points.

In 2024, 13.89% of enterprises in Estonia used AI technology, in line the EU average of 13.48%. This was more than double the figure for 2023 (5.19%), thus marking a very considerable increase in AI use among Estonian enterprises. A notable fact was that, in 2024, SMEs had an uptake rate of 13.28%, whereas large enterprises had a higher rate: 38.99%. This resulted in a difference of 25.71 percentage points between SMEs and large enterprises, which was lower than the difference of 28.53 percentage points for EU-level figures.

In 2022 SMEs in Estonia generated 48.2% of the total value added in the economy, whereas large enterprises contributed 20.8%. In particular, SMEs constituted about 97.7% of enterprises with more than 10 employees, while large enterprises represented 2.3%.

In conclusion, Estonia demonstrated mixed results in the adoption of cloud computing, data analytics and artificial intelligence technologies. While cloud uptake was significantly above the EU average, the adoption of data analytics and artificial intelligence lagged behind. Across all three technologies, large enterprises consistently reported higher levels of uptake compared to SMEs, in line with broader EU trends. Considering the high number of SMEs relative to large enterprises and the fact that they contribute nearly half of the country's economic value added, these disparities in adoption rates underline the importance of addressing digital transformation among smaller businesses to support their integration into the digital economy.

- [Cloud](#)

In its adjusted roadmap Estonia proposed a new target and trajectory for cloud in line with the EU target of 75%.

In its roadmap Estonian does not present any measures specifically dedicated to cloud, only measures targeted towards the digitalisation of businesses that may include cloud; see the section on SMEs with at least basic digital intensity.

- [Data Analytics](#)

In its new adjusted roadmap Estonia proposed a new target and trajectory for the digitalisation of businesses in line with the EU target of 75%.

In its roadmap Estonian does not present any measures specifically dedicated to data analytics, only measures targeted towards the digitalisation of businesses that may include data analytics; see the section on SMEs with at least basic digital intensity.

- [Artificial Intelligence](#)

In its adjusted roadmap Estonia proposed a new target and trajectory for the adoption of AI in line with the EU target of 75%.

As mentioned in Estonia's adjusted roadmap, The Technopol AI Development Programme, launched in 2022-2025, continues to guide the AI scene. The AI development programme has been launched and will focus on industrial companies and start-ups in the environmental, health and energy sectors.

The AI start-up incubator has launched 30 enterprises, and more than 19 new AI-based products/enterprises have entered the market. The programme will continue until 2027 with another 30 start-ups.

Estonia is promoting the use of AI in the public sector. AI adoption support was provided to over 30 public sector organisations, and 172 AI-based solutions have been implemented in the public sector. In the public sector the adoption of generative AI was prioritised through more than 15 pilot projects.

Estonia is placing an emphasis on **preserving its language by integrating Estonian into AI models**. AI language models are facing difficulties in learning small languages as there is not enough data. To combat this issue, Estonia has shared nearly four billion linguistic datasets with a leading tech company in the digital sphere to improve functions such as voice assistants, chatbots and translations tools.

Unicorns, scale-ups and start-ups

At the beginning of 2025, Estonia had 2 unicorns, which is the same number as last year. Estonia has given birth to 10 unicorns.

In its adjusted roadmap Estonia proposed a new target and trajectory for unicorns, aiming to have 5 unicorns by 2030.

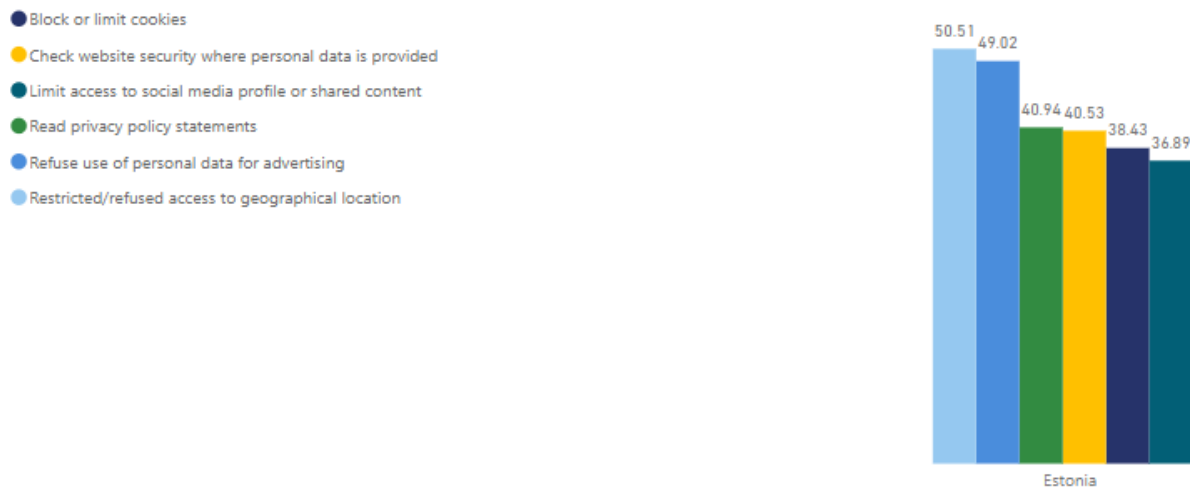
In 2024 the start-up scene in Estonia was characterised by DeepTech's continued momentum, but at the same time a decline in investment in the Estonian start-up sector. DeepTech accounted for 63% of the Estonian start-up sector in 2024 and 17% of the sector's workforce. DeepTech companies raised EUR 206.2 million (63% of investment in the sector) across 20 deals. The Estonian government launched a EUR 100 million defence tech fund that will increase the development of new defence-oriented DeepTech start-ups. At the same time, [Start-up Estonia](#) reports a decline in investment of 23% from 2023 to 2024 for Estonian start-ups; the annual investment volume in 2024 was the lowest in the last five years. This decline is partly due to the general trend of less venture capital activity worldwide.

[Start-up Estonia](#) states in its yearly report that **14 396 individuals were employed by start-ups, a decrease of 1.4% from 2023**. Estonia continues to report a shortage of talent in the sector.

Estonia also reports a decrease in the formation of new start-ups (four times fewer were established compared to the previous 3-4 years). As a result the Estonian government has focused on supporting certain sector-specific accelerator programmes in areas such as health, DeepTech and clean tech, through initiatives such as NATO Diana (launched last year). Additionally, Estonia has chosen to look beyond its national ecosystem and to prioritise collaboration with the Nordic countries, mainly Sweden and Finland, to launch a pre-accelerator (expected to launch in 2025).

Strengthening Cybersecurity & Resilience

Type of activities to protect personal data online (% of individuals)



In Estonia almost three quarters of people have digital safety skills above a basic level. 74.97% of individuals reported taking at least one action to protect their personal data online in 2023, exceeding the EU average of 69.55%. Of note was the fact that 50% engaged in three or more actions (and therefore could be considered as having digital safety skills beyond a basic level). The most common action was restricting or refusing access to geographical location, with 50.51% of individuals taking this measure; limiting access to social media profiles or shared online content was the least frequent measure taken, by 36.89% of people.

Estonian enterprises tend to experience more cyberattack-related incidents but employees are less aware of their ICT security-related obligations compared to the EU average. The number of enterprises that experienced ICT security incidents leading to unavailability of ICT services as a result of attacks from outside (such as ransomware or denial-of-service attacks) increased slightly in Estonia, from 3.06% in 2022 to 3.53% in 2024. This is marginally above the EU average (3.43%). However, Estonian enterprises are more prone to incidents resulting from hardware or software failures (18.63%) than their EU peers (17.97%). In terms of measures taken, 90.85% of enterprises deployed some ICT security measures (compared with the EU average of 92.76%) but only 54.89% of enterprises made their employees aware of their obligations in ICT security-related issues, which was below the EU average (59.97%).

Estonia is slightly above the EU average in the rollout of the secure Internet Protocol version 6 (IPv6) for end-users. As regards the deployment of [secure internet standards](#), Estonia is slightly above the EU in the rollout of IPv6 for end-users (39%, compared with an EU average of 36%) and is significantly below the EU average on the server side (6%, compared with 17% for the EU). IPv6 is an important protocol as it ensures the scalability, stability and security of the internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have been long depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out as it introduces security features to DNS. In Estonia, the DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology) is 67% (Q3 2024), above the EU average of 47%.

According to the Digital Decade Eurobarometer 2025, 80% of Estonians think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies.

Estonia's new national cybersecurity strategy for 2024-2030, 'Cyber-conscious Estonia', places a new emphasis on safeguarding digital infrastructure, protecting its institutions and citizens from cyber threats, and increasing cybersecurity cooperation.

In its adjusted roadmap Estonia identifies increasing cyber risks as one of its main challenges for the country's overall progress in digitalisation.

The [Estonian Information System Authority \(RIA\)](#) reports almost a doubling in the number of cybersecurity incidents, increasing from 3 314 in 2023 to 6 515 in 2024. Phishing and scam websites made up most of the incidents (4 224) and increased by 250% compared to the previous year.

In February 2024 Estonia had its largest data breach in history. An Estonia-based pharmacy company had its loyalty card systems hacked and the leak included nearly 700 000 personal identification codes, over 400 000 email addresses, and tens of thousands phone numbers and home addresses. Despite the breach, no lasting impact has been documented.

Estonia's geographical and geopolitical situation affects Estonian cybersecurity. [RIA reports](#) an increased number of incidents targeting government institutions, local authorities and the security and defence sectors.

Estonia reports that it has implemented the 5G Cybersecurity toolbox.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Estonia is putting a lot of attention on the development of its citizens' digital skills. In its renewed digital agenda (intending to be published during the summer of 2025) Estonia is identifying four target groups: vulnerable people (the young, those who are unemployed and not in education or training, the older population and people with low digital literacy), civil servants and general workforce (identifying the needs for a digitalised workforce), ICT professionals and leaders (people in senior positions in either the public and the private fields).

According to the 2025 Eurobarometer, 84% of Estonians think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 76% consider it would improve their daily use of digital technologies, and 82% think public authorities should consider it important to ensure that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services.

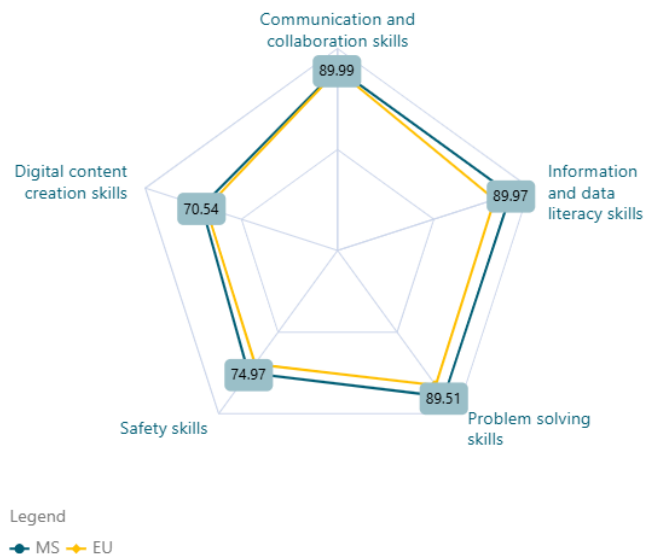
Equipping people with digital skills

Basic Digital Skills

Estonia's digital skills profile is strong, with evidence of inclusive growth across different dimensions. According to data from 2023, 62.61% of Estonia's population has basic digital skills (the national target for 2030 is 80%), which is higher than the EU average of 55.56%. While there are no figures available for 2024, detailed breakdowns of the 2023 data provide a more granular perspective.

- **Gender gap:** there is almost no gender gap in digital skills in Estonia: 63.16% of men and 62.09% of women are digitally skilled. The difference between these figures is 1.07 percentage points, which is half the 2.23 percentage-point difference for the EU as a whole.
- **Education level:** among those with higher education in Estonia, 71.81% have at least basic digital skills, which is less than the EU average of 79.83%. Of those individuals with a medium level of education, 54.58% have a basic level of skills; the difference between this group and the national average is only 8.03 percentage points, much less than the corresponding figure of 21.95 percentage points for the EU overall. This small variation suggests that education level is a less significant driving factor in digital skills in Estonia.
- **Living areas:** 56.99% of rural dwellers in Estonia have at least basic digital skills, which is higher than the EU average for rural areas, at 47.50%. The gap between rural areas and the overall national level is 5.62 percentage points, which is less than average gap for the EU.
- **Age groups:** of the different age groups in Estonia, 16 to 24-year-olds have the most digital skills at 86.84%, well above the EU average of 69.98%. Those in the 65 to 74-year-old range have fewer skills, coming in at 22.67%, which is under the EU average of 28.19%.
- **Digital Skills Index components:** Estonia scores well in the Digital Skills Index, above the EU average in all five skill areas. It does best in communication and collaboration skills, at 89.99%, which is close to the EU average. The area with the lowest score is digital content creation at 70.54%, but this is still above the 68.28% in the EU as a whole.

Digital Skills Index components
% of individuals



Estonia exhibits a high level of digital skills across its population, with particularly good communication and collaboration abilities. The country shows small gaps in gender and education levels, and while there is room to help older Estonians improve their digital skills, the overall picture is one of solid digital competency.

In its adjusted roadmap, Estonia increased its target for the basic digital skills of the population from 60% to 80% in line with the EU target.

Estonia is in the process of developing an action plan focusing on basic digital skills and ICT specialists. The plan will set out to ensure that there are no overlaps of initiatives between different ministries nor any uncovered areas. It is estimated that the action plan will be launched by late summer 2025.

An emphasis is put on educating people with low digital skills, and people living in rural and remote areas. At the end of 2024, as a part of the Estonian government's action plan (in cooperation with an external training partner), e-learning material was created and will be introduced in autumn 2025 through 20 one-day seminars will be held across the country for people with low digital skills. **Estonia is putting an emphasis on educating civil servants in digital skills.** Digital skills development is fragmented, and lacking coordination across the government sector to address gaps and to create basic literacy and advanced skills of the civil servants. To tackle this, Estonia has published Digital State Academy learning hub and organised training sessions to specifically strengthen ICT management skills, digital services management and development competencies and improve the skills of IT project managers. In 2024, 2 500 central government employees received training in data and AI, and a data sector training programme for internal trainers was launched.

Estonia identifies mid-level managers competencies on planning and managing comprehensive digital transformation should be strengthened. Managers who lack an understanding of their responsibilities in cybersecurity and risk assessment, and who do not sufficiently align their digitalisation initiatives with the strategic aims of their respective areas, can hinder overall digital transformation. This is because they may not fully understand how emerging technologies and smarter use of data can be implemented and how these solutions can be beneficial.

2024 recommendation on basic digital skills: Continue implementing initiatives to improve digital skills and ensure that no one is left behind.

The MS made some efforts to address the recommendation through new policy actions in 2024. Through the measures discussed above Estonia is implementing initiatives to further improve digital skills among various groups.

An emphasis on is put on educating people with low digital skills and people who live in rural and remote areas. At the end of 2024, as a part of the Estonian government action plan (in cooperation with an external training partner), e-learning material was created. In Autumn 2025 there will be 20 one-day seminars will be held across the country for people with low digital skills.

ICT specialists

The number of ICT specialists in Estonia represents 7.2% of total employment in the country (with a national target of 10% by 2030) after a growth of 7.46% in 2024; this stands above the EU average of 5.0%. The country is on track according to its national trajectory. In 2023 the figure was 6.7% nationally and 4.8% at EU level. The growth rate is almost double that observed at EU level (4.2% in 2024). This trend is particularly visible among female ICT specialists. In 2023, 26.8% of ICT specialists in Estonia were female, higher than the EU's 19.4%. The figure rose to 27.6% in 2024, which is the highest proportion in the EU (where the average was 19.5%). Estonia's growth rate of 3.0% in this area outperformed the EU's 0.5%.

In 2022, 18.78% of enterprises with 10 or more employees in Estonia provided ICT training, lagging behind the EU's 22.37%. By 2024, this figure had risen to 21.05%, still below the EU's 22.29%. However, Estonia's annual growth rate of 5.9% outpaced the EU's -0.2%. This indicates a positive trajectory in ICT training provision, albeit one starting from a lower base.

Estonia's ICT training provision and ICT specialist workforce show a mixed picture. While the country lags behind the EU average in terms of enterprises providing ICT training, it has a higher annual growth rate. Estonia's ICT specialist workforce, particularly the share of female ICT specialists, is notably higher than the EU average and shows a higher growth rate. This suggests a strong potential for Estonia to further develop its ICT sector.

In terms of labour market demand, Eurostat experimental statistics based on web scraping show that in Estonia, the profiles of 'software and applications developers and analysts' are the most sought after, representing 47.3% of online job advertisements for ICT specialists (58.0% at EU level). Three types of profile are more wanted more frequently in Estonia than in the EU in average: 'information and communications technology service managers' (20.2% of online job advertisements for ICT specialists, versus an EU average of 3.8%), 'information and communications technology operations and user support technicians' (13.5%), and 'database and network professionals' (10.2%).

Estonia is working to anticipate the digital skills needed across various sectors in the future. The country is preparing a study to determine what digital skills will be needed in the labour market (e.g. supporting the adoption of generative AI solution for SMEs) and the results will inform plans and measures to address this skills gap.

In its roadmap Estonia identifies the shortage of highly skilled digital specialists across the sector as a hindrance to achieving a digital society. This scarcity is seen as leading to high competition and slowing down digitalisation efforts. In 2024 a survey found that if Estonia does not prioritise the upskilling of its workforce, this will ultimately harm the country's competitiveness.

2024 recommendation on ICT-specialists: Continue measures aiming at increasing the number of more senior ICT specialists (higher level of experience) and continue improving gender balance.

The MS made some efforts to address the recommendation through new policy actions in 2024. Through the measures discussed above and in the chapter on digital skills, Estonia has fulfilled this recommendation. Measures are being taken to increase the number of more senior ICT specialists; it is too soon to be able to determine whether these have led to any results, however. Estonia is relying on previously introduced measures to continue improving the gender balance.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

Estonia's digital public services and access to e-health records continue to outperform the EU average. The country is on track according to its national trajectory. In 2023, Estonia's total score for digital public services for citizens was 95.83, surpassing the EU's 79.44; in 2024 it reached 96.12, still above the EU's 82.32. The country is on track to its target according to its national trajectory. The growth in this figure in Estonia in 2024 was 0.3%. For cross-border digital public services for citizens, Estonia scored 97.38 in 2023 and 94.64 in 2024, in both cases higher than the EU's 68.37 and 71.28 respectively. But Estonia's performance did decrease by 2.8%.

In the realm of digital public services for businesses, Estonia's total score was 98.75 in 2023 and 97.5 in 2024, in both years exceeding the EU's 85.42 and 86.23. The country is on track to meet its target according to its national trajectory. However, the figure in Estonia decreased by 1.3% in 2024. For cross-border digital public services for businesses, Estonia scored 97.5 in 2023 and 95.0 in 2024, both higher than the EU's 73.13 and 73.76. This represented a decrease of 2.6% in Estonia.

Regarding access to e-health records, Estonia's total score was 97.5 in 2023 and reached the EU target of 100.0 in 2024, both higher than the EU's 79.12 and 82.70. The country is on track to its target according to its national trajectory.

e-ID

Estonian authorities are aligned with the European framework of the eIDAS regulation with a view to offering an EU Digital Wallet.

Estonia has notified six eID items under the Estonian eID scheme: the ID card, the RP card, Digi-ID, e-Residency, Mobiil-ID and Diplomatic ID. In 2023, 89.43% of Estonians used their eID to access online services for private purpose in the previous 12 months, which is significantly above the EU average (41.11%). Estonia is working toward introducing its ID, passport and driving licence into the national mobile application eesti.ee to be able to access government services.

Estonia reports of no new measures in the roadmap.

Estonian stakeholders, both public and private, are present in one of the consortia of LSPs (known as POTENTIAL) that is in the grant agreement preparation stage. The consortium comprises a government ministry and a two private companies. EE overall costs for involvement in proposals is approximately EUR 0.4 million with the grants requested by Estonian entities amounting to approximately EUR 0.2 million. The kinds of case that EE will be involved in include POTENTIAL: Mobile Driving Licence.

Digitalisation of public services for citizens and businesses

In its adjusted roadmap Estonia proposed a new target and trajectory for digitalisation of public services for citizens and businesses, both in line with the EU target of 100%. Given the measures adopted and current rate of progress this target is within reach.

In 2024 Estonia continued its work on integrating digital solutions into all important life events. By the end of 2024 Estonia had 8 life-event services: marriage, childbirth, military service, relocation to Estonia, bereavement, pension, support for a child with a severe diagnosis (new), and divorce (new). Across all life events, there were in total 301 497 visits in total on the eesti.ee site, of which 104 312 visits were related to marriage information (averaging 8 700 times per month). 58% of all marriage applications were submitted through the portal.

The Estonian national mobile application of eesti.ee was launched at the end of 2024, providing access to government services from any location. In its first month it had more than 28 000 downloads.

In 2024, Estonia showed initiative in the area of data consent by providing insight into data usage. Estonia made it obligatory to adopt the 'Data Tracker' across all governmental administrations by 2025. The Data Tracker provides citizens with a clear overview of the use of their data and in 2024 the service was used over 1 000 000 times to facilitate data-sharing between the state and private sectors. Efforts to establish a legal framework for data consent continued.

Estonia also showed progress in the availability and usability of open data. The number of data sets in the Open Data Portal increased by 905, and as a result reached the 2025 Recovery and Resilience Facility target one year ahead of schedule. Preparations are also underway to launch the Data Information Gateway in the second quarter of 2025.

e-Health

Estonia reached the EU 2030 target of having a score of 100 for access to medical records. The country is on track according to its national trajectory because it has already reached the target.

Estonia reports in their roadmap that older people and people with disabilities may experience difficulty accessing their digital health records.

According to the 2025 Eurobarometer, 81% Estonians think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) during their daily life by 2030.

2024 recommendation on e-Health: Offer a mobile application for citizens to access their electronic health records.

The MS addressed fully the recommendation by putting significant policy actions into place in 2024. Estonia has launched a national mobile app, eesti.ee, that also includes health data. In addition, the browser version of the e-Health portal is accessible to mobile devices.

Building a safe and human centric digital environment and preserving our democracy

In Estonia online participation in political and civic life is declining. In 2024, 18.28% of people used the internet to participate in consultations, to vote or to share their opinions online. This proportion is below the EU average and is falling (it was 30.44% in 2022), which is the opposite of the trend observed at the EU level (17.59% in 2022 and 20.45% in 2024).

In 2023 in Estonia, 49.67% of individuals came across online messages that were considered hostile or degrading towards groups of people, such as those defined by LGBTIQ identities or religion, placing Estonia well above the EU average of 33.5%. A substantial 65.77% of young people (16-24) reported encountering such messages, compared to 51.47% of adults (25-64), highlighting a significant difference, with the youth experiencing markedly higher exposure. Males (46.99%) had slightly lower rates of exposure compared to females (52.21%). Overall, Estonia experienced one of the highest overall exposure rates in the EU, driven particularly by its youth demographic.

In 2023, 59.91% of individuals in Estonia stated that they had come across untrue or dubious information or content on internet news sites or social media, noticeably higher than the EU average of 49.25%. Of these individuals, according to the survey, 26.13% took steps to verify the content, representing a moderate level of critical engagement in assessing the truthfulness of such material. Young people (aged 16-24) were more likely than adults (25-64) to report encountering such content (69.64% compared with 62.71%). A significant difference existed in verification rates: 46.73% of young people verified the truthfulness of content, compared with 26.45% of adults. Males (61.28%) and females (58.61%) reported similar exposure rates, though males were relatively more likely to verify content, at 30.15% compared to 22.33% for females.

The 2023 data on online interactions in Estonia reveals a concerning picture, with a high proportion of individuals, particularly young people (16-24), coming across hostile and degrading online messages. Additionally, a significant proportion of individuals in Estonia encountered potentially misleading information online. However, the data also suggests that Estonians, especially young people, took steps to address this issue, with a moderate to high level of critical engagement in verifying the accuracy of online content compared to EU averages. The findings highlight the need for continued efforts to promote a safe and informed online environment, with a focus on supporting the population in developing critical thinking and digital literacy skills.

According to the Digital Decade Eurobarometer 2025, 89% Estonians think it should be urgent the action of the public authorities to protect children online regarding the negative impact of social media

Estonia

on children's mental health, 88% to protect against cyberbullying and online harassment. Additionally, 87% Estonians believe it to be urgent to put in place age assurance mechanisms to restrict age-inappropriate content.

In 2024 the '[France and Estonia – Together Against Disinformation](#)' project was launched. It aims to respond to disinformation campaigns and strengthen democratic resilience by raising public awareness and fostering cross-border collaboration between Estonian and French academia, public institutions, and civil society.

Leveraging digital transformation for a smart greening

Estonia is still aiming to be the [greenest digital government in the world](#) with its Digital Agenda 2030, but a systematic approach to the area is yet to be introduced. Despite having this high ambition, Estonia has not yet introduced a strategy to accomplish the feat.

The Estonian population recycles only a small part of its ICT equipment. Estonian people recycled more their laptop and desktop devices (8.60% for laptops and tablets, 10.34% for desktops) than the EU average (11.31% and 14.66%, respectively) but recycled less their mobile phones (8.11%, 10.93% for the EU). Moreover, 22.80% of people considered the energy efficiency as important when purchasing ICT devices (EU: 19.35%) but the eco-design of the device was considered important by 13.29%, which is above the EU average (12.04%). However, those two eco-friendly criteria take on less importance for the buyer than the price, the performance, and the design of the ICT device.

The Estonian population recycles only a small proportion of its ICT equipment. More Estonian people recycled their laptop and desktop devices (8.60% for laptops and tablets, 10.34% for desktops) than the EU average (11.31% and 14.66% respectively) but fewer recycled their mobile phones (8.11% compared with 10.93% for the EU as a whole). Moreover, 22.80% of people considered energy efficiency to be important when purchasing ICT devices (EU: 19.35%) but the eco-design of the device was considered important by 13.29%, which is above the EU average (12.04%). However, these two environmental criteria are of less importance to the buyer than the price, performance and design of the ICT device.

According to the Digital Decade Eurobarometer 2025, 59% Estonians consider digital technologies important to help fight climate change (below the EU average of 74%), and only 56% of Estonian respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities (below the EU average of 80%).

The private sector is taking initiatives to increase the lifespan of ICT devices. The organisation Green Dice collects old ICT equipment from government and the private sector, refurbishes it and rents it out at an affordable price. [More than 2 000 devices have been transferred to schools and to almost 500 individuals.](#)

Estonia is also prioritising the right of future generations and children to a clean environment. A legal act, which entered into force in 2024, emphasises that all individuals and institutions are required to avoid harming the environment in their activities in order not to violate the right of current and unborn children to a full life, health and development.

In 2023 Estonia launched a Sustainability Reporting Tool which aims to be a digital reporting tool that provides guidance on what data to submit to fulfil reporting and produce recommendations on how to improve SMEs performance in the area of sustainability. This project will run until the end of 2025 with a budget of EUR 3.5 million.

The Estonian telecom industry is showing initiative in reducing its energy consumption and carbon footprint. Several of the telecommunication operators have programs to reduce e-waste, by offers mobile phone, and digital equipment recycling programs, as well as encouraging circular economy through refurbished devices.

Estonia does not present any measures in its roadmap adjustment dedicated to the green and digital transition.

2024 recommendation on green ICT: Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.

Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

Estonia made some efforts to address the recommendation through new policy actions in 2024. Estonia demonstrates a high ambition to implement a green digital government, as reflected in its legal acts, private enterprises and ambition. However, there is no concrete framework or policies and measures.

Annex I – National roadmap analysis

Estonia's national Digital Decade strategic roadmap

Estonia submitted a fully revised national Digital Decade roadmap on 27 March 2025. The roadmap contains 13 new targets, 13 trajectories and an update of its intended actions. The adjusted roadmap shows a stronger emphasis on quantum computing (including HPC), EU-level cooperation and digital skills. It includes clear reporting on the public consultation of stakeholders. However, the green transition is not very well incorporated. The roadmap includes measures that provide an insight to the state of play, but most of the activities described lack detail – such as budget, timeline and expected impact – that would give a better understanding of planned actions.

The adjusted roadmap/new roadmap addresses a limited number of roadmap recommendations issued in 2024:

- Establish a national target and trajectory on VHCN coverage, FTTP coverage, 5G coverage, edge nodes, SMEs with at least a basic level of digital intensity, cloud, AI, data analytics, unicorns, ICT specialists, digital public services for citizens, digital public services for business, and access to health records. Align the level of ambition of the national target and propose a trajectory for at least basic digital skills: the new roadmap includes a target and trajectory for all these key performance indicators (KPIs) except edge nodes. Estonia has chosen to not set a target in this area because it is following a market-driven approach. Estonia has aligned the level of ambition of the target for digital skills of at least a basic level with the EU target (80%) and has proposed a trajectory for this target.
- Clearly present measures dedicated to VHCN coverage, FTTP coverage, 5G coverage, edge nodes, SMEs with at least a basic level of digital intensity, cloud, AI, data analytics, unicorns, ICT specialists, at least basic digital skills, digital public services for citizens, digital public services for business, and access to health records considering the Digital decade objectives. When presenting the measures in the roadmap provide a description of the measures, describe its intended effects and results, state the budget of the measure differentiating from public, EU and private funding: Estonia has presented its planned activities dedicated to the KPIs mentioned above. However, these activities have not been presented as clear-cut measures with budget, timeline and expected impact giving a better understanding of planned actions.
- Consult stakeholders in the drafting of the roadmap. Report on the consideration of stakeholders' feedback in the roadmap: Estonia has consulted and reported on the stakeholders' feedback process. Estonia initiated a review involving contributors from the public and private sectors and civil society. Additionally, Estonia also conducted surveys, participated in networking forums and held workshops. The roadmap lacks information on how stakeholder feedback was taken into consideration.

Overall, Estonia presents a selected set of main policies and measures contributing to the achievement of some Digital Decade targets. The measures presented cover several types of objectives: technological leadership, sovereignty, competitiveness and cybersecurity. It is not possible to determine the budget of the measures presented.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Estonia is a member of the Local Digital Twins towards the CitiVERSE EDIC, is an observer to the Alliance for Language Technologies EDIC and is also working towards setting up an EDIC in the area of genomics. Estonia is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Estonia has not yet presented any project in the framework of Digital Decade's Best Practice Accelerator⁶.

EU funding for digital policies in Estonia

Estonia allocates 24% of its total recovery and resilience plan to digital (EUR 208 million)⁷. In addition, under cohesion policy, EUR 373 million (representing 11% of the country's total cohesion policy funding), is dedicated to advancing Estonia's digital transformation⁸. According to JRC estimates, EUR 541 million directly contribute to achieving Digital Decade targets (of which EUR 208 million comes from the RRF and EUR 333 million from cohesion policy funding)⁹.

The RRF and Cohesion Funding provide balanced support across the different Digital Decade targets. In particular, the Estonian Recovery and Resilience Plan (RRP) is making significant contributions to the targets related to the digitalisation of public services. The plan also includes important reforms and investments aimed at increasing gigabit network coverage.

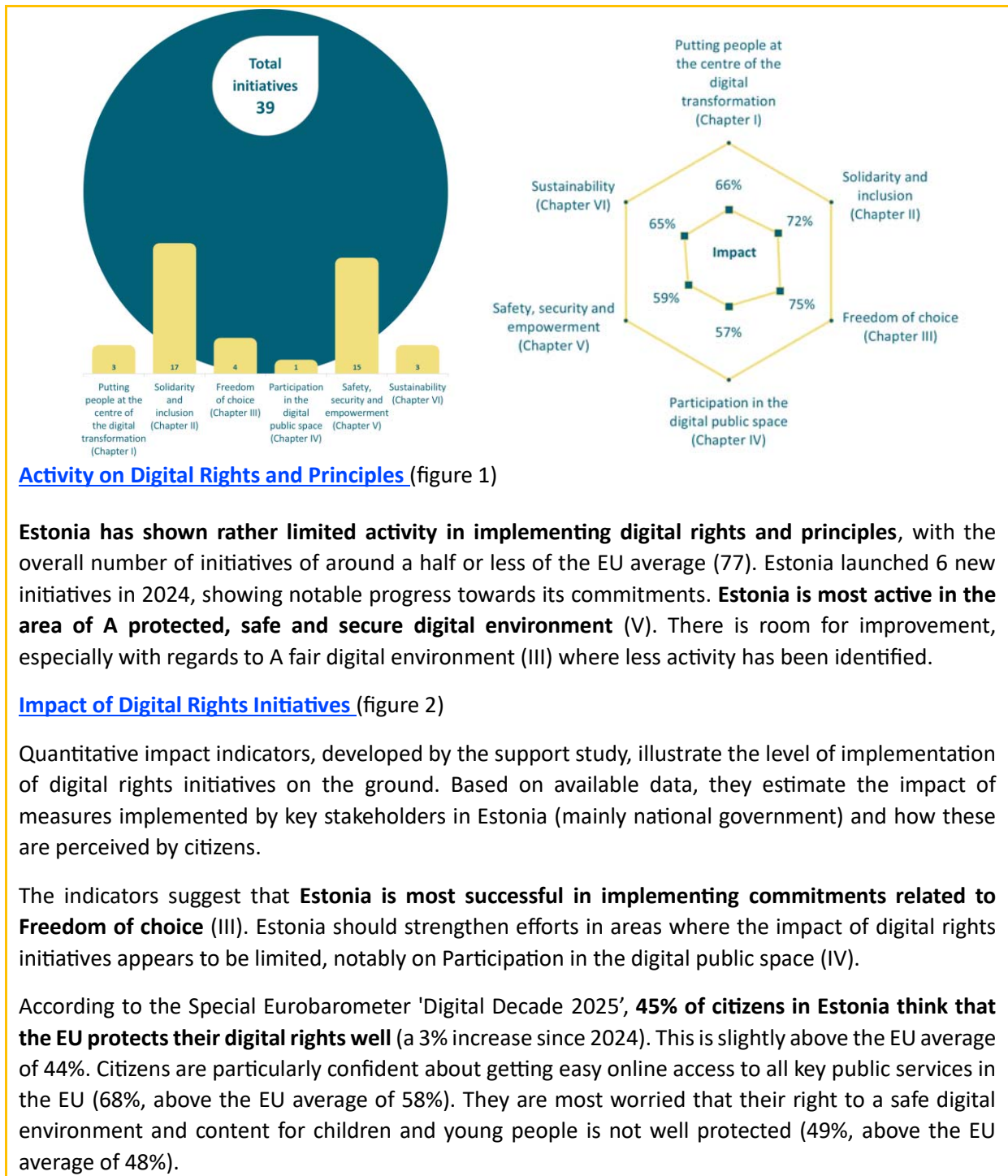
⁶ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

⁷ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

⁸ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

⁹ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹⁰



¹⁰ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

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DIGITAL DECADE 2025 COUNTRY REPORTS

Finland

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Executive summary

Finland positions itself as a technological leader with digitally agile enterprises, skilled citizens and a strong semiconductor industry. While its gigabit infrastructure requires further development, digital public services are widely available to people and businesses.

Finland shows a high level of ambition in its contribution to the Digital Decade having set 12 national targets, 100% of which aligned with the EU 2030 targets. The country is following its trajectories well with 83% of them being on track (considering 2024 trajectories defined for 6 KPIs out of 8 analysed). Finland addressed 72% of the 11 recommendations issued by the Commission in 2024, either by implementing significant policy changes (27%) or making some changes (45%) through new measures.

In 2024, 5G almost covered the entire country. Finland strengthened European sovereignty with developments in semiconductors and cross-sectoral support for artificial intelligence (AI) and other disruptive technologies. Notably, it hosts one of the first European AI Factories. Finnish businesses rely on digital tools and close to three quarters of them use cloud solutions. Digitalisation enjoys strong public support, individuals have solid basic digital skills and relatively high privacy and content evaluation skills. There is a widespread use of digital government solutions. However, the need for ICT specialists persists. Finland is actively preparing for the implementation of the European Digital Identity Regulation and the European Health Data Space Regulation.

Digital Decade KPI ⁽¹⁾	Finland				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	FI	EU
Fixed Very High Capacity Network (VHCN) coverage	77.7%	81.7%	5.1%	66.6%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	61.1%	68.3%	11.6%	66.6%	69.2%	8.4%	100.0%	-
Overall 5G coverage	98.3%	99.5%	1.2%	99.6%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	24	47	95.8%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity ⁽²⁾	-	92.5%	1.7%	-	72.9%	2.8%	95.0%	90%
Cloud	73.0%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	15.1%	24.4%	61.4%	26.0%	13.5%	67.2%	75.0%	75%
Data analytics	40.6%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	79.5%	-	-	-	-	-	-	75%
Unicorns	7	7	0.0%	-	286	4.4%	-	500
At least basic digital skills	82.0%	-	-	-	-	-	87.0%	80%
ICT specialists	7.6%	7.8%	2.6%	7.9%	5.0%	4.2%	10.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	90.6	96.3	6.3%	92.0	82.3	3.6%	100.0	100
Digital public services for businesses	100.0	98.8	-1.3%	-	86.2	0.9%	100.0	100
Access to e-Health records	82.6	84.7	2.5%	-	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics
(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special Eurobarometer on ‘the Digital Decade’ 2025, 77% of Finnish citizens consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 92% consider it important to counter and mitigate the issue of fake news and disinformation online, and on competitiveness, 88% consider it important to ensure that European companies can grow and become ‘European Champions’ capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Finland boasts excellent 5G infrastructure and is making good progress in improving fixed connectivity despite remaining below the EU average. The country is putting significant efforts into advancing digital technologies, particularly through its active participation in the ‘Chips for Europe’ initiative, supporting research, development and innovation (RDI) in quantum ecosystem and gathering scientists and enterprises in Finland’s AI efforts. Although Finland has made good progress in adopting digital technologies and leveraging the data economy, achieving its ambitious AI and data analytics targets will depend on continuous efforts. The country has a start-up friendly ecosystem, but scaling up remains an issue and, in general, Finnish enterprises struggle to achieve high productivity and innovation. Nonetheless, they show good awareness of cybersecurity measures. In this area, in October 2024 Finland adopted a comprehensive [cybersecurity strategy for 2024-2035](#).

Protecting and empowering EU people and society

Finland’s digital skills performance indicates inclusive growth across various demographic groups, although some gaps remain among rural populations and older people. Most of the population also have the skills needed to critically evaluate digital content. The number of ICT specialists, including women, is increasing but they continue to be in high demand. As result, there is some action under way to support higher education in ICT. Finland’s digital public services are achieving scores close to 100; however, access to digital health records is progressing slower than in the rest of the EU. In the second quarter of 2024, Finland successfully notified the ‘Citizen Certificate’ eID scheme. By actively participating in European large-scale pilots and other cross-country projects, the country is preparing for the implementation of the European Digital Identity Regulation and the European Health Data Space Regulation.

Leveraging digital transformation for a smart greening

Finland is a leader in monitoring and reducing the environmental impact of its ICT sector. It also links clean energy with advantages for enterprises and aligns technological advancements with sustainability goals. The EuroHPC LUMI supercomputer hosting Climate Change Adaptation Digital Twin is a notable example of this. The country plays a key role in green initiatives in the Digital Decade’s Best Practice Accelerator.

National digital decade strategic roadmap

Finland submitted an addendum to the national Digital Decade roadmap on 29 November 2024. The addendum, like the original roadmap, is based on Finland’s [Digital Compass](#). The content of the roadmap and its update have been developed in cooperation with stakeholders. The new roadmap addresses a substantial number of roadmap recommendations issued in 2024, containing both additional and revised targets and trajectories. All targets align with the EU-level goals for 2030, and two are even higher, 87% for basic digital skills and 95% for the basic digital intensity of SMEs. The revised roadmap continues to prioritise semiconductors and quantum, RDI activities and the digital

empowerment of enterprises. It contains 14 measures with a budget of EUR 559 million, comprising EUR 556 million from public budget (equivalent to 0.2% of GDP). It covers many objectives of the Digital Decade, such as creating a human-centred digital space, boosting technological leadership, sovereignty, competitiveness, and supporting the green transition.

Funding & projects for digital

Finland allocates 29% of its total recovery and resilience plan to digital (EUR 526 million)¹. In addition, under cohesion policy, EUR 385 million, representing 20% of the country's total cohesion policy funding, is dedicated to advancing Finland's digital transformation².

Finland is a member of the Alliance for Language Technologies EDIC. Finland is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). The country is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Finland is co-leading the Green IT cluster of the Best Practice Accelerator³, promoting the exchange of information on public policies aimed at the environmental transition of digital technologies. The country has already contributed with two best practices in this area. Additionally, Finland has shared best practices on digital skills development and the adoption of digital technologies by enterprises.

Digital rights and principles

According to a support study, France has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 53 initiatives overall but no new initiatives launched in 2024. France is most active in the area of participation in the digital public space. Less activity has been identified with regards to digital public services online. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing safety, security and empowerment.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Recommendations

- **Gigabit:** Intensify efforts to develop fixed gigabit connectivity, including by encouraging the take up of the existing broadband support measure and identifying the most suitable strategies to achieve full coverage.
- **ICT specialists:** Intensify efforts to attract ICT specialists, including those from abroad, by offering tailored training pathways, and addressing the gender gap in the field.
- **Advanced technologies:** Further promote cooperation between academia, businesses and other stakeholders, with a view to advancing innovation with the support of digital technologies.
- **AI:** Continue strengthening the AI ecosystem to boost Finland's leadership role in this area.
- **Cybersecurity:** Continue efforts in cybersecurity to address evolving threats, particularly for enterprises and public administration.
- **Unicorns:** Continue improving the business environment and access to finance for digital start-ups to scale-up and compete globally.
- **Semiconductors and digital innovation:** Continue investing in the development and manufacturing of critical technologies in the areas of digital and deep tech.

A competitive, sovereign and resilient EU based on technological leadership

Finland's digital competitiveness has been a priority for policymakers, with the goal of establishing the country as a global technological leader and driving the growth of the national economy. Despite budgetary constraints, authorities and stakeholders are trying to build on their achievements, pool resources and make use of EU opportunities. Notably, Finland is home to an AI Factory in Kajaani and is extremely active in the 'Chips for Europe' initiative.

The country's high level of digitalisation allows for digitally enabled growth. Finland benefits from excellent 5G networks and growing gigabit connection, especially in urban areas. 9 out of 10 small and medium sized enterprises (SMEs) have at least a basic level of digital intensity and uptake of technologies such as cloud, AI and data analytics, and are making good progress in these areas. However, if they wish to scale up, growth companies often need to move abroad once they reach a certain stage of development.

Finland has an ambition to increase research, development and innovation (RDI) expenditure to 4% of GDP by 2030 (from 3.09% in 2023). The ICT sector is particularly research and development (R&D) driven, with its spending accounting for 36.68% of total R&D business expenditure in the country, which is among the highest levels recorded in the EU in 2022 (but visibly behind countries such as Malta, Estonia or Latvia)⁴. R&D personnel in the ICT sector account for 38.36% of total R&D personnel, also one of the highest levels in the EU. Moreover, the Finnish ICT sector represented 5.81% of the gross value added in 2022. This is slightly lower than the 2020 value and higher than the EU average of 5.46%, pointing to the overall importance of ICT to the national economy. According to the 2025 Eurobarometer⁵, 93% of Finnish people think that increasing research and innovation to have more secure and strong digital technologies should be a priority for the public authorities.

Finland was identified as an innovation leader in the [European Innovation Scoreboard 2024](#), performing at 127.8% of the EU average. While digitalisation in terms of networks and skills is considered a strong enabler, supported by attractive research ecosystems, challenges remain in resource productivity and innovation by SMEs, including through cooperation and innovation expenditure.

Building technological leadership: digital infrastructure and technologies

In 2024, Finland made significant strides in digital infrastructure, with its 5G coverage leading the EU. The country also excels at spectrum assignment. Although Very High-Capacity Network (VHCN) and Fibre to the Premises (FTTP) coverages remained slightly below the EU averages, they grew at a faster pace. Finland's thriving semiconductor ecosystem bolsters the EU's sovereignty, and efforts in quantum technologies further position the country as a competitive leader in advanced technology landscapes.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Connectivity infrastructure

In terms of VHCN coverage, in 2024 Finland's total coverage stood at 81.65% (2030 national target 100%), just below the EU average of 82.49%. However, Finland's growth rate of 5.1% outpaced the EU's 4.9%. The country is also on track according to its national trajectory. Fixed broadband subscriptions with download speed of 100 Mbps or more were at 53.10% and of 1 Gbps or more at 5.21%. For households in sparsely populated areas, Finland's VHCN coverage was 49.95%, significantly lower than the EU average of 61.89%, but with a higher growth rate of 27.0% (EU: 11.3%).

Finland's total FTTP coverage was 68.26% (2030 national target 100%), slightly below the EU average of 69.24% but exceeding the EU average growth rate (8.4%) with 11.6%. The country is on track according to its national trajectory. For households in sparsely populated areas, Finland's FTTP coverage was 49.95%, lower than the EU's 58.78%, but with a growth rate of 27.0%, the country again outperformed the EU's 11.9%.

In terms of overall 5G coverage, Finland was an EU frontrunner with 99.49% (2030 national target 100%) and a growth rate of 1.2%, compared to the EU average of 94.35% (+6.0%). The country is on track according to its national trajectory. For households in sparsely populated areas, Finland's 5G coverage was 97.08%, significantly higher than the EU average of 79.57%, but its growth rate of 5.1% fell short of the EU average (11.9%). In the 3.4-3.8 GHz band, 5G coverage rose by 2.4% to reach 91.86%, well above the EU average of 67.72%. For households in sparsely populated areas, 5G coverage in this band was 58.84%, much higher than the EU average (26.19%), but with a much slower growth rate (17.1% vs an EU average of 65.1%). As in the previous year, 5G spectrum assignment for pioneer bands stood at 99.17% in 2025, significantly higher than the EU average of 74.63%.

VHCN and FTTP

In its adjusted roadmap, Finland upheld the 100% 2030 target for VHCN and proposed a 100% target for FTTP, in line with the SDDR24 recommendation. Based on the current progress rate and given that no new public funding measures are in place, these targets remain ambitious.

Finland's broadband aid scheme under the Recovery and Resilience Facility (RRF) received applications in 2022-2023 and connections for 16 000 households covered by this measure should be put in place by the end of 2026. According to the country's adjusted roadmap, broadband construction is currently supported by the European Agricultural Fund for Rural Development. In the Finnish Rural Development Fund Plan, EUR 53 million has been reserved for financing broadband connections in rural areas (through 'village network projects') in 2023-2027. As of early 2025, 29 projects worth approximately EUR 9.4 million had been awarded under this fund, and an additional 12 applications are being processed. This should help alleviate the difficulties with market-based deployment of broadband in sparsely populated areas. EU funds for agriculture also support other initiatives to enhance digitalisation in rural areas, such as [Smart Villages](#) projects.

The roll-out of VHCN and fibre is progressing well, and hopes are high that the national implementation of the Gigabit Infrastructure Act (GIA) will play a significant role in further acceleration. Notably, stakeholders see the chance in the introduction of a streamlined permitting process. In 2023, investments in fixed networks in the country amounted to a record high of [EUR 385 million](#), focusing predominantly on fibre. Although there are three main players in the telecommunications market, when it comes specifically to fibre network coverage, a quarter of the national market belongs to new entrants, demonstrating good competition.

Finland

Copper networks in Finland are being decommissioned, with less than 100 000 broadband subscriptions still relying on copper. Some operators plan to stop using copper as early as 2025. It will be substituted in part by high quality mobile networks, especially in rural areas.

The country is also seizing opportunities to strategically deploy submarine cables. The most significant project funded under Connecting Europe Facility (CEF) Digital has been [Far North Fiber](#) that aims to build a submarine cable connection from Northern Norway via arctic areas of Canada to Japan. Recently, Finnish Far North Fibre and Swedish Polar Connect have laid the ground for cooperation on this project. Other submarine cable projects include C-Lion2 and Terrestrial Backbone Finland projects, and the new Eastern Light connection between Finland and Sweden.

2024 recommendation on connectivity infrastructure: Intensify efforts to develop fixed gigabit connectivity, including by reinforcing public investments where necessary.

In 2024, Finland continued to implement existing measures but did not introduce any new ones. Based on a [2024 study](#), the country does not plan any new public support scheme. At the same time, sums remaining to be allocated from EFARD might suggest that the measures to support remote areas to date have not been fully used by the operators. A further chance for market-based deployment might be the GIA implementation.

5G

Following the roadmap adjustment, Finland's target for 2030 remains at 100% as per the initial roadmap submitted in 2023. Given the figures above, the target seems achievable in the coming years. The country has also adjusted its trajectory to reflect this good progress.

Finland is consequently realising its roadmap goal of maximally efficient use of frequencies within the confines of the existing frequency bands. Almost all 5G pioneer bands have been assigned (99.17%). In addition, with [the recent shutdown of 3G networks](#), frequencies are being released for the more efficient 4G and 5G technologies.

2024 recommendation on connectivity infrastructure: Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

Finland made efforts to address the recommendation through new policy actions in 2024. There are multiple [ongoing 5G projects and trials](#), focusing notably on sustainable growth, road and rail transport and shipping. In addition, operators are well on their way to deploying 5G standalone networks. Most of the operators have deployed 5G standalone (frequently referred to as 5G+) either in the entirety or major part of their networks, and some of them already provide services commercially. For example, the largest Finnish mobile network operator [launched](#) 5G standalone network broadband subscriptions.

Semiconductors

Finland is a strong player in the EU semiconductors ecosystem, strengthening the EU's sovereignty and contributing to a secure chips supply. The [2024 industry-led strategy for semiconductors](#) has mapped out the opportunities and set a solid framework for growth. In addition, the country is actively leveraging possibilities under the 'Chips for Europe' initiative, notably through co-hosting all five EU

pilot production lines procured by Chips JU (APECS, FAMES, NanoIC, PIXEurope, WBG). All of them represent Finnish strengths in semiconductors and create an opportunity to connect with European partners. Pilot lines develop new semiconductor processes and technologies that are available to companies to develop and scale products into production. The most recent one is Advanced Photonic Integrated Circuits Pilot Line for Europe (PIXEurope) jointly funded by the EU through the Horizon Europe and Digital Europe Programmes, participating states, and private organisations.

To support the development of advanced chip technologies and drive their demand in Finland and across Europe, the Finnish Chips Competence Centre (FiCCC) - another initiative under the EU Chips Act - became operational in early 2025. FiCCC brings together companies, networks of stakeholders and universities to provide technical expertise and experimentation and thus allow companies, in particular start-ups and SMEs, to innovate e.g. on chips design. It is important to note that Finland's chips and quantum efforts are intertwined.

The semiconductors ecosystem in Finland is very regional, with companies that leverage opportunities coming notably from geographic proximity of and working together with higher education institutions. This also drives the possibility for regional actors to actively participate in EU-wide initiatives. For instance, the Tampere region features globally competitive expertise in chip technology and possesses a strong talent pool, especially in system-on-chip design and in the development, manufacturing, and integration of III-V compound semiconductors.

Edge nodes

According to the Edge Node Observatory, there were an estimated 47 edge nodes in Finland in 2024, an increase of 95.8% since 2023. This is almost double (+23 edge nodes) the amount estimated for 2023.

As explained in the roadmap adjustment, Finland sees the increase of edge nodes as being due to grassroots market development. Therefore, the country does not set a separate target. It expects an increase in the number of edge nodes when businesses generate sufficient demand for cloud-based AI exploitation.

Quantum technologies

As a quantum competence cluster, Finland is a strong player in the European quantum ecosystem. The country continues to implement the roadmap measures in this area. Notably, VTT Technical Research Centre of Finland and IQM Quantum Computers, have launched Europe's first 50-qubit superconducting quantum computer in March 2025. The quantum computer is open for use by companies and researchers in universities and research institutes through the VTT QC quantum computing service and it will be integrated into the Finnish high-performance computing infrastructure to promote hybrid computing. VTT continues upscaling the quantum computer to 300-qubit together with IQM by 2027. Finland is also participating in the LUMI-Q quantum computer in Czechia, which will be linked with the LUMI supercomputer to develop a national quantum computing environment. The future AI factory will include an experimental platform combining AI and quantum computing, with an investment of EUR 40 million.

In addition, Finnish Quantum Flagship funded by the Research Council of Finland brings together leading quantum experts in physics, computational science, mathematics, nanoscience and nanotechnology, and economics to consolidate and expand Finland's national ecosystem for quantum technology. Through cutting-edge research, the Flagship boosts the emergence of new businesses and

secure Finland's position as a leading quantum-enabled society. Flagship host organisations are Aalto University, University of Helsinki, CSC, University of Jyväskylä, Tampere University, University of Oulu and VTT. More generally, the Flagship status of the Academy of Finland is given to a small number of scientifically top-level competence centres that support future knowledge and know-how, and sustainable solutions to societal challenges, and advance economic growth by developing new business opportunities.

State funds are supporting the development of Kvanttinova, a piloting and development centre for microelectronics and quantum technologies in Espoo. Kvanttinova is a joint initiative by VTT Technical Research Centre of Finland, the City of Espoo, Aalto University and the industry members of the semiconductor industry group of Technology Industries of Finland (TIF). The aim is to increase quantum RDI, boost internalisation of the sector and attract investments. To support this piloting environment and make the most of European partnerships, Finland aims to actively participate in all the European quantum pilot line proposals. To catalyse collaboration with other European countries, Finland participates in [mapping of Nordic-Baltic quantum](#) ecosystem under the Nordic Council of Ministers.

In April 2025 Finland's [quantum technology strategy](#) was published. The working group that coordinated the preparation of the strategy proposes setting up a quantum competence centre and ensuring access to world-class quantum computers, while also creating a competitive research environment and introducing quantum-secure encryption to support Finland's quantum technology sector by 2035. They emphasise the importance of a long-term research, development and innovation (RDI) programme, leveraging private funding, influencing EU and international regulations, and national coordination to foster the growth and development of the Finnish quantum ecosystem.

2024 recommendation on technological leadership: Secure further sources of funding and encourage private investment in disruptive technologies.

Finland made some effort to address the recommendation by introducing new policy actions in 2024. The country has seized opportunities in semiconductors, quantum and AI (see below), notably by participating successfully in emerging chips pilot lines.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

By prioritising the widespread adoption of basic digital intensity among SMEs, and advances in AI, cloud services, and data analytics, Finnish enterprises can cultivate a highly competitive business landscape, supported by a stable regulatory environment. While the country has ambitious plans for AI adoption by enterprises, a strong collaboration between industry, academia and public entities will remain essential to make the most of emerging opportunities.

[SMEs with at least basic digital intensity](#)

In Finland, most SMEs (92.51%) achieved at least a basic level of digital intensity (2030 national target 95%), with an annual growth rate of 1.7% between 2022 and 2024. This is well above the EU average of 72.91%. Furthermore, when looking specifically at more digitalised SMEs, 61.01% had high or very high digital intensity, almost double the EU average of 32.66%. As such, Finland maintained its leadership in the digital transformation of SMEs.

Following the 2024 recommendation on its roadmap, Finland raised its target for at least basic digital intensity of SMEs from 90% to 95% in the roadmap adjustment. Given the current level and growth metrics, this target seems reachable.

Finland decided to build on achievements of the RRF-funded Real Time Economy project with a national budget of EUR 3.3 million in 2025. The Patent and Registration Office will be responsible for overseeing the network of companies' digital financial management. It will also coordinate development work so that digitalisation projects implemented in public administrations and the private sector can ensure an efficient digital financial management of the network of companies. Furthermore, a provision on the cooperation group for companies' digital financial management will be added to the law.

The Data Economy Growth Programme outlined in the roadmap was launched in December 2024. The objective of the programme is to increase the common impact of current actions and funding. To that end, it will introduce concrete measures to improve the capabilities of companies. It will also create opportunities for data-driven value creation e.g. by fostering synergies with other actors' initiatives and projects, and by improving the capacity of companies to utilise data thanks to cooperation within the Ministry of Economic Affairs and Employment work areas. To support the work on data economy opportunities, the government [prepared a report](#) which examines the opportunities and challenges of measuring the size, economic significance, and impact of the data economy in Finland. The report found a cost-based approach to be the most suitable, given the availability of necessary registry data in Finland. It stressed that foreign collaboration on developing comparable metrics and on data collection is essential to monitor the development of the data economy at international level.

A well-established roadmap measure is the Digital Native mission of Business Finland, which provides EUR 265 million in funding to accelerate the digital transformation. With its Data Economy programme (2023-2027), 6G Bridge programme (2022-2026), generative AI campaign and quantum computing campaign, Finnish enterprises can increase their competitive advantage. In addition, Finland hosts four European Digital Innovation Hubs (Robocoast, HealthHub Finland, Finnish AI Region (FAIR) and Location Innovation Hub). Specialising in manufacturing, construction, health, energy, maritime, and transport, the hubs cooperate closely together and have produced a common service portfolio, among other outputs.

Take-up of cloud/AI/data analytics

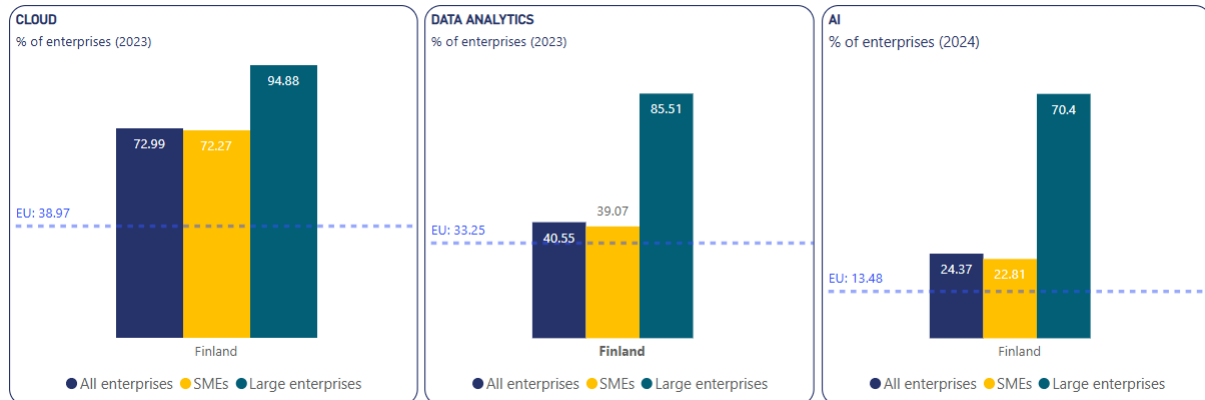
According to 2024 data, 24.37% of enterprises in Finland adopted AI (2030 national target 75%), which is an impressive figure compared to the EU average of 13.48%. This reveals a growth rate of 61.39% compared to 2023, slightly lower than the EU-level growth rate of 67.2%. More specifically, among SMEs, the uptake rate was 22.81%, while the majority (70.4%) of large enterprises used AI. This corresponds to a gap of 47.59 percentage points (pp.) between SMEs and large enterprises, which is considerably higher than the EU average gap of 28.53 pp. The country is lagging behind compared to its national trajectory, but its good progress is reflected in the ambitious 2030 target of 75% enterprises using AI in Finland. The 2025 Eurobarometer shows that 89% of Finnish people think that public authorities should prioritise shaping the development of AI and other digital technologies to ensure that they respect our rights and values, same as last year.

Adoption of cloud, data analytics, and the three technologies together were not measured in 2024.

In 2023, cloud uptake among Finnish enterprises stood at 72.99%, well above the average EU uptake of 38.97%. This brings Finland very close to its 2030 target of 75% of enterprises using cloud. More specifically, SMEs demonstrated a high uptake rate of 72.27%, but large enterprises saw an even greater uptake at 94.88%. This indicates a 22.61 pp. difference in uptake between SMEs and large enterprises in Finland, which is lower than the EU-level gap of 31.68 pp.

Finland

Approximately 2 out of 5 enterprises in Finland (40.55%) performed data analytics in 2023, well above the EU average of 33.25%. Among these, uptake reached 39.07% among SMEs, while a significantly higher proportion of large enterprises (85.51%) performed data analytics. This resulted in a gap of 46.44 pp. between SMEs and large enterprises, which exceeded the EU-level gap of 39.72 pp.



Taking the three technologies together (adoption of either AI, cloud, or data analytics), Finland stood at 79.51%, significantly above the EU average of 54.7%. Uptake among SMEs was slightly lower at 78.9%, while almost all large enterprises (98.03%) used AI technologies, sophisticated or intermediate cloud computing services, or data analytics. This indicates a percentage point difference of 19.13 in uptake between SMEs and large enterprises in Finland, which is lower than the EU-level gap of 32.97 pp.

In conclusion, Finland's adoption of cloud computing, data analytics, and AI technologies significantly outpaced EU averages. While large enterprises led in adoption rates, particularly in AI and data analytics, SMEs also demonstrated notable engagement, particularly in cloud computing and data analytics.

- [Cloud](#)

Finland is very close to achieving its 75% cloud adoption target before 2030. Given the good results, no roadmap measures are directly targeted at promoting cloud solutions among enterprises. Cloud's symbiotic relationship with the data economy and AI can further reinforce growth in this indicator.

- [Data Analytics](#)

Finland retains a 75% target of enterprises using data analytics, in line with the EU target. No roadmap measures are directly targeted at promoting data analytics solutions among enterprises. However, as data analytics provides the tools and methodologies necessary to harness the power of data, it will be indispensable for the development, implementation, and refinement of AI systems, actions which are at heart of Finland's digital agenda. In addition, Finnish stakeholders are also very active in the field of data spaces, notably through the [Data Spaces Alliance](#) gathering enablers and builders of various data spaces.

- [Artificial Intelligence](#)

Finland is at the forefront of AI efforts in the EU and is working towards its 75% target of AI adoption by 2030. Among significant developments in this area in 2024, the country was selected to host one of the European AI Factories. LUMI AI is an investment of EUR 614 million (with EUR 306 million in funding from the EU, national funding of EUR 250 million and the remaining sum covered by other hosting consortium members, namely Czechia, Denmark, Estonia, Norway and Poland). LUMI-AI

Factory services began in April 2025 based on the current LUMI EuroHPC supercomputer in Kajaani. LUMI's successor, a new LUMI+ AI optimised supercomputer will start operating later in 2025. The main target areas of the Finnish AI Factory are manufacturing industries, health and life sciences, communication technologies and networks, digital twins and AI for science.

The country can rely on solid partnerships to boost RDI activities based on AI. The **Finnish Centre for Artificial Intelligence (FCAI)** is a Finnish RDI Flagship which unites top experts from academia and industry to solve real-life problems using both existing and novel AI. It was initiated by Aalto University, the University of Helsinki, and VTT Technical Research Centre of Finland.

In addition, the European Laboratory for Learning and Intelligent Systems (ELLIS Institute) was established in Finland in December 2024 to promote top AI research, large-scale R&D collaboration and ethical AI development. The existing **ELLIS Unit Helsinki** hosted by FCAI is projected to grow into a **world-class AI research hub** that will bring AI expertise into use for different fields. An innovation ecosystem will develop around the ELLIS Institute, attracting talent, companies and investments to Finland. The ELLIS Institute Finland initiative has gathered support from over 20 top companies, the Technology Industries of Finland, the Confederation of Finnish Industries, and all the current Research Council of Finland Flagship projects. A direct link between the LUMI AI and ELLIS provided by FCAI will facilitate their collaboration and synergy.

Technology Industries of Finland will act as business interface of the AI Factory. The [AI Finland network](#) brings together Finnish companies and other entities interested in AI. Nearly 400 companies have already registered to join the network, which was set up in March 2024. The network's goal is to increase adoption and development of AI in Finland.

2024 recommendation on AI: Encourage enterprises to apply existing advanced technological solutions, such as AI or quantum testing possibilities and innovate further in these areas.

Finland made some effort to address the recommendation through new policy actions in 2024. The LUMI AI Factory aims to unite key stakeholders to increase collaboration opportunities and support their HPC and AI projects. LUMI-AI has strong synergies with other recent national investments in AI, e.g. FCAI Flagship, ELLIS Institute and pilots for doctoral training, which strengthen scientific research and higher education in Finnish universities. Through planned inclusion of businesses to LUMI AI possibilities, the private sector will be encouraged to make use of AI and other advanced technologies.

Unicorns, scale-ups and start-ups

Finland offers good conditions and overall environment for start-ups, but the available later stage financing falls short when it comes to scaling up on a global level. In 2024, Finland was home to seven unicorns - the same as in the previous year - with some companies having the potential to become unicorns. The country decided not to set a national target for the number of unicorns and stressed that it is important for the EU to be an attractive and competitive environment.

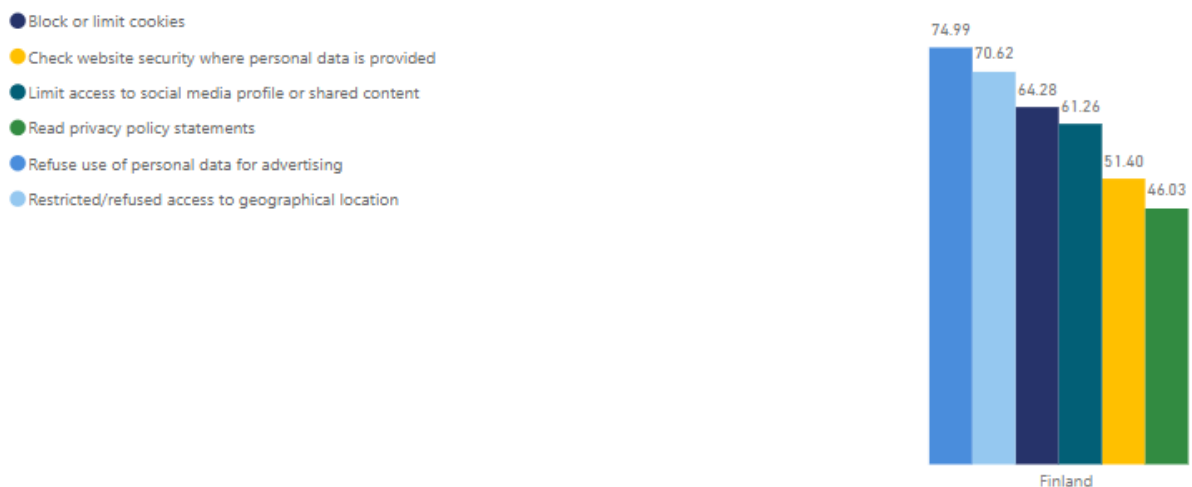
To support growth-oriented SMEs, the Growth Entrepreneurship Programme was launched. The first part of the programme proposes measures to be undertaken by the Ministry of Economic Affairs and Employment's administrative branch - Business Finland, Finnvera, ELY Centres, Tesi, and VTT - to accelerate growth entrepreneurship. The second part proposes measures to improve the operating environment of growth companies to make it more conducive to growth and renewal. The Ministry of

Economic Affairs and Employment is in the process of preparing the programme. The ultimate objective is to commit to measures that will double the number of growth-oriented medium sized entrepreneur-led companies (known as '*Mittelstand*') by 2030.

Strengthening Cybersecurity & Resilience

In Finland, most individuals (92.35%) of individuals took steps to protect their personal data online, far exceeding the EU average of 69.55%. Moreover, 75.3% of the Finnish population carried out three or more activities to protect their personal data online (see the graph below) and can therefore be considered as having above basic digital safety skills. Refusing the use of personal data for advertising purposes was the most common measure (74.99%), while the least frequent was reading privacy policy statements (46.03%).

Type of activities to protect personal data online (% of individuals)



Finnish enterprises tend to experience significantly more incidents related to cyberattacks than their EU counterparts. However, they are also better prepared to confront them, as employees are more aware of their ICT security related obligations compared to the EU. The number of enterprises in Finland that experienced ICT security incidents leading to the unavailability of ICT services due to attacks from outside (e.g. ransomware attacks and denial of service attacks) increased significantly, from 4.92% in 2022 to 7.21% in 2024. It is the second highest in the EU after Latvia (8.02%), well above the EU average (3.43%). Finnish enterprises are also much more prone to incidents related to hardware or software failures (37.40%) than their EU peers (17.97%). In terms of measures, almost all (98.74%) enterprises deployed some ICT security measures (against the EU average of 92.76%) and three quarters (74.81%) made their employees aware of their obligations on ICT security related issues, significantly above the EU average (59.97%).

Finland leads the EU in the roll-out of Domain Name System Security Extensions (DNSSEC), an important standard to be rolled out as it introduces security features to the DNS. In Finland, the DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology) is 97% (data from Q3-2024), more than double the EU average (47%). Concerning the deployment of [secure internet standards](#), Finland hovers around the EU average in the roll-out of the secure Internet Protocol version 6 (IPv6) for end users (35% vs an EU average of 36%) and is below the EU average on the server side (13% vs 17%, according to data from Q3-2024). IPv6 is an important protocol as it ensures the scalability, stability, and security of the

Internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have long been depleted.

To respond to technological and geopolitical challenges, in October 2024 Finland adopted a new [cybersecurity strategy for 2024-2035](#), accompanied by an [implementation plan](#). The strategy the refers to NIS2 Directive requirements and takes into account other key strategies and reports. It underlines the need for a whole-of-society approach to cybersecurity and the importance of maintaining trust in digital services, while also stressing its role as a vital component in the Finnish model of comprehensive security. Built on four pillars: (i) competence, technology and development and innovation activities; (ii) preparedness; (iii) cooperation; and (iv) response and countermeasures, it provides a comprehensive outlook on Finland's cybersecurity priorities.

Although Finland does not include cybersecurity measures in its roadmap adjustment, it continues to boost the cybersecurity skills of its population. One of the priorities of the implementation plan is ensuring application and funding of the outcomes of the Cyber Citizen project. This RRF-funded project focused on developing an EU-wide unified learning model to teach basic cybersecurity skills through research, online education, and gamification. A noteworthy and tangible result is [Cyber City Tycoon](#), a game designed to help players (children and adults) identify cyber threats. It is available in all EU languages and downloadable from app stores. Another resource from the project is [SecPort](#), a comprehensive platform to help users master key cybersecurity skills. It serves as a hub for learning resources such as courses, articles, videos and games, and covers various cybersecurity topics including threat detection, risk management, and safe online practices. The portal's AI-driven personalisation enhances user experience by providing tailored content that matches individual learning needs and preferences. SecPort is also available in all EU languages, ensuring accessibility to a broad audience.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

In Finland, digital skills are notably high thanks to inclusive growth and education systems that enhance skills across demographics. AI literacy and digital public services have also seen improvements, with initiatives like the New Literacies Development Programme contributing to enhanced media literacy and ICT skills. Finland is involved in measures to train ICT specialists and, to a lesser extent, to attract them and tackle a gender gap in this field. The country is a leader in digital public services and cross-border services, but at the same time, digital health could benefit from even further improvements.

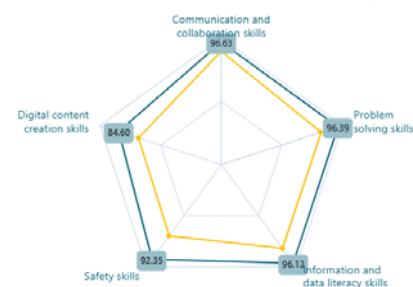
Equipping people with digital skills

Basic Digital Skills

Finland's population has excellent digital skills, with evidence of inclusive growth across multiple dimensions. According to data from 2023, 81.99% of its population has at least basic digital skills (2030 national target 87%), well above the EU average of 55.56%. While there is no new data for 2024, a breakdown by demographic factors provides some insights.

- **Gender Gap:** Interestingly, Finland's gender gap is in favour of women, with 80.94% of men and 83.05% of women possessing at least basic digital skills, leading to a 2.11pp gap. This is to be compared with the EU average gap of 2.23pp in favour of men.
- **Education Level:** High levels of formal education correlate with digital proficiency; 92.26% of Finns with high formal education have at least basic digital skills, which is greater than the EU average of 79.83%. The least digitally skilled are individuals with no or low formal education, at 78.36%, which is the highest number for this group across the EU. Therefore, the gap from national average is only 3.63 pp., which is minimal compared to the average EU gap of 21.95 pp.
- **Living Areas:** In rural areas, 74.02% of residents have basic digital skills, which is significantly higher than the EU average for rural areas (47.50%). The discrepancy between rural and national averages in Finland is 7.97 pp., close to the EU average gap of 8.06 pp.
- **Age Groups:** The 35-44 age group leads in digital skills with a proficiency rate of 94.05%, outperforming the EU average of 65.26%. 65-74-year-olds, while being the least skilled age group in Finland, still have a noteworthy proficiency rate of 50.24%, which is considerably above the EU average of 28.19%.
- **Digital Skills Index components:** Finland excels in all five areas of the Digital Skills Index, surpassing the EU average across the board. Its highest score is in communication and collaboration skills at 96.63%, way above the EU average of 89.33%. The lowest

Digital Skills Index components
% of individuals



Legend
— MS — EU

score, yet still high, is for digital content creation skills at 84.60%, well above the EU average of 68.28%.

Overall, Finland demonstrates robust digital proficiency levels throughout its population and is well on track to achieve its 87% target for basic digital skills, an ambition higher than the EU's target of 80% by 2030. The nation's strengths in digital skills are evident and are almost independent of the differences in levels of education. While discrepancies between age groups and living areas exist, they remain moderate compared with the corresponding EU averages. This can be explained by digital education beginning in early childhood, but also by a positive approach towards lifelong learning, as suggested by the [overall high literacy and numeracy of adult population](#).

2024 recommendation on basic digital skills: Continue empowering literacy of its population and developing competences in areas such as cybersecurity.

In 2024 Finland continued to strengthen the literacy of its population. For children and young people, the New Literacies Development Programme 2020-2023 strengthened media literacy, ICT and programming skills through competence description, curricula and local pilot projects. Educators continue to use the guidelines and materials developed as part of this programme. In addition, the Ministry of Education and Culture is preparing AI recommendations for early childhood education and care, and primary and secondary education, which will contribute to the development of AI literacy.

Concerning adults, as a part of AI coordination, possible measures will be identified and mapped out to develop educational offering for different target groups. Finland plans to create a knowledge base for assessing media literacy as part of an ongoing joint Nordic project (Nordic MIL Index). Finland will be focusing on adult population in its part of the project, with the first results available by summer 2025. Projects such as Cyber Citizen (see above) contribute to enhancing the cybersecurity skills of the Finnish population.

ICT specialists

In 2024, 7.8% of total employment in Finland was in ICT (2030 national target 10%), after a progression of 2.6%, outpacing the EU's 5.0%. The country is on track according to its national trajectory. On gender distribution among ICT specialists, Finland shows a higher percentage of female ICT specialists compared to the EU average. In 2024, 22.4% of ICT specialists in Finland were female (from 22.2% in 2023), compared to the EU average of 19.5%. The growth rate for female ICT specialists in Finland was 0.9%, higher than the EU's 0.5%. This indicates that Finland is making progress in increasing the representation of women in the ICT sector, outperforming the EU in this area.

While Finland has a higher proportion of enterprises offering ICT training, the rate of decline in this area was more pronounced than in the EU. In 2022, 39.83% of enterprises with 10 or more employees in Finland provided ICT training, significantly higher than the EU average of 22.37%. However, by 2024, this figure had decreased to 38.33%, still above the EU's 22.29%. The annual growth rate for enterprises providing ICT training in Finland was -1.9%, which is lower than the EU average of -0.2%.

In terms of demand from the labour market, Eurostat's experimental statistics based on web scraping show that in Finland the profiles of 'software and applications developers and analysts' are the most sought after, accounting for 63.4% of online job advertisements for ICT specialists (EU average: 58.0%). Three other types of profiles are more wanted in Finland than in the EU in average: 'database and network professionals' (13.7% of online job advertisements for ICT specialists), 'other information and

communications technology specialists' (10.4%) and 'information and communications technology service managers' (4.6%).

Finland retained its 10% target for ICT specialists. However, it did not introduce any new measures related to ICT specialists in its roadmap adjustment, putting the target in danger. Looking at specialised skills, the initiative of Technology Industries of Finland to fund thesis scholarships in AI and post-doctoral research would boost the number of ICT students and professionals. Finland continues to have difficulties in retaining foreign students (ca. 12%), including in the ICT sector. As reported last year, Finland is discussing incentives for international students to stay in Finland to work after graduation, for example by waiving tuition fees. However, a major practical obstacle to retaining foreign students is limited supply of training and employment opportunities that do not require Finnish or Swedish language skills. For this, cooperation with the private sector is primordial. It is important to note that Finland has a lower share of population (between 25–34-year-olds) with tertiary education compared to the OECD average.

2024 recommendation on ICT specialists: Intensify efforts in attracting ICT specialists and offering tailored training paths as well as address the gender gap in this field.

Finland continued to implement existing measures but did not introduce any new ones. Notably, the country's STEM strategy includes promoting gender-inclusive development in those fields. In addition, the government has been increasing the number of ICT graduates through agreements with higher education institutions and allocating around 400 PhD positions in ICT for the period 2024-2027. Students in other fields can choose ICT-related courses and gain micro credentials.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

In 2024, Finland's total score for digital public services for citizens was 96.32 (2030 national target: 100), outpacing the average EU score of 82.32. Finland's growth rate of 6.3% in this area surpassed the EU's 3.6%. The country is on track according to its national trajectory. For cross-border digital public services, Finland's score was 93.91 in 2024, higher than the EU average score of 71.28. Finland's growth rate of 10.5% in this category also exceeded the EU's 4.3%. The share of people using government internet websites or apps has minimally decreased from 97.61% in 2023 to 97.14% in 2024. However, the use of government websites in Finland is still far above the EU average of 74.71% in 2024.

On digital public services for businesses, Finland's total score was 98.75 in 2024 (2030 national target: 100), higher than the average EU score of 86.23. The country did not provide a national trajectory point for 2024, likely because the target was already achieved in previous years. For cross-border digital public services for businesses, Finland's score was 97.5 in 2024, higher than the average EU score of 73.76. One newly introduced Single Digital Gateway Regulation-related service (reporting the termination of business activity, excluding involvement of insolvency or liquidation procedures) was not found online, lowering the average score.

Regarding access to e-health records, Finland's total score was 84.7 in 2024, higher than the average EU score of 82.70 (2030 national target: 100). However, Finland's growth rate of 2.5% in this area was lower than the EU's 4.5%. The country did not provide a national trajectory point for 2024.

Finland's digital public services and access to e-health records were generally above the EU average, with high scores in most categories. However, the country's growth rate in access to e-health records is slower than the EU average growth.

eID

Finland has been working actively on the national implementation of the EU Digital Identity Wallet (EUDIW) through technical and legislative means. The Finnish Digital and Population Data Services (DVV) is responsible for preparing the wallet, while national stakeholders (both public and private) are active in four large-scale pilots before EUDIW becomes fully operational by the end of 2026. The latest one is the consortium Wallet Ecosystem for Business & Payment Use cases, Identification, Legal person representation and Data sharing (WE BUILD), jointly led by Sweden and the Netherlands. It aims to pilot the usage of EUDI Wallets across 13 use cases in the areas of businesses, supply chain, and payments. It will become operational in autumn 2025. In addition to the wallet, Finland will also promote electronic services for legal entities by issuing them with identification data.

2024 recommendation on eID: Notify to the Commission an eID scheme under the eIDAS Regulation.

The recommendation has been fully addressed. The Finnish 'Citizen Certificate' has been notified to a high assurance level and was [published](#) in the Official Journal of the EU in April 2025. Finland still needs to implement some technical changes during 2025 before the full usage of the eID scheme. Once completed, people in Finland will benefit from the increasing number of services available across borders in the EU.

Digitalisation of public services for citizens and businesses

Finland still aims to attain a score of 100 for the digitalisation of public services for citizens and businesses, and has proposed a trajectory to reach this score for services for citizens.

To support businesses in the complex digital regulatory environment, public and private stakeholders in Finland and Denmark are cooperating to create a catalogue of electronic tools designed to clarify legislation such as the AI Act, the Data Act, and the European Health Data Space (EHDS) Regulation. Led and funded by the Finnish Innovation Fund Sitra, their goal is to empower innovators and implementers of digital solutions to make informed decisions concerning these regulations. In November 2024, [the first e-tool](#) interpreting the AI Act became available.

Finland is making good progress towards a seamless, automated exchange of authentic documents and data across the EU. It has already successfully tested its first transactions through the 'once-only' technical system of the EU Single Digital Gateway. The country participates in the [Nordic DigiGovLab](#) project (2024-2026) which aims to provide insights and recommendations for human-centric and inclusive digital government in the Nordic-Baltic countries. The project sets out to develop strategies for the automatic exchange of data in the event of death, and subsequent inheritance, and to establish cohesive governance principles, e.g. in relation to AI in public administration.

e-Health

Finland aims to achieve a score of 100 in e-health by 2030, in line with the EU target. To support this ambition, the country has introduced a new measure on electronic health records - a mobile application of My Kanta, the Finnish health portal, to be launched in spring 2025. The app will enable health documents and referrals to be safely stored and displayed on mobile devices, with the same access to services and data as the existing web-based version. The app may function as a digital wallet app in the future, possibly enabling users to manage their health data and care contacts efficiently.

Finland is leading European work on health data. In its role as co-lead in the [e-Health Network](#), Finland is preparing an implementation roadmap to support all Member States in the implementation of the European Health Data Space Regulation. Finland has been the pioneer country in Europe for the secondary use of health data. With regard to Nordic collaboration, the Ministry of Social Affairs and Health steers the [Nordic VALO project](#) on secondary use of health data, which supports EHDS preparations in the Nordic region by strengthening RDI cooperation. The formal Nordic Ministry Council e-Health group receives updates on the VALO progress and discusses EHDS related Nordic questions. Finland's internal EHDS preparations are primarily centred on the area of primary use. The current focus in the area of digital services is to help people become more involved in their own health management. Finland is also actively seeking for international collaboration to share the experiences.

Broader digitalisation of healthcare services is supported by the RRF. The welfare sector, together with national authorities, have developed and introduced digital services aimed at citizens, information systems and management solutions for professionals. As reported by Finnish authorities, citizens' digital transactions with social and healthcare professionals have increased by 16.1 pp. from 2020 (25.8%) to 2024 (41.9%).

2024 recommendation on e-Health: (i) Expand the coverage of the online access service to ensure that all citizens can access their electronic health data online; (ii) Widen the catalogue of data available to citizens in that service; (iii) Consider offering a mobile application for citizens to access their electronic health records and enhanced authentication methods.

Finland made some effort to address the recommendation by introducing new policy actions in 2024. On the data catalogue, patients now have access to their electronic hospital discharge reports. However, data on e.g. medical images, and medical devices/implants remain unavailable for the time being. Regarding coverage and mobile application, the country announced that in 2025 it will roll-out a mobile application using existing authentication methods. . With EHDS implementation, a wider data content for citizens is being considered. Given that banking ID is the most common method for gaining access to electronic health data and not all citizens have banking ID, eID EUDI wallet-use possibilities will be assessed during 2025, also in alignment with EHDS Regulation obligations.

Building a safe and human-centric digital environment and preserving our democracy

Online participation in political and civic life is decreasing in Finland. In 2024, 23.73% of people used the internet to participate in consultations, to vote or to share opinions online. This share is above the EU average but is trending downwards (25.64% in 2022), which is the opposite of the trend observed at EU level (17.59% in 2022 and 20.45% in 2024). According to the Digital Decade Eurobarometer 2025, 79% of Finnish respondents consider that digital technologies will be important for accessing education and training opportunities by 2030.

The majority of Finland's population critically evaluates online content and almost 2 out of 5 of those who encounter doubtful information check its accuracy. In 2023, 69.81% of individuals reported having come across untrue or doubtful information or content on internet news sites or social media, significantly higher than the EU average of 49.25%. 38.31% of them checked the truthfulness of doubtful information found online, significantly more than the EU average (24.29%). Young people (16-24) (79.6%) reported slightly more exposure to doubtful information than adults (25-64) (73.84%), with

a striking difference in verification rates (61.12% for young people vs 38.95% for adults). Men (72.62%) were relatively more likely than women (66.99%) to report encountering untrue or doubtful content, as well as to verify its accuracy (43.42% vs 33.2% of females). Media literacy and critical thinking are included in national curriculum, what might contribute to the overall good results compared to the EU average.

In 2023 almost half of the Finnish population (46.33%) encountered messages online considered hostile or degrading towards groups of people, such as those based on LGBTIQ identities or racial origin, well above the EU average of 33.5%. Young people (16-24) (69.1%) reported substantially higher exposure than adults (25-64) (47.02%), showing one of the largest age-related differences in the EU. Women (49.55%) and men (43.12%) reported similar rates of exposure, with a slight but notable gender gap.

In addition, according to the Digital Decade Eurobarometer 2025, Finnish people consider it urgent that public authorities act to protect children online regarding the negative impact of social media on children's mental health (96% of Finnish respondents), cyberbullying and online harassment (96%) and to put in place age assurance mechanisms to restrict age-inappropriate content (90%).

Traficom, the Finnish Transport and Communications Agency, in its role of national Digital Services Coordinator under the Digital Services Act (DSA), has been increasing awareness on the DSA among users and stakeholders. This has resulted in over 70 complaints to this coordinator in 2024, mainly about Facebook, Instagram and TikTok, which were also transferred to other DSCs notably the Irish one. Traficom has awarded a status of 'Trusted Flagger' to three Finnish organisations.

Leveraging digital transformation for a smart greening

As explained in Finland's recent [industrial policy strategy](#), the country sees the clean transition as an important opportunity. The country's high level of digitalisation sets out good conditions for the two transitions, green and digital, to support each other. According to the Digital Decade Eurobarometer 2025, 66% of Finnish people consider digital technologies important to help fight climate change, while 77% of Finnish respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities, below the EU averages (74% and 90%, respectively).

Finland incentivises the use of clean energy by enterprises. The taxation of electricity has been implemented in such a way that energy efficient industry, for example data centres using waste heat, receive an advantage i.e. lower tax band⁶. While the [Climate and Environmental Strategy for the ICT Sector](#) is being implemented, the Finnish Transport and Communications Agency Traficom has ceased monitoring power consumption in Finnish networks based on the yearly reports issued by the operators. The statistics did not achieve sufficient levels of reliability, demonstrating the challenge of monitoring the impact of networks on the environment.

⁶ Ongoing government proposal to change the relevant regulation might affect the existing solution, see [Regeringens proposition till riksdagen med förslag till lag om ändring av lagen om punktskatt på elström och vissa bränslen - Valtiovarainministeriö](#).

On top of an analysis of the carbon footprint, discussions have commenced between the government and stakeholders on a 'carbon handprint' - a term used to describe the positive climate impacts of products or services. The key principle of the handprint is that it does not grow by reducing one's own footprint. Instead, an organisation's handprint increases when it helps other parties e.g. by reducing their carbon footprint. Both [Finnish Environment Institute Syke](#) and the [Confederation of Finnish Industries](#) produced reports on the carbon handprint of Finnish exports. Technology Industries of Finland has started working towards calculating the carbon handprint of companies and products. One of the biggest challenges in calculating the carbon handprint is the lack of a common calculation method. LUT University has [developed](#) methods assessing [carbon handprint](#) in joint research projects with VTT. Before commencing work on a carbon handprint, Syke had also [assessed](#) the environmental impacts of the digitalisation of public sector services.

The Finnish population recycles only a small part of its ICT equipment. Finland's inhabitants are more likely to recycle their laptop and desktop devices (15.26% for laptops and tablets, 18.31% for desktops) than the EU average (11.31% and 14.66%, respectively), with recycling of mobile phones being close to the EU average (11.16% vs 10.93%). Moreover, only 14.20% of people consider energy efficiency as important when purchasing ICT devices (EU average: 19.35%), but the eco-design of the device is considered important by 12.92%, which is just above the EU average (12.04%). However, those two eco-friendly criteria take on less importance for the buyer than price, performance, and design of the ICT device.

Finland provides an example of how technology can help understand climate change. Finnish supercomputer LUMI is also successfully implementing in the Climate Change Adaptation Digital Twin (Climate Digital Twin), a high-priority digital twin of Destination Earth. The Climate DT is a simulation system that can be used to support decision-making on the impacts of climate change and different adaptation strategies at local and regional levels over multiple decades.

2024 recommendation on green ICT: (i) Continue developing a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs; (ii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing; (iii) Demonstrate leadership in using digital transition for environmental purposes by promoting national tools and methodologies at European level.

Finland fully addressed the recommendation by introducing significant policy actions in 2024. The country promotes the efficiency of digital infrastructures (see above) and puts significant efforts into mapping the carbon handprint of products and services, including digital ones. Finland participates in the Digital Decade's best practice accelerator as co-leader for sharing information on the digital environmental transition, demonstrating leadership in this field (see Annex II below).

Annex I – National roadmap analysis

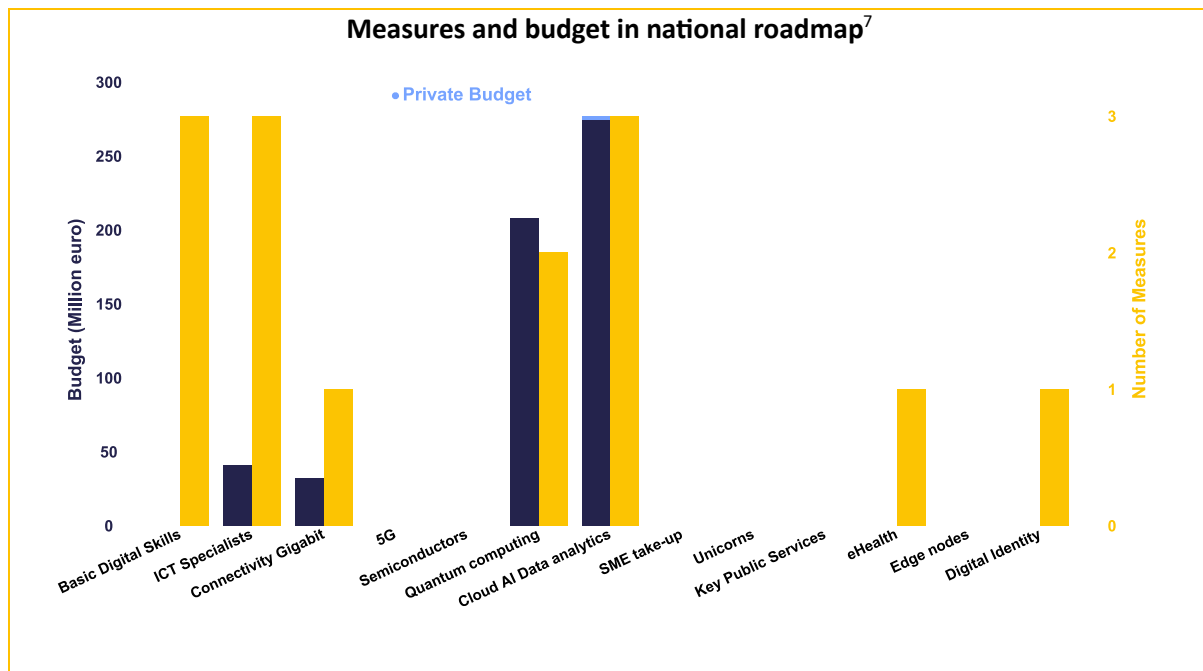
Finland's national Digital Decade strategic roadmap

Finland submitted an addendum to the Digital Decade roadmap on 29 November 2024, which includes an additional measure, revised measure descriptions, new targets and revised trajectories. The addendum, like the original roadmap, is based on Finland's [Digital Compass](#) and its [yearly implementation plans](#) that comprehensively address digital action by the country. The content of the roadmap and its update have been developed in close cooperation with stakeholders, as part of regular consultations conducted notably by the [Coordination Group for Digitalisation](#) (the 'Digital Office').

The new roadmap addresses a substantial number of roadmap recommendations issued in 2024:

- *Propose a target and trajectory for FTTP, edge nodes and unicorns, design a trajectory for VHCN, cloud, data analytics, AI, digital public services for citizens and e-health:* Finland provided the requested trajectories except for e-health and added a FTTP target accompanied by a trajectory. Regarding edge nodes, the country argues there is no database or public influence allowing for a target. Regarding unicorns, Finland did not consider it appropriate to set a separate national target and considers it important that the EU is an attractive and competitive environment.
- *Propose a higher target for basic digital intensity of enterprises:* Finland raised the target from 90% to 95%, above the EU ambition level.
- *Strengthen the measures on ICT specialists and gigabit, add measures on digital public services and e-health:* Finland added a measure related to e-health and mapped a supporting broadband deployment in rural areas which was absent in the initial roadmap.
- *Review the budget description of all presented measures, duly highlighting national and EU sources such as Recovery and Resilience Facility:* A budget for some existing measures was added.
- *Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it:* Some link between the measures and the corresponding rights and objectives was provided. The roadmap clearly reinforces Finland's contribution to the Digital Decade objectives of tech leadership, sovereignty and green ICT.

Overall, Finland presents a non-exhaustive list of policies and measures that will contribute to achieving each of the Digital Decade targets. All targets align with the EU-level goals for 2030, and two are set higher: a target of 87% for basic digital skills, and a target of 95% for basic digital intensity of SMEs. The measures presented also cover several types of objectives: technological leadership, sovereignty, competitiveness, and the green transition. In total, the 14 measures have a budget of EUR 559 million, equivalent to 0.2% of GDP. The roadmap also underlines the importance of RDI activities, by offering possibilities in multiple areas (e.g. 5G, semiconductors, quantum, and to some extent, AI).



⁷ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Finland is a member of the Alliance for Language Technologies EDIC, and is also working towards setting up an EDIC in the area of genomics. Finland is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Finland is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Finland is co-leading the Green IT cluster of the Best Practice Accelerator⁸, promoting the sharing of information relating to public policies on the environmental transition of digital technology. Finland has notably shared two best practices: on the Climate and Environmental Strategy for the ICT Sector in Finland, and on increasing the knowledge base on the environmental handprint and footprint effect of the ICT sector.

Finland also participates in the Digital Skills cluster (with shared two best practices: Finnish National STEM Strategy and Action Plan and New Literacies Development Programme) and in the uptake of the Digital Technologies cluster (with best practice: RELEX Solutions as an Example of Successful Startup Innovation and Support).

EU funding for digital policies in Finland

Finland allocates 29% of its total recovery and resilience plan to digital (EUR 526 million)⁹. In addition, under cohesion policy, EUR 385 million (representing 20% of the country's total cohesion policy funding), is dedicated to advancing Finland's digital transformation¹⁰. According to JRC estimates, EUR 566 million directly contribute to achieving Digital Decade targets (of which EUR 391 million comes from the RRF and EUR 175 million from cohesion policy funding)¹¹.

The largest digital measure in the recovery and resilience plan is dedicated to the digitalisation of healthcare services (EUR 145 million). Other measures are designed to support (i) rail digitalisation, (ii) boosting the potential of the data economy, (iii) RDI in advanced technologies such as 6G, AI and quantum, and (iv) training in the public and private sector, including in cybersecurity. The high-speed broadband scheme receives EUR 32 million from the plan.

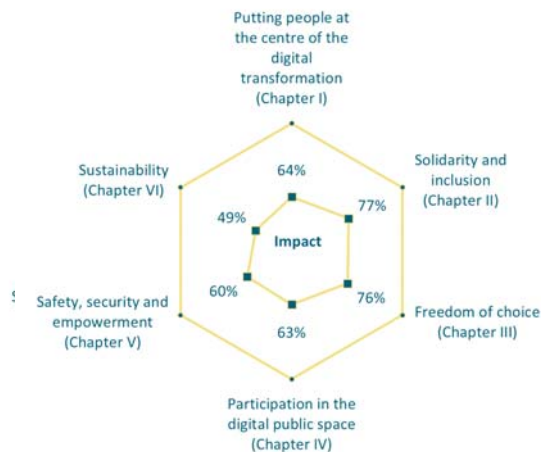
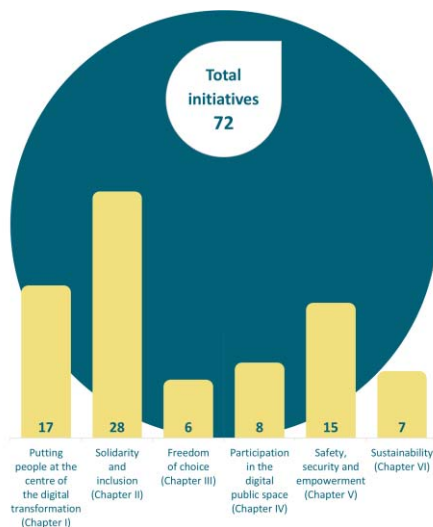
⁸ Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

⁹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹⁰ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹¹ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital rights and principles¹²



Activity on digital rights and principles (figure 1)

Finland has been relatively active in implementing digital rights and principles, with 72 initiatives overall and 5 new initiatives launched in 2024, showing limited progress towards its commitments. Finland is most active in the area of Putting people at the centre of the digital transformation (I). There is room for improvement, especially with regards to Interactions with algorithms and artificial intelligence systems (III) where less activity has been identified.

Impact of digital rights initiatives (figure 2)

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Finland (mainly national government) and how these are perceived by citizens.

The indicators suggest that Finland is most successful in implementing commitments related to Solidarity and inclusion (II). Finland could strengthen efforts in areas where the impact of digital rights initiatives appears to be limited, notably on Sustainability (VI).

According to the Special Eurobarometer 'Digital Decade 2025', 55% of citizens in Finland think that the EU protects their digital rights well (a 3% decrease since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting freedom of assembly and of association in the digital environment and getting access to safe and privacy-friendly digital technologies (76%, above the EU average of 59% and 55% respectively). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (57%, above the EU average of 48%).

¹² Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
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DIGITAL DECADE 2025 COUNTRY REPORTS

France

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Executive summary

France can rely on a very good digital infrastructure but lags behind in the digitalisation of businesses. The country positions itself as a tech leader in AI and green ICT.

France shows a high level of ambition in its contribution to the Digital Decade having set 9 national targets, 100% of which aligned with the EU 2030 targets. The country is following its trajectories moderately well with 50% of them being on track (considering 2024 trajectories defined for 6 KPIs out of 8 analysed). France addressed 77% of the 13 recommendations issued by the Commission in 2024, either by implementing significant policy changes (54%) or making some changes (23%) through new measures.

In 2024, fibre and 5G coverage in France is high despite a large territory. The digitalisation of SMEs and the adoption of advanced digital technologies by businesses remains below average. Recent activities, such as hosting the AI Action Summit in 2025, confirm that France wants to position itself as a leader in AI. The country is also developing initiatives and standards to measure and reduce the environmental footprint of the ICT sector. France's digital policies increasingly emphasise sovereignty by, for example, developing its national production of semiconductors and fostering the adoption of sovereign EU and French solutions by businesses and the public administration. France has set out a very broad portfolio of actions to raise awareness of cyberthreats in all sectors (enterprises, administration, general public) but has also provided support in implementing cybersecurity strategies, especially in the healthcare sector.

Digital Decade KPI ⁽¹⁾	France				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	FR	EU
Fixed Very High Capacity Network (VHCN) coverage	81.4%	87.5%	7.5%	90.7%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	81.4%	87.5%	7.5%	-	69.2%	8.4%	-	-
Overall 5G coverage	90.9%	94.3%	3.8%	96.6%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	272	532	95.6%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	68.5%	3.8%	-	72.9%	2.8%	90.0%	90%
Cloud	23.0%	-	-	-	-	-	-	75%
Artificial Intelligence	5.9%	9.9%	68.5%	-	13.5%	67.2%	-	75%
Data analytics	33.9%	-	-	-	-	-	-	75%
AI or Cloud or Data analytics	44.9%	-	-	-	-	-	65.0%	75%
Unicorns	43	48	11.6%	49	286	4.4%	100	500
At least basic digital skills	59.7%	-	-	-	-	-	80.0%	80%
ICT specialists	4.7%	4.8%	2.1%	5.5%	5.0%	4.2%	10.0%	~10%
e-ID scheme notification		Yes						
Digital public services for citizens	72.1	71.2	-1.2%	76.1	82.3	3.6%	100.0	100
Digital public services for businesses	79.3	76.9	-3.0%	82.3	86.2	0.9%	100.0	100
Access to e-Health records	79.3	84.2	6.2%	82.2	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special Eurobarometer on ‘the Digital Decade’ 2025, 65% of French people consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 89% consider it important to counter and mitigate the issue of fake news and disinformation online. And on competitiveness, 82% consider it important to ensure that European companies can grow and become ‘European Champions’ capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Digital infrastructure indicators (very high capacity networks (VHCNs), fibre to the premises (FTTP), 5G) are all above the EU average thanks to effective public policies (plan ‘*France très haut débit*’, multiple service providers sharing a fibre network). However, the digitalisation of enterprises, especially SMEs, is still lagging. Nonetheless, France has demonstrated leadership in AI and can count on a dynamic start-up ecosystem in this sector and in quantum computing. The country has adjusted its roadmap with additional measures to foster the adoption of generative AI and retrieval-augmented generation technologies by businesses. However, the take-up of advanced digital technologies by businesses is below average. France promotes cyber awareness on all fronts: businesses, population, and administration. The updated roadmap includes a programme for cyber protection of healthcare facilities. The roadmap also includes massive investments in semiconductors (research and production).

Protecting and empowering EU people and society

France’s digital skills performance reflects inclusive growth across genders and a small urban-rural skills gap, but some disparities persist based on people’s education levels. The general population’s poor performance in mathematics may limit the pursuit of science, technology, engineering and mathematics (STEM) and ICT specialist training and careers as these skills shortages are persistent. Public service digitalisation is losing ground compared to the EU average. In this area, the authorities are focussing on reducing the administrative burden (dematerialisation – replacing physical documents, processes and transactions with digital equivalents, ‘once only’ principle). They are also promoting the adoption of sovereign solutions, including cloud, open software, and specialised skills within the administration. On a positive note, the digitalisation of healthcare has made impressive progress in the past two years.

Leveraging digital transformation for a smart greening

France is a global leader in monitoring and reducing the environmental impact of its ICT sector. It has developed tools to measure, forecast and monitor the ICT sector’s footprint (such as designing carbon reduction trajectories) and plays a key role in green initiatives within the Digital Decade’s Best Practice Accelerator.

National digital decade strategic roadmap

France submitted a fully revised national Digital Decade roadmap on 3 February 2025, containing six additional measures and revised trajectories. The updates are aligned with the Commission’s new priorities on AI, cybersecurity and green ICT. It includes reporting on the consultation of stakeholders. It addresses a substantial number of roadmap recommendations issued in 2024. All targets align with the EU level goals for 2030 (except for the combined indicator on the adoption of AI, cloud, and data analytics technologies where the country aims at 65%, below the EU target of 75%). The revised

roadmap continues to prioritise semiconductors, connectivity, and e-Health. It contains of 33 measures with a budget of EUR 18.6 billion, including EUR 11.1 billion from the public budget (equivalent to 0.38% of GDP). It covers all the Digital Decade objectives, such as creating a human-centred digital space, boosting resilience and security, promoting sovereignty, supporting the green transition, and protecting society.

Funding & projects for digital

France allocates 22% of its total recovery and resilience plan to digital (EUR 8.1 billion)¹. In addition, under cohesion policy, EUR 1.9 billion, representing 11% of the country's total cohesion policy funding, is dedicated to advancing France's digital transformation².

France is the host Member State of the Alliance for Language Technologies EDIC (ALT-EDIC). France is also a member of the Local Digital Twins towards CitiVERSE EDIC. The country is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). France is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

France has contributed to the Best Practice Accelerator³ by leading the cluster on Green IT related to public policies on the environmental transition of digital technology. It shared three best practices within this cluster (the general reference framework for the eco-design of digital services, the Alt IMPACT Communication Campaign, and the development of product category rules for environmental evaluation and labelling) and one additional best practice in the Digital Skills cluster (digital advisors).

Digital rights and principles

According to a support study, France has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 53 initiatives overall but no new initiatives launched in 2024. France is most active in the area of participation in the digital public space. Less activity has been identified with regards to digital public services online. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing safety, security and empowerment.

Recommendations

- **SMEs:** Improve digitalisation of SMEs, including by directing existing support schemes to SMEs that lag in digitalisation, independently of their size.
- **ICT specialists and advanced skills:** Increase the job market relevance, improve the visibility, and clarify the offer of digital training and reskilling options.
- **Advanced technologies take-up:** Support the adoption of advanced digital technologies by businesses (with a particular attention to AI and cloud) via the creation of local ecosystems to

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

spread technologies and best practices across all economic sectors. Encourage the adoption of sovereign European solutions.

- **Artificial intelligence:** Continue supporting innovation in AI to strengthen France's leadership in the sector and create future global leader companies.
- **Cybersecurity:** Continue efforts in cybersecurity to address evolving threats, particularly for enterprises and administration.
- **Digital public services:** Speed up the digitalisation of public services for both citizen and businesses, in particular by expanding cross-border capabilities.

A competitive, sovereign and resilient EU based on technological leadership

France's digital competitiveness has been a key focus for policymakers, aiming to position the country as a global leader in the tech landscape. In recent years, significant progress has been made, with growing investments in start-ups, a vibrant tech ecosystem in hubs like Paris, and advances in AI, cybersecurity, and cloud computing. The long-term investment plan, France 2030, with a budget of EUR 54 billion, is pivotal in developing cutting-edge digital technologies such as AI, quantum and cybersecurity. However, recent political instabilities and budget arbitrage are putting this progress at risk, potentially undermining the momentum achieved so far. Reduced funding for digital transformation, infrastructure, and innovation initiatives risks slowing France's ability to compete with other countries. Economic and political visibility is paramount for companies to anticipate and plan their investments.

In France, enterprises' demographic characteristics may account for some of the challenges in adopting digital technologies. SMEs account for approximately 96.8% of the enterprises with more than 10 employees, while large enterprises made up only 3.2%. The French ICT sector represented 4.36% of the gross value added in 2022 ⁴. It was then equal to the 2017 value and was lower than the EU average of 5.46%, pointing to an overall underdevelopment. R&D in the ICT sector represented 16.79% of total R&D expenditure by businesses and 22.42% of total R&D personnel.

French digital infrastructures are a significant asset. Despite its expansive territory, France is leading the way in the deployment of Fibre and 5G. The 'symmetrical framework' for the deployment of Fibre played a major role in achieving extensive coverage. This framework aims to ensure fair competition between operators while optimising costs and infrastructure works. According to the 2025 Eurobarometer⁵, 83% of French people think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

France ambitions to be a leader in the AI race. In 2024 and 2025, the country multiplied the initiatives to support and promote its AI ecosystem. Beside a sustained support to investment in all dimensions of AI (infrastructures, adoption by businesses, innovation, skills, ...) from France 2030, Paris hosted the AI Action Summit in February 2025. The event brought together heads of state, leaders of international organisations, CEOs, academics, and civil society representatives to discuss and promote the responsible development and use of AI. In the new government formations, the post of Minister of Digital now mentions specifically AI: 'Minister Delegate responsible for Artificial Intelligence and Digital Technology'.

Sovereignty has become a fundamental issue in all digital initiatives. France is involved in European workstreams aimed at creating sovereign digital tools, with European partners, such as the work carried out on data spaces, or the multilateral cooperation initiated around the construction of sovereign digital suites (Digital Workspaces) based on common open-source technological building blocks.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Building technological leadership: digital infrastructure and technologies

France is very active in the roll-out of connectivity infrastructures. Both Fibre and 5G networks are expected to reach 100% coverage well before 2030, narrowing the geographical divides in a large territory with sizeable rural areas.

Connectivity infrastructure

France is at 87.47% of Very-High-Capacity Networks (VHCN) coverage (2030 national target 100%) after a progression of +7.5% in 2024, and standings above the EU average of 82.49%. The country is on track according to its national trajectory. The growth rate of 7.5% from 2023 outperforms the EU's 4.9%. For households in rural areas, France's VHCN coverage was 78.12% in 2024, above the EU's 61.89%. The growth rate for this category was 20.9%, surpassing again the EU's rate of 11.3%.

France is at 87.47% of Fibre-To-The-Premises (FTTP) coverage (2030 national target 100%) after a progression of +7.5% in 2024, far exceeding the EU average of 69.24%. France also outpaced the EU in term of FTTP coverage but with a growth rate of 7.5%, falling lower than the EU's rate of 8.4% that can be explained by France reaching full coverage. For households in sparsely populated areas, France's FTTP coverage was 78.12% in 2024, above the EU's 58.78%. The growth rate for these areas was 20.9%, outperforming the EU's 11.9%. The country did not provide a national trajectory for 2024 but it is assumed to be identical to the VHCN trajectory.

France is at 94.34% of 5G coverage (2030 national target 100%) after a progression of +3.8% in 2024, standing around the EU average of 94.35%. The country is on track according to its national trajectory. France's growth rate of 3.8% was however lower than the EU's 6.0%. For households in rural areas, France's 5G coverage was 77.86% in 2024, below the EU's 79.57%. The growth rate for this category was 6.0%, half of the EU's 11.9%. France's 5G coverage in the 3.4-3.8 GHz band was 73.98% in 2024, higher than the EU's 67.72%. However, France's growth rate of 11.7% was significantly lower than the EU's 32.6%. Regarding 5G spectrum, France's assignment of harmonised spectrum in 5G pioneer bands was 59.17% in 2025 (same value as last year), below the EU's 74.63%.

In France, fixed broadband take-up indicators are excellent while the mobile ones are below the EU average. In 2023, 65.39% of fixed broadband subscriptions in France were at speeds of 100 Mbps or higher, slightly below the EU's 65.9%. However, by 2024, France's share increased to 74.11%, surpassing the EU's 71.88%. The growth rate for this indicator in France was 13.3%, outperforming the EU's 9.1%. In France, fixed broadband subscriptions at speeds >1 Gbps are the highest in the EU. In 2024, France's share reached 58.92%, while the EU's was 22.25%. However, France's annual growth rate of 14.3% lagged behind the EU's 20.5%. The share of the population using 5G SIM cards in France was 15.28% in 2023, lower than the EU's 21.7%. By 2024, this share increased to 27.03%, still below the EU's 35.56%. But France's growth rate in this area was 76.9%, outperforming the EU's 63.9%.

VHCN and FTTP

France's VHCN and FTTP targets remain at 100% with a completion date by 2025, as set out in the 2023 roadmap. Given these solid figures and the pace of roll-out, both targets seem realistic. It is therefore justified that the current strategy, the plan '*France Très Haut Débit*', remains the main measure in place and that no new supporting measures were submitted along with the roadmap adjustment. The last connections, the most difficult to complete, will be incentivised by an on-demand mechanism.

In 2025, France started to close its copper network. Incumbent operator Orange started the shutdown by batches of municipalities and the process will take place across the entire territory until 2030. On 31 January 2025, [the first batch of 162 municipalities](#) saw its copper network shutdown. The 210 000 people concerned by this shutdown were given support to transition to Fibre. Across the country, a massive migration to Fibre subscriptions can be observed (more than 60% of population), made possible by the widespread availability of the service.

The mutualisation of the Fibre networks encourages competition between operators. By the end of 2024, 90% of the 39.3 million existing Fibre lines were covered by the four main operators. It also allows quick migration to Fibre subscriptions, which now represents around 73% of the total internet subscriptions. However, for 2024, although final data are not yet available, analyses suggest a downward trend in investments, which amounted to 13.7 bn in 2023.

With multiple sea fronts and outermost regions, submarine cables are major digital infrastructures to ensure security and sovereignty of France and the EU. Recent developments demonstrated that submarine cables are pivotal in ensuring digital security and sovereignty. Securing the submarine network requires deploying alternative routes and laying redundant cables. These projects are supported by the public sector. In outermost regions, these projects are not often economically viable, which makes European funding an effective way to fill market gaps. To secure this strategic market of building and laying submarine cables, the French State became the major shareholder in the cable making company Alcatel Submarine Networks (ASN) in 2024. As an example of EU funded project, the [MEDUSA project](#) involves installing a state-of-the-art, high-capacity fibre-optic submarine cable connecting five EU Mediterranean countries (Cyprus, Spain, France, Italy and Portugal) to four countries in the EU's southern neighbourhood (Algeria, Egypt, Morocco and Tunisia). The [PISCES subsea cable system](#) (funded by the Connecting Europe Facility) links the transatlantic and other international cable systems landing in Ireland, France, Spain and Portugal, and will allow for capacity interconnection on these systems. The [CELIA project](#) aims to build a state-of-the-art submarine cable to improve the connectivity conditions of two French and Dutch Caribbean islands, Martinique and Aruba respectively.

5G

Following the roadmap adjustment, France's 5G target remains at 100% by 2030. Given the solid figures and the pace of roll-out, the target seems realistic.

The four operators sustain the deployment of 5G sites. All operators are present in the 3.5 GHz band but follow different strategies in the 700-800 MHz and 1.8-2.1 GHz bands. However, only 59.17% of the 5G pioneer bands are assigned, against 74.63% at the EU level. There is still no commercial demand for the 26 GHz band.

2024 recommendation on connectivity infrastructure: Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

France made efforts to address the recommendation through new policy actions in 2024. The four main operators activated 5G stand-alone in their core networks in 2024. For innovative applications, 26 GHz frequency were attributed to '5G open experimenting platforms', with examples from port of Le Havre for logistical applications, Rennes train station for travellers and internal uses at the

technical centre, the St Quentin-en-Yvelines velodrome for needs related to events. In addition, the 3.8-4.0 GHz band frequencies have been the subject of more than a hundred requests to experiment with the technology and use cases for a wide variety of economic and geographic sectors.

Semiconductors

Semiconductors remain a clear priority highlighted in France's roadmap and the long-term investment strategy, France 2030. While no new measures were presented in the roadmap adjustment this year, the original roadmap already provided for a sizeable support of more than EUR 12 billion to the sector. The blend of measures aims at encouraging the building of semiconductor production capacities in France, supporting innovation and first industrialisation projects, and upscaling the production toward high-end 'chips for AI' to compete against big players from the US and China.

France's efforts in semiconductor production will strengthen the EU's sovereignty and ensure a secure supply. One key example is the semiconductor mega factory in Crolles, which began operations in 2023. Once it will reach full capacity by 2028, it could increase the EU's semiconductor production by nearly 6%. In addition, as part of the France 2030 investment plan, the French government has established a 'Critical Metals Fund' with EUR 500 million. This fund aims to support projects across the entire value chain of essential metals like lithium, nickel, and cobalt.

Edge nodes

According to the Edge Node Observatory, France is estimated to have deployed a total of 532 edge nodes by 2024, a progression of +95.6% since 2023. This is almost doubling (+260 edge node) the amount estimated for 2023 (272, number revised since State of the Digital Decade report (SDDR) 2024).

2024 recommendation on edge nodes: Consider measures specific to edge nodes deployment, supplementary to the IPCEI-CIS participation.

In 2024, France continued the implementation of existing measures but did not take any new measure. Beyond the IPCEI-CIS, the main national instrument for edge nodes deployment is the Cloud Acceleration Strategy backed by EUR 550 million, partly funded by the RRF and part of the 2023 roadmap. It supports innovation in cloud and edge services while financing early-stage research in resource organisation and optimisation.

Quantum technologies

France is a global leader in quantum technologies. The main public support is the national Quantum Strategy for 2030 fostering the development of the large-scale fault tolerant quantum computer (LSQ), of simulators and accelerators of the noisy intermediate scale quantum computer, and of enabling technologies. The target is to produce a LSQ before 2030. France has all the ammunition to compete in the quantum field against other superpowers: access to secure infrastructures, high public investment, leading quantum start-ups (e.g. Quandela, Pasqal, Alice & Bob, C12, Quobly), and a pool of qualified engineers and mathematicians. No additional public measures were presented in the adjusted roadmap.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

France is home of cutting-edge start-ups in AI but the bulk of enterprises are not digitalised sufficiently. By improving the digitalisation of its businesses, France could boost its competitiveness. Indeed, expanding the spread of ICT knowledge and technologies, especially among SMEs, could address one of the weaknesses [weighing on total factor productivity](#) of the country.

SMEs with at least basic digital intensity

In France, 68.45% of SMEs (10 to 259 employees) showed at least a basic level of digital intensity (2030 national target 90%) after a progression of +3.8% annually between 2022 and 2024, standing below the EU average of 72.91%. The digitalisation of French SMEs is showing a positive trend but still lag behind its EU peers. Looking specifically at top digitalised SMEs, only 21.59% of SMEs in France reached high or very high digital intensity, falling significantly short of the EU average of 32.66%. Overall, France has shown progress, but room for improvement continues to exist in the digital intensity of its SMEs, particularly in terms of advanced digital intensity.

The annual France Num barometer, measuring the perception and usage of digital by SMEs and very small enterprises showed in 2024 that digitalisation is gaining traction. Several metrics are on the rise: 77% of executives surveyed believe that digital technology facilitates communication with customers (+3pp compared to 2023), 42% believe that digital technology allows them to make money (+3pp). The main barrier to digitalisation concerns the need for extra capacities and skills for mastering new technologies. The apparent simplicity of generative AI (spoken language) still appears complex for small structures to implement.

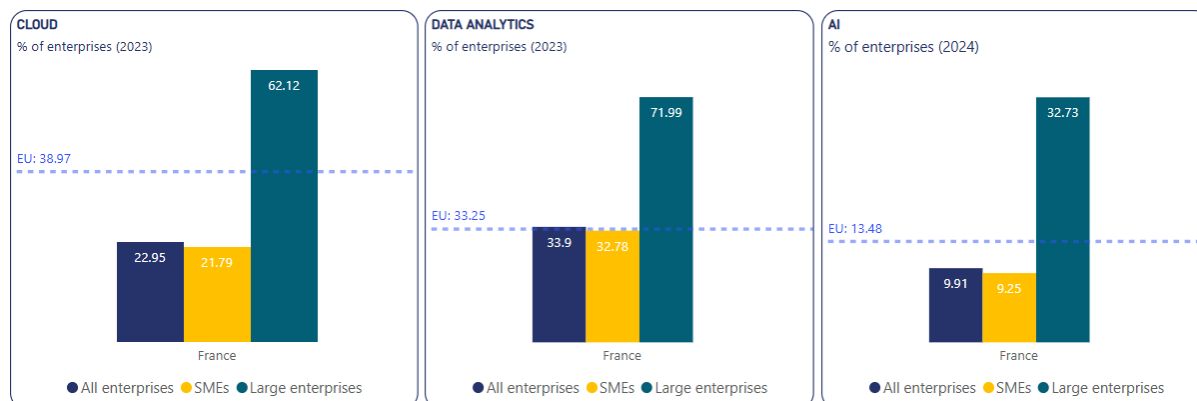
France still aims at 90% of SMEs with basic digital intensity, in line with the EU target for 2030. However, given the current levels and growth metrics, it is unlikely that the target will be reached. Moreover, no new measure targeted specifically to SMEs were presented in the adjusted roadmap. France Num remains the main tool targeting SMEs. But with a focus on enterprises with less than 10 employees, the results of this instrument are hardly captured by the Digital Decade key performance indicator (KPI) which focuses on enterprises 10-249 employees. Recently, France Num has undergone a few improvements such as more targeted actions at the local level, the dissemination of use-case by peers or the Tour France Num to raise awareness of the potential of digital technology.

2024 recommendation on digitalisation of SMEs: Set up additional measures and increase resources for existing schemes to improve the SMEs digitalisation performance and to further leverage the impact of the European Digital Innovation Hub in regions and its close presence to regional ecosystems, paying special attention to its outermost regions.

France made some efforts to address the recommendation through new policy actions in 2024. To tackle the low digitalisation level of SMEs, France will leverage the adoption of technologies such as AI and cloud (see dedicated sections). The scheme France Num (targeted at SMEs and VSEs) is in place since 2018 but did not recently benefit from major changes in scope or in resources. For EDIHs, see below.

In 2024, 16 EDIHs started in France, mainly centred around AI. Already 860 digital maturity assessment diagnostics were performed by enterprises. Several EDIHs have partnerships with other Member States. The participants however warn of the need for more communication around these initiatives.

Take up of cloud/AI/data analytics



According to new data collected in 2024, 9.91% of French enterprises adopted AI after a progression of +68.5% in a year, but still stands below the EU average. About 1 out of 10 enterprises in France were employing AI technology, falling behind the EU average of 13.48%. Nonetheless, France experienced a similar growth rate from 2023 (+68.5%) as the corresponding EU-level growth rate (+67.2%). More specifically, SMEs had an AI uptake rate of 9.25%, whereas large enterprises demonstrated a higher rate of 32.74%. This resulted in a gap of 23.49 pp. between SMEs and large enterprises, which was lower than the EU gap of 28.53 pp. The country did not provide a national trajectory point for 2024 as it only submitted a trajectory for the KPI on the three technologies (AI, cloud, data analytics) combined.

Adoption of cloud, data analytics, and the three technologies together were not measured in 2024.

In 2023, only 22.95% of French enterprises adopted cloud technologies, considerably lower than the EU average of 38.97%. Moreover, SMEs exhibited a lower adoption rate of 21.79%, whereas 62.12% of large enterprises used advanced cloud services. This resulted in a gap of 40.33 pp. in uptake between SMEs and large enterprises in France, higher than the EU-level gap of 31.68 pp.

Data from 2023 showed that, 33.90% of French enterprises adopted data analytics technologies, in the EU average of 33.25%. More specifically, 32.78% of SMEs adopted data analytics, while the uptake was considerably higher among large enterprises at 71.99%. This led to a difference of 39.21 pp. in engagement between SMEs and large enterprises, aligning with the EU gap.

When taking the three technologies together in 2023, 44.86% of enterprises in France engaged with either AI, cloud, or data analytics technologies (2030 national target of 65%), considerably below the EU average of 54.70%. More specifically, the uptake among SMEs was slightly lower than the national average, at 43.73%, while large enterprises had a markedly higher rate of 83.21%. This indicates a difference of 39.48 pp. in uptake between SMEs and large enterprises in France, which is higher than the EU-level gap of 32.97 pp.

In conclusion, France displayed lower adoption rates of cloud computing and AI technologies among enterprises with 10 or more employees compared to EU averages. On the other hand, adoption of data analytics was slightly higher. Large enterprises consistently reported significantly higher adoption levels across all technologies compared to SMEs. Despite SMEs representing most enterprises in France, their contribution to economic value added remains substantially lower than that of large enterprises. These findings highlight the need for targeted measures to bridge the digitalisation gap and enhance the competitiveness of SMEs.

In its adjusted roadmap, France revised downward its ambition for 2030 with an adoption rate of technologies by enterprises of 65%, potentially jeopardising the EU-level goal. The adjustment does not contain a breakdown per technology anymore but instead presents a single trajectory for the indicators of the three technologies combined (adoption of either cloud or data analytics or AI). The new target is 65% by 2030, lower than the EU-level target of 75%. This decision will have considerable impact on the overall EU performance given the size of the French economy, which hosts almost 12% of European enterprises. In term of achievability of the national target, France chooses mainly to leverage the adoption of AI by all enterprises. Past and new measures might boost the take up of AI by all enterprises, including SMEs which could also influence positively the basic digital intensity of SMEs.

- [Cloud](#)

The strategy '[Cloud de confiance](#)' ('Trusted cloud') should contribute to the deployment of sovereign cloud solutions. It aims to strengthen France's technological independence by supporting national and European cloud players. This includes initiatives to develop competitive and innovative offers. Increasing trust in the cloud technologies could foster the adoption of such services by enterprises and administrations and decrease dependency to foreign solutions.

- [Data Analytics](#)

No new development relevant for the 2025 Digital Decade report.

- [Artificial Intelligence](#)

AI is France's main priority as far as digital technologies are concerned. The national AI strategy, hosting the AI Action Summit, and new measures in the national roadmap adjustment confirm that AI is of utmost importance in the public policies. In 2024, France developed ecosystems for AI take up, placing the State as a trusted third party to showcase AI technologies and facilitate their adoption. Adoption guides (including regulatory topics) will be published to share trusted information on AI technologies and present profitable business cases. In May 2024, the President announced nine new awards of the call for expressions of interest 'AI clusters', centres of excellence in research and training in AI, supported by EUR 360 million from France 2030. Also in 2024, the call for projects [Acceleration of the uses of generative AI in the economy](#) was launched and should boost the use of AI by businesses. The 2025 Eurobarometer shows that 79% of French people think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values. It represents a big increase of 9 percentage points compared to last year, reflecting the growing interest of the citizens at this respect.

France added two new measures on AI in its adjusted roadmap that should foster the adoption of AI technologies.

- Call for projects 'Accelerating the uses of generative AI in the economy' of the France 2030 plan. The call for projects aims to support the development of specialised generative AI solutions for specific use cases, by bringing together technological players and end users for quick adoption. This mechanism is the follow-up of the Digital Commons of Generative AI programme, which aimed to create fundamental technological bricks in open source and to demonstrate the profitability and replicability of generative AI technologies in various economic sectors. Successful bidders should be decided in 2025.
- Guide for the adoption of retrieval-augmented generation (RAG) technology for businesses. RAG is a generative AI technology that allows models to be specialised with enterprise data

without retraining, offering simplicity and accessibility for various applications. The Directorate-General for Enterprises published a practical guide in November 2024 to encourage the adoption of RAG, detailing relevant use cases, prerequisites, costs and technological choices, in order to help companies and regional administrations integrate this technology.

2024 recommendation on AI: (i) Review the mix of measures to support the adoption of advanced digital technologies (with a particular attention to AI and cloud). (ii) Foster the creation of local ecosystems to allow technologies (AI, cloud, data analytics) and best practices to diffuse across the broader business sector. Build on the recent national AI Commission report to design new measures to develop the AI ecosystem and foster related technologies adoption by enterprises.

France addressed fully the recommendation by putting significant policy actions into place in 2024. France has added two new measures in its adjusted roadmap to support the adoption of AI by enterprises. The country also follows an approach of local ecosystems for adoption and dissemination of AI technologies. France also hosted the AI Action Summit in 2025.

Paris hosted the [AI Action Summit](#) in February 2025 and will host an EU AI factory. The EU announced investing EUR 200 billion for the development of AI gigafactories and data centres, including [one site in France](#) (AI Factory France, AI2F). The funding will come mainly from the private sector: EUR 150 billion will be financed by the European AI Champions Initiative alliance, and the remaining EUR 50 billion by the EU. Also, at the end of the summit, around 60 countries have signed an agreement for an open, inclusive and ethical AI. The text also provides for a global dialogue, coordination for the governance of AI, and the signatories call for avoiding a market concentration and make these tools more accessible. Another axis cited as one of the priorities of this agreement is making AI sustainable for the people and the planet. The Summit was also the occasion for the French company Mistral AI to release its Generative AI application (Le Chat), as a direct contender to non-EU solutions such as ChatGPT or DeepSeek.

Prior to the summit, the French President announced [EUR 109 billion of private investment in France to develop AI](#). Most of the funds should be earmarked for the construction of data centres. Among the investors, the United Arab Emirates plans to finance a giant data centre in France, with a computing capacity of up to 1GW, as part of the largest AI-focused campus in Europe. The Canadian fund Brookfield has also announced an investment of EUR 20 billion in France by 2030, including EUR 15 billion for new data centres.

Unicorns, scale-ups and start-ups

At the beginning of 2025, France had 48 unicorns (2030 national target of 100), which is 5 more than last year (+11.6%). In its adjusted roadmap, France confirms its ambitious goal of 100 unicorns by 2030. This will contribute greatly to achieving the EU-level target of 500 unicorns. The current trajectory will need to be sustained to reach that goal.

Thanks to a range of reforms, France has improved its business environment in recent years but lack of visibility weighs on investment decisions. Several reforms related to the business environment took place since 2017 (e.g. *‘État au service d’une société de confiance’* ESSOC, *‘loi relative à la croissance et la transformation des entreprises’* PACTE, *‘loi d’accélération et de simplification de l’action publique’* ASAP) and are yielding positive results. In 2024, fewer enterprises than in the rest of the EU found that regulations were a major obstacle to attracting investment (18% vs 22%). However, recent difficulties in establishing a stable government and passing the national budget has brought about uncertainty for businesses. The [EY attractiveness barometer](#) showed that half of business

managers consider that France's appeal has declined since June 2024 and, as a consequence, 49% of foreign investors have cut back on their investment plans in France.

Despite economic uncertainties, start-ups employment remained dynamic in 2024. After a slowdown in job growth between April and September 2024, the dynamic has been on the rise again. The slight recovery observed in October was confirmed in November. Overall, for 2024, French start-ups have generated [more than 18 000 jobs](#), an increase of nearly 6% year-on-year. The AI sector had nearly 1 900 start-ups employing more than 50 000 people. These companies have benefited from nearly 90 fundraising rounds, representing EUR 1.7 billion.

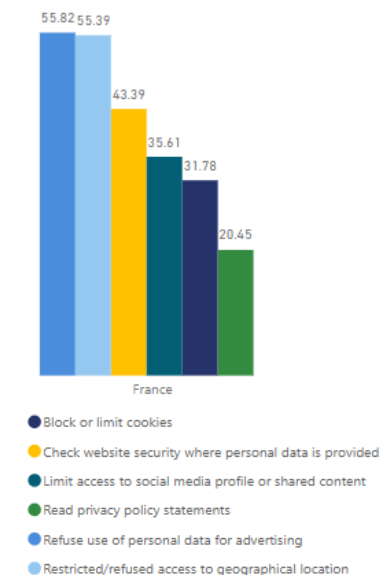
France is active in identifying legislative or regulatory obstacles encountered by the French tech ecosystem. In 2017, a consultation called 'Tour des Start-ups' brought out nearly 100 measures and led to the adoption of a series of simplification measures. Also, since 2022, the French Tech Mission has been providing legal support to Next40 companies (40 most promising young companies), by putting them in touch with the right contacts in public administrations and by assessing proposals that have positive consequences for the ecosystem. Start-ups are consulted when drafting legislation.

Strengthening Cybersecurity & Resilience

In France, about 3 out of 4 people have basic digital safety skills. 72.69% of individuals reported taking at least one action (see the 6 types of digital safety actions in the graph's legend) to protect their personal data online in 2023, slightly above the EU average of 69.55%. More specifically, 1 out of 2 (49.69%) individuals are considered as having above basic digital safety skills (i.e. engaging in 3 actions). The most common action taken by individuals was refusing the use of personal data for advertising purposes, with 55.82% of individuals taking this step, while reading privacy policy statements was the least frequent action, reported by only 20.45%.

French enterprises tend to experience less incidents related to cyberattacks but employees are less aware of their ICT security related obligations compared to the EU. The number of enterprises that experienced ICT security incidents leading to unavailability of ICT services due to attack from outside (e.g. Ransomware attacks, Denial of Service attacks) slightly increased in France, from 2.36% in 2022 to 2.73% in 2024. It remains below the EU average (3.43%). However, French enterprises are more prone to incidents related to hardware or software failures (21.40%) than their EU peers (17.97%). In terms of measures, 93.20% of enterprises deployed some ICT security measures (around the EU average of 92.76%) but only 48.13% of enterprises made their employees aware of their obligations in ICT security related issues, significantly below the EU average (59.97%).

Type of activities to protect personal data online
(% of individuals)



France leads the EU in the roll-out of the secure Internet Protocol version 6 (IPv6) protocol for end users. Concerning the deployment of [secure internet standards](#), France leads the EU in the roll-out of IPv6 for the end users (65%, EU average: 36%) and is slightly above the EU average on the server side (23% vs 17% for the EU). IPv6 is an important protocol as it ensures the scalability, stability, and security of the Internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have been

long depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled-out as it introduces security features to the Domain Name System. In France, the DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology) is 34% (Q3-2024), below the EU average of 47%.

With increasing threats, France develops cyber awareness on all fronts. On the enterprises side, a recent programme called 'cyber PME' proposes solutions for SMEs and mid-cap companies wishing to strengthen their level of security and protect themselves from risks. Up to now, 300 enterprises were accompanied. For administrations and organisations, the National Agency for Information Systems Security (Agence nationale de la sécurité des systèmes d'information, ANSSI) proposes cybersecurity courses (['parcours de cybersécurité'](#)) which enable beneficiaries to protect themselves against cybercriminal threats by achieving a cybersecurity objective in a progressive, measurable and adapted way for each beneficiary, in line with the level of threat and maturity. Already 950 companies benefited from these courses. More generally, ANSSI launched a [website](#) for the assistance and prevention of digital risk for the general public and also [another one](#) to raise awareness on phishing. According to the Digital Decade Eurobarometer 2025, 82% of French citizens think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies.

In its adjusted roadmap, France presents the CaRE programme, aimed at the cyber protection of healthcare establishments. This action programme on cybersecurity acceleration and resilience of healthcare facilities aims to improve the cybersecurity of hospital information systems and to strengthen the resilience of healthcare structures against cyber threats. It pursues two main objectives (i) to prevent attacks; and (ii) to enable fast recovery in the event of an incident. The programme is structured around four axes (i) governance and resilience; (ii) resources and pooling; (iii) awareness; and (iv) operational security. It is funded by EUR 250 million for 2023-2025 but will reach EUR 750 million in total by 2027.

2024 recommendation on cybersecurity: (i) Continue efforts in cybersecurity to address evolving threats and restore the confidence of enterprises and general public.

France addressed fully the recommendation by putting significant policy actions into place in 2024. France has recently deployed a very broad range of actions to raise awareness about cyber threats in all sectors (enterprises, administration, general public). It has also provided support in implementing cybersecurity strategies with actions, including Cyber PME. The new measure added in the adjusted roadmap (CaRE programme) targets the cybersecurity of the healthcare sector, which is a [top priority](#) of the Commission.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

France's administration aims at making digitalisation inclusive with actions targeting known divides and improving the public services. In term of digital skills of the population, France performs well with only few gaps identified toward the lower educated and based on socio-economic status. The lack of ICT specialists could however create tensions on the job market and slow down the development of the ICT sector. The digitalisation of the public sector benefits from many actions being implemented, including for relieving administrative burden. France is also very active in protecting children online and fighting disinformation with services, including VIGINUM. However, the French population could be seen as less digital savvy than its EU peers as it participates less in civic life online and is less inclined to fact-check information found online. According to the 2025 Eurobarometer, 85% of French people think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 73% consider it would improve their daily use of digital technologies, and 88% think public authorities should consider it important to ensure that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services.

Equipping people with digital skills

Basic Digital Skills

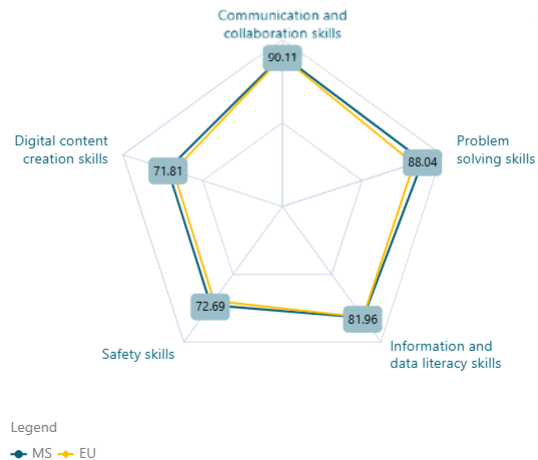
France's digital skills profile is strong, with evidence of inclusive growth across different dimensions. According to data from 2023, 59.67% of France's population with at least basic digital skills (2030 national target 80%) after a small decline of -1.9%, standing above the EU average of 55.56%. While there is no new data for 2024, a breakdown by demographic factors provides for some of insights.

- **Gender Gap:** France shows an uncommon situation in the gender gap, with 59.14% of men and 60.18% of women having at least basic digital skills, creating a small gap of 1.04 pp. in favour of women. This goes against the typical EU trend, where the gap averages 2.23 pp. in favour of men.
- **Education Level:** Education is a strong indicator of digital proficiency in France. 82.40% of individuals with higher education levels have at least basic digital skills, exceeding the EU average (79.83%). However, those with lower levels of education face challenges, with only 34.59% having basic skills, a gap with the national average of 25.08 pp., larger than the EU average (21.95pp).
- **Living Areas:** In rural France, 56.17% of people have at least basic digital skills, which is higher than the EU average for rural areas (47.50%). The gap between rural and urban areas in France is a modest 3.50 pp., showcasing a smaller divide than the EU average (8.06 pp.).
- **Age Groups:** Young adults between the ages of 16 and 24 have good digital skills, with a proficiency rate of 76.70%, surpassing the EU average (69.98%). The senior age group of between 65 and 74 has fewer skills at 34.79%. However, this is still above the EU average for that age group (28.19%).

Digital Skills Index components: France performs well in the Digital Skills Index competencies, scoring above the EU average in all five areas. Their strongest area is communication and collaboration skills at 90.11%, slightly above the EU average. The lowest score is for digital content creation at 71.81%, however, this also stands above the EU average (68.28%).

In summary, France's digital skills profile shows inclusive growth across genders and a small urban-rural skills gap. While there's a significant disparity based on education level, overall, France's performance in essential digital skills is good, with room for targeted improvements to support lower-educated individuals and older adults.

Digital Skills Index components
% of individuals



France's target for the basic digital skills of the population remains at 80%. It is in line with the EU target by 2030. In the absence of new measures in the roadmap adjustment, the SDDR 2024 conclusions still apply. The current rate of progress would require more effort in order to reach this target.

2024 recommendation on basic digital skills: Take measures to boost the digital skills of the population on the shorter term, with additional efforts in its outermost regions.

In 2024, France continued the implementation of existing measures but did not take any new measure. France continued to implement measures from its roadmap such as '*Territoires Numériques Educatifs*' or '*Compétences métiers d'avenir*', while working to reinforce basic training especially in mathematics. However no new measure was proposed in the roadmap adjustment.

The divide in term of digital skills seems to reflect mostly socio-economic disparities. As seen above, education level, strongly linked to socio-economic status, reveals some disparities. It is estimated that 16 million people are 'far from digital'. France's education curriculum is one of the densest and it is not easy to find room to include specific digital training courses. However, public initiatives such as CLEMI ('*Centre pour l'éducation aux médias et à l'information*') are tasked to train the entire educational system about medias and information. Generative AI could be envisaged as tool to bridge digital divides as it uses daily language. However, it is possible that social disparities are also reproduced in the way people express themselves (e.g. low education or foreign origins). The question of infrastructures and equipment could also help bridging divides. Households could struggle to purchase or access high quality digital equipment, but strong networks are present in France (see Connectivity infrastructure section).

ICT specialists

France is at 4.8% of ICT specialists in total employment (2030 national target 10%) after a progression of +2.1% in 2024 and stands below the EU average of 5.0%. The country is lagging behind compared to its national trajectory. It was 4.7% in 2023 and represents half of growth rate observed at EU level (+4.2% in 2024). This indicates that while France is making progress, it is not keeping pace with the EU average.

The share of French women as ICT specialists and ICT training show a concerning trend. In terms of women ICT specialists, France had a higher share in 2023 at 20.1%, compared to the EU's 19.4%. However, by 2024, this figure dropped to 19.3%, falling below the EU's 19.5%. The growth rate for women ICT specialists in France was -4.0%, significantly lower than the EU's 0.5%. This suggests that France is not effectively retaining or attracting female talent in the ICT sector. In 2022, 15.09% of enterprises with 10 or more employees in France provided ICT training, which was lower than the EU's 22.37%. By 2024, this figure fell further to 13.07%, while the EU's percentage slightly declined to 22.29%. The decline in the share of women ICT specialists and enterprises providing ICT training, combined with a poor dynamic for overall ICT specialists in employment are a cause for concern.

In terms of labour market demand, Eurostat experimental statistics based on web scraping show that in France, the profiles of 'software and applications developers and analysts' are the most sought after, representing 55.1% of online job advertisements for ICT specialists (58.0% at EU level). Three types of profile are sought after in France than in the EU on average: 'information and communications technology service managers' (4.5% of online job advertisements for ICT specialists), 'information and communications technology operations and user support technicians' (11.6%), and 'telecommunications and broadcasting technicians' (3.5%).

Recent studies still underline weaknesses in the maths skills of French pupils. The Trends in Mathematics and Science Study 2023 (TIMSS) reveals that France ranks bottom of EU Member States and below the OECD average for maths. The trend is getting worse for secondary school students. While France is implementing a targeted strategy to overcome this problem, it will take time to bear fruit. The training of ICT specialists is closely linked to performances in maths and more generally Science, Technology, Engineering, and Mathematics (STEM) disciplines.

France still aims to reach 10% of ICT specialists in employment by 2030. Given the absence of new measures in the roadmap adjustment and the intrinsic inertia of the indicator, it seems that the target will be difficult to reach.

2024 recommendation on ICT specialists: Increase the attractiveness of STEM disciplines at school to boost the number of young people, including girls, interested in taking up ICT-related studies or careers. Increase the visibility and readability of training and reskilling options. Design incentive schemes to attract and retain ICT specialists.

In 2024, France continued the implementation of existing measures but did not take any new measure. Several stakeholders share the opinion that training blocks in digital are somewhat heterogeneous. The ICT sector suffers from an image deficit (as compared to well identified flagship sectors such as aeronautics) which can lead to less visible job careers.

Following its ambitious AI strategy, France aims to run a large-scale training to acquire experts in AI. In May 2024, nine new winners of the call for expressions of interest 'AI clusters' were selected. These centres of excellence in research and training in AI will be supported with EUR 360 million.

A slow down in ICT employment growth has eased the lack of available ICT experts. The lack of ICT specialists was declared as one of the main barriers to growth for ICT enterprises. But during summer 2024, growth in employment by the ICT sector [slowed down markedly](#) which could partly ease these tensions.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

For digital public services for citizens, France scored at 71.19 (2030 national target of 100) after a small decline of -1.2%, below the EU average of 82.32. The country is lagging behind compared to its national trajectory. In 2023, France's total digital public services score for citizens was 72.09, below the EU's 79.44. In 2024, it dropped to 71.19, still below the EU's 82.32. France's growth rate of -1.2% in this area is lower than the EU's 3.6%. The slight fall can be explained by weaknesses in cross-border services (related to the Single Digital Gateway Regulation (SDGR) and the translation of municipality webpages). On cross-border digital public services for citizens, France scored 50.92 in 2024, standing far below the EU's 71.28. The share of people using government websites or apps is increasing year-on-year, from 89.99% in 2022 to 91.60% in 2024. It is far above the EU average of 74.71% in 2024.

For digital public services for business, France scored 76.90 (2030 national target of 100) after a decline of -3.0%, below the EU average of 86.23. The country is lagging behind compared to its national trajectory. France's total score was 79.31 in 2023 and 76.90 in 2024, both below the EU's 85.42 and 86.23, respectively. The country's growth rate of -3.0% is notably lower than the EU's 0.9% because of a newly introduced SDGR-related service that was not found online. For cross-border digital public services for businesses, France's score was 56.07 in 2024, below the EU's 73.76.

France's access to e-Health records tells a different story with a score of 84.23 (2030 national target of 100) after a growth of 6.2%, above the EU average of 82.7. The country is on track according to its national trajectory. In 2023, France's total score was 79.27, slightly above the EU's 79.12, and in 2024, it rose to 84.23, above the EU's 82.7. France's growth rate of 6.2% in this area outperforms the EU's 4.5%, continuing the fast growth that was already observed in 2023.

e-ID

French authorities are aligned with the European framework of the eIDAS Regulation with a view to offering an EU Digital Wallet by the end of 2026. The government is working to increase the number of digital identity use cases, in order to achieve a complete and secure digital identity wallet. For example, at the beginning of 2024, the digitalised driving licence has joined the *France Identité* application. With the FranceConnect service, users can carry out a very large number of online procedures with a digital identity that they choose from several providers. FranceConnect+ is available as a reinforced level of identification to carry out the most sensitive procedures, in particular financial ones.

France leads the consortium Advanced Project for Trusted Identity Technologies and Unified Digital Ecosystem (APTITUDE) that will pilot the usage of EU Digital Wallets. The project involves strong public and private engagement across 11 Member States and Ukraine, bringing together over 110 participants. This project focuses on advancing the use of wallets for travel and payment purposes across 4 use cases: payments, mobile vehicle registration certificates, digital travel credentials, and tickets and travel check-in. Building on the foundational work carried by the Commission and the experience of ongoing large-scale pilot projects, APTITUDE is planned to start in autumn 2025 and run for two years.

Digitalisation of public services for citizens and businesses

France still aims at reaching a score of 100 for the digitalisation of public services for citizen and businesses. The adjusted roadmap encloses clear intermediary goals such as the availability digitalised

services, user satisfaction, simplicity, accessibility and authentication processes. Current observed sluggish progress suggest that France will have to accelerate in order to reach its target.

2024 recommendation on key digital public services: Make efforts to digitalise public services, with particular attention to re-use of information available to public administrations and user support.

France addressed fully the recommendation by putting significant policy actions into place in 2024. The updated national roadmap clearly identifies the re-use of information as a priority axis. The 'once-only' principle is to be implemented at 100% of online public services (currently at 69%) by December 2026. For user support, the target is to reach 100% of online services with a user satisfaction rate of 8/10 (currently 53%).

The simplification of administrative procedures is a priority in the digitalisation of French public services. Several dematerialisation principles are being implemented: i) the circulation of data between administrations (in particular via a reinforced network of application programming interfaces APIs); ii) the proactivity of the administration to go towards citizens, with a view to reduce the non-use of public services; and iii) the 'once-only' principle which requires the administration to no longer ask the user for data or supporting documents that it already holds. Furthermore, a draft law on simplification should be presented in 2025, consecutive to the recent public action simplification law (*'loi d'accélération et de simplification de l'action publique'* ASAP)

Administrative and regulatory burden is being cut in France. According to the OECD's iREG indicators on administrative and regulatory burden, France performs better than the OECD average (1.16 in France vs 1.68 in the OECD in 2023) and much lower than in 2018 (1.88). However, businesses, especially the smaller ones, report complexities of administrative services (sometimes related to increased cybersecurity measures), a high number of regulations, and call for impact assessments of the cost for businesses to implement those regulations.

On sovereignty of the digital administration, the State's digital strategy prioritises the control of its information systems. It guides choices in terms of investments in infrastructure such as cloud, in collaborative applications and tools (La Suite) and in AI (Albert). A proactive strategy based on the use of free software will reinforce sovereignty, while fully controlling costs while aiming for excellence. Sovereignty also happens on the skills side by re-internalising digital know-how with 345 full-time equivalents positions created in 2024 in the administrations. On top of the national actions, France joined forces with Germany and the Netherlands to promote the use of free software to offer public officials truly sovereign digital workspaces. In December 2024, the three countries signed a declaration of intent for trilateral cooperation aimed at strengthening digital sovereignty in public administration.

In 2024, France continued its actions to digitalise the public sector. The 'Public Digital Campus', launched in January 2024, is a training centre centralising and disseminating an interministerial training offer adapted to the needs identified for digital. This campus has designed and established mandatory training for senior civil service executives and is initiating the deployment of Pix, a digital skills diagnostic tool, for all public officials by 2026. In parallel, the administration continued to promote the circulation and exchange of data, in particular with the launch of experiments in the use of generative AI based on the [ALLiANCe incubator](#). The digitalisation of 'Maprocuration' and 'Plainte En Ligne' was achieved, two essential high-volume services, which significantly improved the citizen's experience in the run-up to June 2024 elections and that of victims of crimes against their property. Since March 2025, the Vitale card (health insurance) is also available in electronic form.

France still aims at a score of 100 for the access to medical records, in line with the 2030 EU target. Recent impressive progress (see State of the 2024 Digital Decade report) hint that this target is realistic. Moreover, in its roadmap adjustment, France revised the budget of the existing measure 'digital health acceleration strategy', from EUR 718 million to 750 million.

2024 recommendation on e-Health: (i) Make all data types available to citizens through the online access service; (ii) Enhance the authentication method for logging in to the online access service by using a (pre)notified e-ID; (iii) Introduce a legal basis and provide the technical functionality for authorised persons to access electronic health data on behalf of others.

France made some efforts to address the recommendation through new policy actions in 2024. First, 10 of the 13 data categories are now made available, with the data category of procedures/operations newly reported to be available. Data on medical devices/implants, medical images, and eDispensation remains unavailable to citizens. Second, citizens can now authenticate using an eIDAS-compliant eID when accessing their health records. Third, on access for authorised persons, there is currently no legal basis nor functions in place to grant others access to your e-Health data. However, a feature is reportedly underdevelopment.

Building a safe and human centric digital environment and preserving our democracy

In France, the online participation to political and civic life is declining. In 2024, 15.02% of people used the internet to participate to consultations, for voting or sharing opinions online. This share is below the EU average and trending downward (16.44% in 2022), which is the opposite of the trend observed at the EU level (17.59% in 2022 and 20.45% in 2024).

Due to its influence, France is a preferred target for disinformation attacks but it set up countermeasures. Due to the size of its economy, its diversity, its military and soft power, being the home of critical industries and host of international events (2024 Summer Olympics), France suffers regular disinformation and destabilisation campaigns often happening online. More and more, disinformation takes the form of amplified true but irrelevant information, playing with the freedom of speech. As a response, France set up VIGINUM, the technical and operational service of the State responsible for monitoring and protecting against foreign digital interferences. VIGINUM is part of the General Secretariat for Defence and National Security and monitors inauthentic phenomena (suspicious accounts, malicious content, abnormal, aberrant or coordinated behaviour) that appear on digital platforms.

Only 1 out of 4 French internet users declare fact-checking doubtful online information. In 2023, 53.00% of French people declared having encountered untrue or doubtful information or content on internet news sites or social media, above the EU average of 49.25%. Of these individuals, 25.42% fact-checked its truthfulness, representing a modest level of critical evaluation among those who perceived such content as misleading. Young people (16-24) (74.86%) reported significantly more exposure than adults (24-64) (53.92%), which may be linked to different trends in internet usage. A notable difference in verification rates also emerged: 41.44% of young people verified content compared to 25.11% of adults. Men (54.25%) and women (51.82%) reported similar exposure rates, with men being slightly more likely to verify content, at 28.7% compared to 22.31% for women.

A high share of the French population, especially young people, is often encountering hostile and degrading messages online. Data shows that in 2023, 40.96% of individuals encountered messages

online that were considered hostile or degrading towards groups based on factors such as political views, ethnicity, or LGBTIQ identities. This figure was significantly above the EU average of 33.5%. Young people aged 16-24 (62.95%) reported significantly higher exposure than adults aged 25-64 (40.65%), highlighting a pronounced age disparity. Conversely, men (41.10%) and women (40.83%) experienced nearly the same exposure.

Since 11 January 2025, 'double anonymity' age verification is mandatory for adult sites in France. The Audiovisual and Digital Communication Regulatory Authority (ARCOM) standard provides that the sites concerned, after a transitional period (until 11 April 2025), offer Internet users at least one 'double anonymity' age verification solution. This type of solution allows to best protect the privacy of the users. The website accessed receives proof of age but not the identity of the user and the provider of the age control solution knows the identity of the Internet user but does not know which sites they consult. This verification process raises several challenges on the social acceptance (need to be easy to use), on data protection (should be handled by a third party), and on competition between providers. The latter calls for a [European collaboration](#) on the matter to provide resources for a common and robust standard solution for the EU. According to the Digital Decade Eurobarometer 2025, French people strongly think that the action of the public authorities is urgent to protect children online regarding the negative impact of social media on children's mental health (97% of French people), cyberbullying and online harassment (96%) and to put in place age assurance mechanisms to restrict age-inappropriate content (95%).

Leveraging digital transformation for a smart greening

France is a world leader in monitoring the environmental impact of its ICT sector and setting up measures to decrease it. France designed monitoring tools to measure, anticipate and control the footprint of the ICT sector. It also contributes as a leader for green initiatives within the Digital Decade framework.

Half of the carbon footprint of the ICT sector in France is carried by equipment but the impact of datacentres grows rapidly. Recent figures show that equipment represents [50% of the ICT sector's footprint](#) and that [datacentres' greenhouse gas emissions](#) made up 46% of the total driven by rising electricity consumption and an extension of the perimeter of the studies, now including the storage of French data in datacentres abroad. Water consumption of the datacentres also grew by [20% in one year](#), for the second year in a row.

The French population recycles only a small part of its ICT equipment. French people tend to recycle more their laptops and desktop devices (12.14% for laptops and tablets, 14.96% for desktops) than the EU average (11.31% and 14.66%, respectively), but recycle less their mobile phones (7.83%, 10.93% for the EU). Moreover, only 15.56% of people considered the energy efficiency as important when purchasing ICT devices (EU: 19.35%) but the ecodesign of the device was considered important by 12.99%, which is above the EU average (12.04%). However, those two eco-friendly criteria take on less importance for the French consumer than the price, the performance, and the design of the ICT device. One in five smartphones sold in France is second-hand, contributing to increasing the total lifespan of mobile phones.

France goes all out on green ICT in its adjusted roadmap. Three measures were added to the Digital Decade roadmap and should reinforce even more the leadership of France on the matter.

- **Publication of the General Reference Framework for the Ecodesign of Digital Services.** It is a technical document intended for digital experts and professions wishing to implement an ecodesign approach for a service (sites, applications, AI, software, API ...). The 78 practical factsheets in the reference document detail the essential criteria to consider reducing the environmental impact of a service.
- **Publication of the first reference framework on the environmental impact of AI.** France has produced the first reference framework on the environmental impact of AI, which resulted in the production of a norm from the French Association for Standardisation (AFNOR). The norm for frugal AI sets out calculation methodologies and good practices for measuring and reducing the environmental impact of AI, and for communicating with common, fair, and verifiable claims.
- **Implementation of bonuses linked to the reparability index.** A bonus of EUR 20 will be paid for the most repairable laptops, mobile phones and televisions, applicable to the sector of electrical and electronic equipment falling within the extended producer responsibility framework.

France is very active in the Digital Decade's Best Practice Accelerator, in the Green and Digital cluster. France is piloting, alongside Finland, the working group aimed at promoting the sharing of information relating to public policies on the environmental transition of digital technology. This

working group aims to create a forum for inter-administration dialogue, bringing together specialists in the environmental transition of digital technologies from the EU-27 in order to promote communication around virtuous public policies and the sharing of common issues. The French authorities have carried out extensive cooperation work with the French digital ecosystem to identify instruments to reduce the environmental footprint of the sector, such as the general reference framework for the ecodesign of digital services. They also shared two additional best practices. First, the Alt IMPACT Communication Campaign which aims at raising public awareness about the environmental impact of digital technologies and promote sobriety; and second, the development and availability of product category rules for environmental evaluation and labelling to ensure the comparability and robustness of environmental information provided to consumers.

France also participates in the Digital Skills cluster, presenting the measure on digital counsellors who are professionals that help people develop basic digital skills.

Smart territories and cities and other initiatives use digital for more sobriety. Based on the [French model for smart territories](#), several actions have been implemented on the ground such as the use of frugal AI, energy consumption reduction with digital, or the use of low-energy digital solutions (some application only require minimal technologies and performances). More generally, the deployment of Fibre in the whole country also participates to the reduction of energy use of the digital sector. According to the Digital Decade Eurobarometer 2025, 72% of French people consider digital technologies important to help fight climate change, while 80% of French respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities.

2024 recommendation on green ICT: (i) Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular datacentres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.

(ii) Demonstrate leadership and continue monitoring and quantifying the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

France addressed fully the recommendation by putting significant policy actions into place in 2024.

The three additional measures in the adjusted roadmap contribute to reduce the footprint of the ICT sector while reinforcing the leadership role of France in this domain. It adds up to three other measures on green ICT from the original roadmap.

Under the measure '2030 acceleration strategy for eco-responsible, competitive and sovereign digital technology' (from the original roadmap), the call for projects 'ECONUM' aims to bring out innovative projects to reduce the environmental footprint of digital technology. Several awards were selected in 2024.

To better monitor and quantify emission reductions, France will propose a dedicated reduction trajectory for the ICT sector in its national low carbon strategy in 2025, associated with coherent measures and policies.

On reinforcing leadership, France participates to the Digital Decade's best practice accelerator as a leader for sharing information on the digital environmental transition. The French national regulatory authority (ARCEP) also [co-chairs the BEREC's working group on 'Sustainability'](#).

Annex I – National roadmap analysis

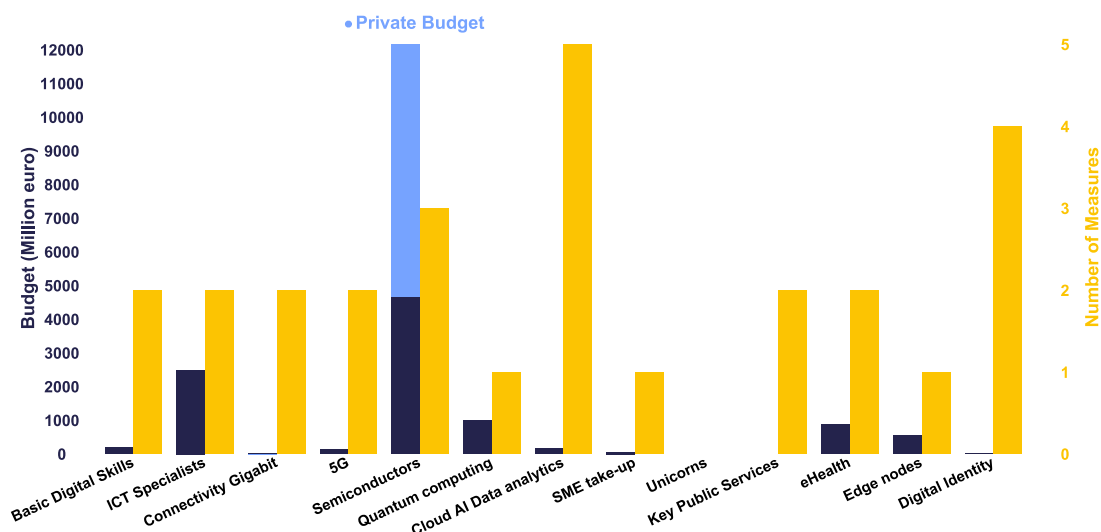
France's national Digital Decade strategic roadmap

France submitted a fully revised national Digital Decade roadmap on 3 February 2025, containing six additional measures and revised trajectories. The updates clearly align with the new Commission's priorities on AI, cybersecurity and green ICT. It includes reporting on the stakeholder consultation. However, while the AI measures presented could partly contribute to the digitalisation of SMEs, it lacks additional targeted measures to support them.

The new roadmap addresses a substantial number of the 2024 roadmap recommendations.

- **Provide a target and trajectory for edge node, design a trajectory for unicorns, and formalise the trajectory for FTTP.** The new roadmap now includes a trajectory for unicorns and while not presented in the roadmap, the VHCN trajectory is still considered identical to the FTTP one. France argues that trajectories for edge nodes (as well as for semiconductor and quantum) are better placed at EU level and therefore does not present any national trajectories.
- **Consider aligning the level of ambition of the targets for the uptake of three technologies by enterprises (AI, cloud, data analytics) to the EU's targets.** France has revised downward the target on adoption by enterprises of either AI, cloud or data analytics to 65%, arguing it is a more realistic target. While it could be justified by a modest starting point, it has a heavy impact on reaching the target of 75% at the EU level by 2030. Individual trajectories for the three technologies were removed.
- **Strengthen the measures contributing to targets that are the most difficult to achieve, especially on the skills and digitalisation of enterprises.** Two new measures on AI were added for adoption by enterprises. None on digital skills.
- **Review the budget description of all measures presented, highlighting EU funding sources such as the Recovery and Resilience Facility (RRF).** The measure 'Digital Health Acceleration Strategy Programme' saw its budget revised upward from EUR 718 m to 750 m. It is not clear if the EU funding is reported for each measure since RRF contributes to funding France 2030 strategies or the plan '*France très haut débit*' and it does not appear as such in the roadmap.
- **Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it.** While a systematic contribution to the digital rights and principles was not carried out, the roadmap clearly reinforces the contribution of France to the Digital Decade objectives of green ICT and cybersecurity.
- **Report on the consultation of stakeholders in the roadmap.** The new roadmap now includes reporting on the stakeholder consultation.

Measures and budget in the national roadmap⁶



The revised roadmap continues to prioritise semiconductors, connectivity, and e-Health. It is composed of 33 measures with a budget of EUR 18.6 bn, comprising EUR 11.1 bn from public budgets (equivalent to 0.38% of GDP). It covers all of the Digital Decade's objectives such as a human-centred digital space, resilience and security, sovereignty, green, and protection of society.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

France is hosting the Alliance for Language Technologies EDIC (ALT-EDIC) which gathers 26 members states and is candidate to host two more EDICs in the making, in the area of agri-food and digital commons. France is also a member of the Local Digital Twins towards the CitiVERSE EDIC. In addition, France is working towards setting up an EDIC in the area of cancer imaging. France is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). It is also a participating state in the EuroHPC Joint Undertaking (JU) and of the Chips JU.

France has contributed to the Best Practice Accelerator, leading the GreenIT cluster by sharing three best practices (General Policy Framework for the Ecodesign of Digital Services, Alt IMPACT Communication Campaign, and Development and availability of Product Category Rules for environmental evaluation and labelling). France also shared one best practice (Digital advisors) in the Digital Skills cluster.

⁶ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

EU funding for digital policies in France

France allocates 22% of its total recovery and resilience plan to digital (EUR 8.1 billion)⁷. In addition, under cohesion policy, EUR 1.9 billion (representing 11% of the country's total cohesion policy funding), is dedicated to advancing France's digital transformation⁸. According to JRC estimates, EUR 8.95 billion directly contribute to achieving Digital Decade targets (of which EUR 7.73 billion comes from the RRF and EUR 1.22 billion from cohesion policy funding)⁹. The largest digital measure of the recovery and resilience plan is targeted to the modernisation of the public health sector (EUR 2 billion). The measure 'Innovating for the resilience of our business models' (EUR 1.8 billion) supports R&D in key digital technologies such as 5G, cloud, quantum, cybersecurity and digital skills. The high-speed broadband plan ('*France Très Haut Débit*') receives EUR 240 million from the RRF.

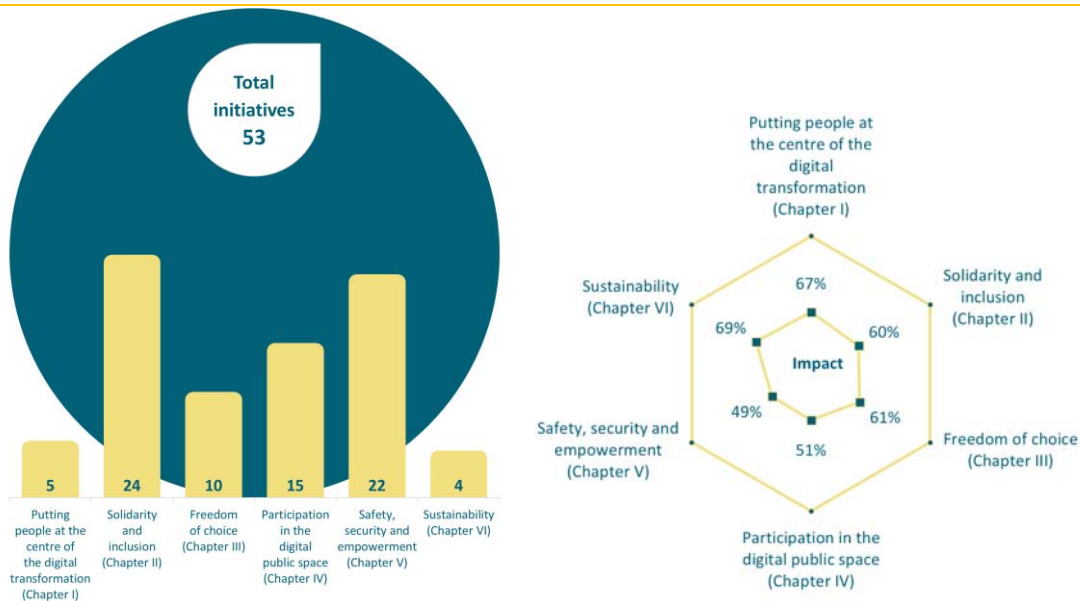
The Digital Decade-relevant budget from cohesion policy funds focuses on enterprises.

⁷ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

⁸ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

⁹ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹⁰



Activity on Digital Rights and Principles (figure 1)

France has been relatively active in implementing digital rights and principles, with 53 initiatives overall. No information is available on new initiatives launched in 2024. **France is most active in the area of Participation in the digital public space (IV).** There is room for improvement, especially with regards to Digital public services online (II) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in France (mainly national government) and how these are perceived by citizens.

The indicators suggest that **France is most successful in implementing commitments related to Putting people at the centre of the digital transformation (I).** France should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Safety, security and empowerment (V).

According to the Special Eurobarometer 'Digital Decade 2025', **37% of citizens in France think that the EU protects their digital rights well** (a 2% decrease since 2024). This is below the EU average of 44%. Citizens are particularly confident about getting basic and advanced digital education, training and skills (63%, above the EU average of 60%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (47%, below EU average of 48%).

¹⁰ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#)



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COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
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DIGITAL DECADE 2025 COUNTRY REPORTS

Germany

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Executive summary

Germany continues to excel in domains related to developing advanced technologies, such as semiconductors and edge nodes. However, the country is lagging behind in providing digital public services, has low digital skills, and incomplete high-capacity network coverage. This highlights the need for more focused measures, which would also further boost businesses' uptake of digital technologies.

Germany shows a substantial level of ambition in its contribution to the Digital Decade, with nine national targets, 89% of which are aligned with the EU 2030 targets. The country is following its trajectories well with 75% of them being on track (considering 2024 trajectories defined for 4 KPIs out of 8 analysed). Germany addressed 33% of the 12 recommendations issued by the Commission in 2024 by making some changes through new measures.

Germany's new Federal Government assumed office in early May 2025. The government's coalition agreement outlines ambitious goals for digital policy and digitalisation, and the focus on digital policy is reflected by the newly established [Federal Ministry for Digitalisation and Government Modernisation](#). This coalition agreement may result in an accelerated digitalisation of Germany, thereby contributing to the objectives of the Digital Decade.

Digital Decade KPI ⁽¹⁾	Germany				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	DE	EU
Fixed Very High-Capacity Network (VHCN) coverage	74.7%	77.4%	3.5%	-	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	29.8%	36.8%	23.4%	-	69.2%	8.4%	100.0%	-
Overall 5G coverage	98.1%	99.1%	0.9%	-	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	358	652	82.1%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	79.9%	1.6%	-	72.9%	2.8%	91.0%	90%
Cloud	38.5%	-	-	-	-	-	-	75%
Artificial Intelligence	11.6%	19.8%	71.0%	-	13.5%	67.2%	-	75%
Data analytics	37.1%	-	-	-	-	-	-	75%
AI or Cloud or Data analytics	58.0%	-	-	-	-	-	-	75%
Unicorns	67	69	3.0%	-	286	4.4%	-	500
At least basic digital skills	52.2%	-	-	-	-	-	80.0%	80%
ICT specialists	4.9%	5.3%	8.2%	4.9%	5.0%	4.2%	5.3%	~10%
eID scheme notification		Yes						
Digital public services for citizens	75.8	78.9	4.1%	75.8	82.3	3.6%	100.0	100
Digital public services for businesses	78.6	77.5	-1.4%	78.6	86.2	0.9%	100.0	100
Access to e-Health records	87.0	87.0	0.0%	100.0	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics
(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special Eurobarometer on 'the Digital Decade' 2025, 74% of German citizens consider that the digitalisation of daily public and private services is making their lives easier. Concerning the action of the public authorities, 88% consider it important to counter and mitigate the issue of fake

news and disinformation online, and regarding competitiveness, 82% consider it important to ensure that European companies can grow and become 'European Champions' able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

Germany is making significant strides in expanding its connectivity infrastructure, with 5G coverage nearly meeting the Digital Decade target, and an ambitious national goal for 100% fibre-to-the-premises (FTTP) by 2030. The country is a leader in the number of edge nodes and is taking proactive steps in quantum computing and semiconductor technologies. While several measures, particularly for FTTP, are expected to yield results soon, Germany still faces challenges. It lags behind the Digital Decade's gigabit connectivity objectives and struggles with access to Very High-Capacity Networks (VHCN) in rural areas, where coverage is below the EU average. Additionally, FTTP availability is limited to only a fraction of households, representing half of the EU average coverage. Although Germany has nearly achieved full 5G coverage, actual usage based on 5G SIM cards remains poor. Despite the relatively high number of unicorns, there is still room to improve the availability of funding for start-ups and to reduce their administrative burdens.

Protecting and empowering EU people and society

Germany faces significant challenges in developing digital skills, having achieved only modest improvements in this area. The German government is making strides in several areas, yet it still behind in some key aspects. This not only hinders the uptake of digital services, but also effectively limits the workforce's ability to use data to improve business services. This issue is particularly relevant because, according to the German Country Report of 2024, SMEs' uptake of AI was hindered by the limited skills in this area. Even so, the German authorities have chosen not to introduce substantial new measures in the national roadmap, preferring instead to allow existing initiatives to take their course.

Germany tends to view these challenges through a wider lens, taking a holistic approach rather than addressing each metric individually. This method is reflected in various aspects, such as Germany's plans to increase the number of ICT specialists. Nonetheless, considerable room for improvement remains, especially in the use of electronic identification and the further digitalisation of public services. These gaps must be addressed to take full advantage of the opportunities presented by the expanding digital landscape and to ensure that Germany remains competitive and innovative on the global stage.

Leveraging digital transformation for a smart greening

Germany prioritises the dual green and digital transition and continues to implement key measures at both federal and state levels. The German population outperforms the EU average in recycling electronics, such as computers, phones, and tablets, although the overall recycling rates for IT equipment remain relatively low.

National digital decade strategic roadmap

On 21 December 2024, Germany submitted a revised national Digital Decade roadmap, addressing recommendations from the 2024 Country Report. The revised roadmap included stakeholder consultation. It is composed of 50 measures with a budget of EUR 102.1 billion, comprising EUR 46.8 billion from public budgets (equivalent to 1.09 % of GDP). New targets were added for ICT specialists and digitalisation of public services for citizens and businesses.

The revision brings impulses on quantum, AI and connectivity, as well as targeting several objectives in broader measures. However, the adjusted roadmap could do more to address the challenges in the area of digitalisation of public services for citizens and businesses.

Funding & projects for digital

Germany allocates 48% of its total recovery and resilience plan to digital (EUR 13.3 billion)¹. In addition, under cohesion policy, EUR 2.2 billion, representing 11% of the country's total cohesion policy funding, is dedicated to advancing Germany's digital transformation². Germany participating directly in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). It is also a participating member of the European High Performance Computing Joint Undertaking (EuroHPC JU) and of the Chips JU³.

Germany has contributed to the Best Practice Accelerator⁴ by sharing several best practices in the 'Digital Skills' cluster as well as in the 'Business Uptake' cluster. In this context, the AI Opportunity Market (MaKi) and the Federal IPv6 Programme are noteworthy.

Digital rights and principles

According to a support study, Germany has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 74 initiatives overall and 3 new initiatives launched in 2024. Germany is most active in the area of digital education, training and skills. Less activity has been identified with regards to putting people at the centre of the digital transformation. Measures in the area of freedom of choice appear to have most impact on the ground, in contrast to those addressing safety, security and empowerment.

Recommendations

- **Digital public services:** Accelerate the digitalisation of key public services by making additional public services available online, improving interoperability, as well as front-end and back-end digitalisation.
- **eID:** Launch targeted measures to ensure eID uptake and use.
- **ICT specialists:** Launch targeted measures to increase the attractiveness of STEM disciplines at school to boost the number of young people, including girls and women, interested in taking up ICT-related studies or careers.
- **Basic digital skills:** Improve the effectiveness of existing measures and evaluate whether increased efforts and/or additional measures are necessary in particular in the area of formal education.
- **Connectivity infrastructure:** Accelerate infrastructure roll-out of very high-capacity digital networks, especially fibre optics.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ Corrigendum to Digital Decade Country Report Germany 2024: Germany is not a member of the Local Digital Twins towards the CitiVERSE EDIC.

⁴ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via published in the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

- **Unicorns/start-ups:** Implement measures to improve access to funding and reduce administrative burdens.
- **Cybersecurity:** Increase efforts in cybersecurity, particularly by increasing awareness amongst private and public entities.

A competitive, sovereign and resilient EU based on technological leadership

Germany has historically had a strong export-driven economy. However, with the economic momentum slowing, there is a pressing need to accelerate structural reforms and harness the benefits of the digital sphere to rejuvenate growth.

Germany's new Federal Government assumed office in early May 2025. The government's coalition agreement outlines ambitious goals for digital policy and digitalisation, and the focus on digital policy is reflected by the newly established Federal Ministry for Digitalisation and Government Modernisation. This coalition agreement may result in an accelerated digitalisation of Germany, thereby contributing to the objectives of the Digital Decade.

Maintaining Germany's leading position in Europe in the development of advanced technologies, such as semiconductors and edge nodes, is a key policy goal for the German authorities. Long-term measures have been put in place, and some of these have already shown their effectiveness. The German focus harmonises seamlessly with the goals of the Digital Decade in these areas. However, additional steps need to be taken in order to secure continued international competitiveness and sovereignty both for Germany and the European Union.

Although the trends and initiatives associated with connectivity infrastructure, such as 5G and Fibre-to-the-Premises (FTTP), are promising, stakeholders still report shortcomings, especially in rural areas, as well as low scores in 5G SIM card uptake. The German ICT sector represented 4.77% of the gross value added in 2022⁵. Additionally, R&D spending in the ICT sector is also low, at only 11.47% of the total R&D business expenditure, which was one of the lowest recorded in the EU in 2021. Furthermore, the R&D personnel in the ICT sector was 13.09% of the total R&D personnel, which was also one of the lowest in the EU.

Germany is doing well overall in the field of cybersecurity. Most Germans took at least one precautionary action to protect their personal data, and businesses have employees who are more aware of ICT security obligations than their EU counterparts. Germany is also at the forefront of the roll-out of Internet Protocol version 6 (IPv6). Germany reports that it has implemented the 5G Cybersecurity Toolbox.

According to the 2025 Eurobarometer⁶, 86% of Germans believe that building an efficient and secure digital infrastructure, which includes connectivity and data processing facilities, is important.

Building technological leadership: digital infrastructure and technologies

Germany is actively rolling out connectivity infrastructures. In particular, 5G coverage has practically reached the Digital Decade target and Germany has set an ambitious national target of 100% for FTTP by 2030. Germany remains a European leader in the number of edge nodes, with complementary measures on both quantum computing technologies and semiconductors. Several measures already introduced, are reported to show dividend in the coming year, especially concerning FTTP.

⁵ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

⁶ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Connectivity infrastructure

Germany is at 77.38% of Very High Capacity Network (VHCN) coverage (2030 national target of 100%) after a progression of +3.5% and stands below the EU average of 82.49%. The country did not provide a national trajectory point for 2024, arguing that it would be difficult to do so because the roll-out in Germany is driven primarily by the private sector.

For households in sparsely populated areas, Germany's VHCN coverage was 37.61% in 2023 and 45.2% in 2024, much below the EU's 55.61% and 61.89% respectively, but Germany's growth rate of 20.2% outpaced the EU's 11.3%.

In the realm of Fibre to the Premises (FTTP) coverage, Germany's total coverage was 29.8% in 2023 and 36.78% in 2024, significantly lower than the EU's 63.87% and 69.24% respectively. The country did not provide a national trajectory point for 2024. However, Germany's growth rate of 23.4% exceeded the EU's 8.4%. For households in sparsely populated areas, Germany's FTTP coverage was 25.57% in 2023 and 33.91% in 2024, below the EU's 52.55% and 58.78%, but Germany's growth rate of 32.6% was higher than the EU's 11.9%. Germany is still second last in the EU in this metric.

Germany's overall 5G coverage was 98.14% in 2023 and 99.05% in 2024, surpassing the EU's 89.01% and 94.35% respectively. Germany's growth rate of 0.9%, compared to the EU's 6.0%, can be attributed to the already saturated 5G coverage levels. The country did not provide a national trajectory point for 2024, likely due to being close to the 100% target. For households in sparsely populated areas, Germany's 5G coverage was 92.77% in 2023 and 96.05% in 2024, higher than the EU's 70.10% and 79.57%.

For 5G coverage in the 3.4–3.8 GHz band, Germany's total coverage was 43.85% in 2023 and 49.5% in 2024, below the EU's 51.06% and 67.72% respectively. Germany's growth rate of 12.9% was lower than the EU's 32.6%. For households in sparsely populated areas, Germany's 5G coverage in this band was 4.81% in 2023 and 6.66% in 2024, significantly lower than the EU's 15.86% and 25.98%, and Germany's growth rate of 38.5% was lower than the EU's 65.1%.

Additionally, Germany's broadband take-up indicators show a mixed performance compared to the EU average. In 2023, 46.88% of fixed broadband subscriptions in Germany were at speeds of 100 Mbps or higher, which is lower than the EU's 65.9%. By 2024, this figure rose to 52.69%, still below the EU's 71.88%. However, Germany's growth rate of 12.4% was higher than EU's 9.1%. For subscriptions at speeds of 1 Gbps or higher, Germany lagged behind the EU. In 2023, only 5.45% of German fixed broadband subscriptions were at this speed, compared to the EU's 18.47%. In 2024, this increased to 5.72%, still below the EU's 22.25%. Germany's growth rate of 5.0% was lower than the EU's 20.5%. Regarding 5G SIM cards, Germany showed significant growth. In 2023, 16.54% of the population had 5G SIM cards, lower than the EU's 21.7%. By 2024, this figure surged to 38.18%, surpassing the EU's 35.56%. Germany's growth rate of 130.8% was significantly higher than the EU's 63.9%.

VHCN and FTTP

The German target for VHCN and FTTP is 100% by 2030, in line with the EU target. In a country marked by urban-rural disparities, achieving full gigabit connectivity is essential to ensure inclusive access. As mentioned above, Germany's current FTTP coverage is limited. In order to achieve the 100% target by 2030, roll-out would have to accelerate considerably. Additionally, a higher VHCN coverage in rural areas may also assist in eroding socio-economic divides.

The Gigabit Strategy of 13 July 2022 (*Gigabitstrategie*) continues to be the basis for implementing measures to achieve the targets related to gigabit connectivity and 5G roll-out. According to the Progress Report on the Gigabit Strategy (October 2024), 87 of the 100 measures have been completed or are currently being implemented. In addition, 35 new measures were added, including a joint copper-fibre migration concept, a fibre optic information campaign and a nationwide mobile measurement week. Several new measures based on the Gigabit Strategy were introduced recently.

Germany wants existing measures that have already been introduced, such as the Gigabit Strategy, to take full effect before introducing additional measures. The allocations from the national budget to two existing measures funded by the Gigabit Strategy were adjusted. While the budget of the Gigabit funding scheme 2.0 increased, the budget of the *kfW Investitionskredit digitale Infrastruktur* decreased.

Germany included the ‘[Gap Closure Pilot Program](#)’ (*Lückenschluss-Programm*) in its Gigabit funding scheme 2.0 in June 2024. The incentive to roll out gigabit infrastructure in rural areas is low, as it is usually unprofitable given the long distances and sparse population. To offset this challenge, the programme creates more synergies between the investments of telecommunication companies and public funding, especially in rural areas.

The roll-out of gigabit infrastructure is reportedly often hampered by high construction costs, a shortage of skilled workers and labour-intensive public approval procedures. According to the German Chamber of Industry and Commerce (*Deutsche Industrie- und Handelskammer* (DIHK)), permit enforcement is still based on outdated standards, even if there are accepted industry standards which aim to reduce the burden and costs of deploying fibre.

A survey by the DIHK shows that 75% of companies were satisfied with the current availability of fast internet at their location.

2024 recommendation on connectivity infrastructure: maintain the recent higher pace of deployment of the fibre infrastructure to reach the Digital Decade target.

In 2024, Germany made some efforts to address the recommendation through new policy actions.

No new measures were introduced in the revised roadmap. However, the budget of some Gigabit Strategy measures was adjusted, introducing the ‘Gap Closure Pilot Programme’ to incentivise roll-out constituting an overall increase of budget on connectivity measures.

5G

Latest reports place Germany’s 5G coverage at 99.05% and the country is therefore on track to reach its target of 100% by 2030 in line with the EU level of ambition. However, 5G coverage in the 3.4-3.8 GHz band was at 43.85%, below the EU average of 51.34%.

Although the current 5G coverage is almost at target, 5G uptake, measured as the share of SIM cards across the population, is only at 38.18%, slightly above the EU average of 35.56%. The uptake is therefore still conservative, but the trend is positive, as the share has risen from 16.56% the year before, which indicates a strong growth rate.

Concerning the extension of mobile spectrum usage rights, the Federal Network Agency (*Bundesnetzagentur*) made far-reaching requirements for mobile network coverage. In the future, each network operator will have to meet [several requirements](#). Firstly, they must supply at least 99.5% of the area nationwide with a transmission rate of at least 50 Mbps in downlink by 2030. Secondly, each allocation holder must supply at least 99% of households in rural areas in each federal

state with a transmission rate of at least 100 Mbps in downlink by 2029. Lastly, they must ensure uninterrupted access for end users to wireless voice and broadband data services along transport routes by 2029. Each allocation holder must provide all federal roads with a transmission rate of at least 100 Mbps in downlink.

2024 recommendation on connectivity infrastructure: ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer applications and encourage operators to continue the deployment of 5G or stand-alone core networks.

In 2024, Germany made efforts to address the recommendations through new policy actions. The requirements announced by the Federal Network Agency constitute a new measure to address the recommendations. Additionally, since November 2019, property users have been able to apply for frequencies in the 3.7-3.8 GHz sub-band to create their own local 5G networks on factory grounds or other types of properties for several use cases. These include factory automation and campus networks, but not the provision of public communication networks.

Semiconductors

Germany's roadmap and long-term investment strategy continue to emphasise semiconductors as a key priority.

No changes and/or new measures on semiconductors have been presented in the amended roadmap for 2025. This means that the Important Project of Common European Interest (IPCEI) on Microelectronics and Communication Technologies, and the investments planned under the European Chips Act remain the cornerstones in this area. Regarding the IPCEI, the Federal Ministry for Economic Affairs and Energy (*Bundesministerium für Wirtschaft und Energie* (BMWE)) is providing several billion euro in funding for 31 projects from 11 federal states, thereby boosting the progress on this area. These initiatives have the potential to attract further significant innovations to Germany, which will in turn support the EU's technological sovereignty.

On 6 November 2024, the BMWE published a funding announcement for innovative investment projects under the European Chips Act ([ECA – 'Förderbekanntmachung'](#)). This serves as an additional building block of the European Chips Act with regard to the goals of ensuring European competitiveness and innovation capacity in the field of semiconductor technologies, adapting the industry to structural changes and strengthening Europe's resilience and security of supply.

Another important development is the joint investment agreement reached between several companies for the construction and operation of a state-of-the-art chips factory in Dresden. The Federal Government is providing support of up to EUR 5 bn, which is in addition to the EUR 10 bn in investment planned by the industry partners in the European Semiconductor Manufacturing Company joint venture.

Edge nodes

According to the Edge Node Observatory, 652 edge nodes were deployed in Germany by 2024. This constitutes an increase compared with 2023, when 358 edge nodes were deployed. As such, Germany continues to be a leader in the EU in this metric.

However, the country has not set a target for edge nodes.

Germany's main activity in this area remains its coordination of the IPCEI on Next Generation Cloud Infrastructure and Services. The project will support the development of software and data processing capabilities to exploit edge nodes.

Quantum technologies

Germany maintains its ambitious target for quantum technologies in its revised roadmap⁷. The German national strategy on quantum technologies calls for the country to be a leader in the sovereign development and deployment of quantum technologies. Germany aims to achieve this target through project funding and public procurement for quantum computing systems.

Accordingly, Germany has launched several initiatives and has included in its revised roadmap a new measure with a budget of EUR 325 million, which aims to provide regional funding measures to establish hubs for quantum technologies/computing.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Establishing a foundation for European enterprises to scale up is essential for European sovereignty and for maintaining economic and social prosperity. Encouraging the growth and adoption of new technologies, even by non-tech enterprises, is a key aspect of the Commission's vision for a thriving EU.

Data from 2024 indicates that Germany performs in line with the EU average regarding the widespread adoption of data analytics and cloud computing, while it performs much better than the EU average regarding AI adoption. The country remains a leader in the EU in terms of the number of unicorns. However, stakeholders report significant administrative burdens, particularly regarding late-stage financing. Additionally, since 2021, the costs of complying with national legislation have increased, and there are indications that lengthy and complex administrative procedures are deterring investment.

SMEs with at least basic digital intensity

In 2024, 4 out of 5 (79.87%) SMEs in Germany had at least a basic level of digital intensity, a slight increase from 77.35% in 2022, growing at an annual rate of 1.6% (2022 is the last comparable year that used a similar methodology for measuring the digital intensity of enterprises). This positioned the country above the EU average of 72.91% in 2024. More specifically, 39.93% of SMEs in Germany had a high or very high digital intensity, again surpassing the EU average of 32.66%, and demonstrating good progress at EU level.

Germany has maintained its target of 91% basic digital intensity among SMEs by 2030. As mentioned, Germany is above the EU average, but still below the EU-wide target of 90%. It seems doubtful whether the national target will be reached by 2030, although Germany could come close to it.

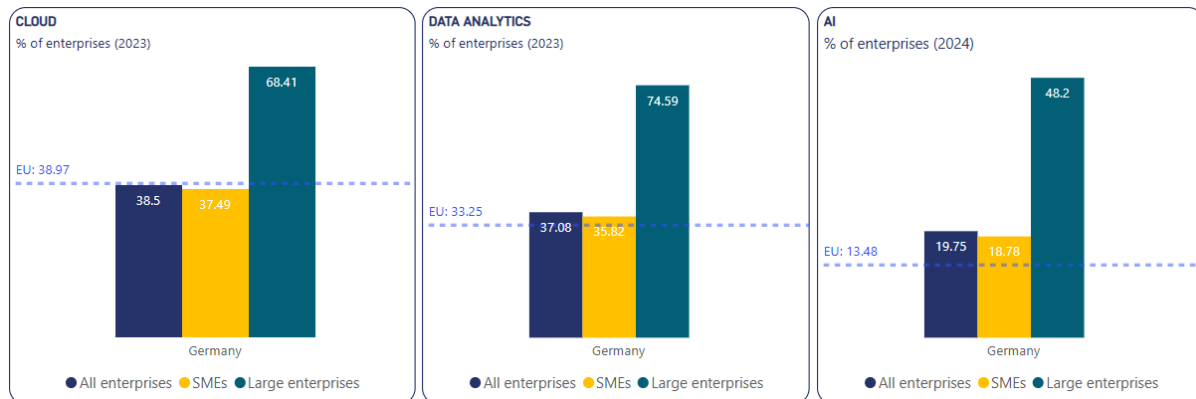
2024 recommendation on the digitalisation of SMEs: continue supporting the digitalisation of SMEs.

In 2024, Germany continued the implementation of existing measures but did not take any new measure.

No new trajectories or measures were introduced in the amended roadmap. Germany has, therefore, continued supporting the digitalisation of SMEs largely in the same way as before.

⁷ By 2030, Germany aims to achieve the sovereign development and deployment of quantum computing systems based on all relevant technology platforms through direct project funding, public procurement and public equity (in particular venture capital). Regional hubs and innovation centres should make available at least 16 systems for research and industrial applications by 2030.

Take up of cloud/AI/data analytics



As shown by the latest available data, in 2023, 38.5% of German enterprises adopted cloud services, thus aligning with the EU average of 38.97%. Among SMEs, the uptake was 37.49%, whereas 68.41% of large enterprises utilised cloud services. This creates a difference of 30.92 percentage points in uptake between SMEs and large enterprises in Germany, which is in line with the EU level gap.

Concerning data analytics, 37.08% of enterprises in Germany adopted data analytics in 2023, beating the EU average of 33.25%. Among these, 35.82% of SMEs used data analytics, while the proportion was significantly higher for large enterprises at 74.59%. Hence, the gap in data analytics engagement between SMEs and large enterprises was 38.77 percentage points, consistent with the EU gap.

In 2024, 19.75% of enterprises in Germany were using AI technology, ahead of the EU average of 13.48%. The country did not provide a national trajectory point for 2024. The uptake of AI among German enterprises thus increased by 71% compared to 2023, when 11.55% were using AI. The country did not provide a national trajectory point for 2024. More specifically, in 2024, the uptake among SMEs was recorded at 18.78%, while approximately 1 out of 2 large enterprises (48.2%) adopted AI technology. This corresponds to a gap of 29.42 percentage points between SMEs and large enterprises, which aligns with the EU level gap.

According to the latest available data (2023), 57.97% of enterprises in Germany used AI technologies, sophisticated or intermediate cloud computing services, or performed data analytics, which is slightly above the EU average of 54.7%. The uptake among SMEs was slightly lower at 56.94%, while large enterprises demonstrated a significantly higher adoption rate of 88.59%. This indicates a percentage point difference of 31.65 in uptake between SMEs and large enterprises in Germany, which is in line with the EU level gap.

As such, Germany displayed a solid performance in the adoption of cloud computing, data analytics, and artificial intelligence technologies, aligning closely with or slightly surpassing EU averages across these areas. However, the adoption gap between SMEs and large enterprises remained substantial across all three technologies, with large enterprises demonstrating significantly higher uptake. These disparities were consistent with EU trends.

In its adjusted roadmap, Germany maintains its combined target at 75%. The adjustment does not contain a breakdown per technology anymore but instead presents a single trajectory for the indicators of the three technologies combined (adoption of either cloud or data analytics or AI).

- [Cloud](#)

Germany has several recent projects connected with IPCEI-CIS (Important Projects of Common European Interest in the field of Cloud Infrastructure and Services). IPCEI-CIS concerns the development of the first interoperable and openly accessible European data processing ecosystem, and

will develop data processing capabilities, software and data sharing tools. Germany has reported that it is working on several projects that are going to leverage the IPCEI-CIS.

Germany is also a driving force behind the new [8ra-initiative](#), which formed around the IPCEI-CIS. The 8ra-initiative aims to leverage the IPCEI-CIS and the framework provided for long-term success. This will be done primarily by establishing a Multi-Provider Cloud-Edge Continuum that is decentralised, interoperable and secure. This will enable European enterprises to remain competitive in the digital economy. As such, Germany is coordinating emerging initiatives, with the goal of integrating them into the 8ra-initiative and building on existing technologies. As a co-coordinator of this IPCEI, Germany will support other Member States that intend to foster the uptake of IPCEI-CIS technologies.

- [Data Analytics](#)

There are no new developments to report that are relevant for the 2025 Digital Decade.

- [Artificial Intelligence](#)

Germany intends to strengthen its position as a competitive player in the field of AI by establishing AI research centres and supporting the development and application of AI. Germany is currently setting up the [Advisory Centre for Artificial Intelligence](#) (*Beratungszentrum für Künstliche Intelligenz*), which will constitute a central point of contact and coordination for AI projects in the federal administration. [Other initiatives](#), such as the cross-departmental AI portal (KIPITZ) and the 'Marketplace for AI Solutions' (MaKI), have also been introduced.

Additionally the European High-Performance Computing (EuroHPC) Joint Undertaking [recently selected seven proposals to establish and operate the first AI Factories across Europe](#), with HammerHAI at the University of Stuttgart being one of them. HammerHAI, and the other six factories, will represent EUR 1.5 bn in investment, funded partly by the Digital Europe Programme and Horizon Europe.

In March this year, [additional six AI factory sites were selected](#), including the JUPITER AI Factory. This factory will contribute to Europe's AI innovation cluster by supporting the development and deployment of AI solutions using Europe's HPC infrastructure to address, in particular, growing industry needs.

Beyond that, Germany aims to increase the use of AI with the [Mittelstand-Digital funding priority](#).⁸ The nationwide network of Mittenstand-Digital Innovation hubs, which has been oriented towards AI since June 2024, aims to strengthen SMEs and support digital transformation of SMEs, start-ups and crafts.

[Unicorns, scale-ups and start-ups](#)

At the beginning of 2025, Germany had 69 unicorns, which is 2 more than last year (+ 3.0%), solidifying Germany's position as a European leader in the field. Germany has no national target for 2030 and has not indicated any new measures to support this metric in the revised roadmap. In previous years, the Federal Government implemented several start-up measures to provide funding and attract talent, thereby supporting the start-up and scale-up ecosystem.

For instance, in June 2024 the High-Tech Gründerfonds (HTGF) was established, with a total volume of EUR 660 m. The HTGF is a public-private venture capital investment firm designed to invest in tech start-ups. Furthermore, through measures such as the WIN Initiative (Initiative Growth and Innovation

⁸ Mittelstand-Digital offers guidance for small and medium-sized enterprises and the skilled crafts as they embrace the digital transformation and informs them about the opportunities and challenges of digitisation.

Capital for Germany), Germany has mobilised additional private capital to support start-ups. The revision of the Federal Immigration Law is also aimed at providing easier and faster access for international talent.

Stakeholders report that there are hurdles to securing late-stage financing. They have also called for several processes to be simplified, such as making stock market listing simpler and fostering cooperation between private actors as well as promoting venture capital. Additionally, stakeholders have reported that the transfer of knowledge from universities was a barrier to the creation of start-ups following scientific research.

The German authorities have reported that they have acted specifically to tackle the administrative burden connected with improving the national business environment. Of particular relevance in this context is the Bureaucracy Relief Act IV (*Bürokratieentlastungsgesetz IV*) of 2024, which should lower the administrative burden for businesses, including SMEs, start-ups and scale-ups, reportedly by EUR 1.3 bn per year⁹.

However, a recent report has identified several key issues in Germany affecting the establishment of new enterprises that could reach unicorn status. The report mentions that the costs of complying with national legislation 'have risen strongly since 2021', and that efforts, such as the 2024 Bureaucracy Relief Act IV, (*Bürokratieentlastungsgesetz IV*) of 2024 have provided limited relief and are therefore not reversing the overall upward trend¹⁰. The report also noted that lengthy and complex administrative procedures have been holding back investment, with 90% of enterprises reporting that bureaucracy and tight regulation constitute a barrier to investment for enterprises, making bureaucracy the most significant obstacle to growth¹¹.

Strengthening Cybersecurity & Resilience

In Germany, 71.03% of individuals took at least one precautionary action to protect their personal data online in 2023, slightly above the EU average of 69.55%. Notably, a moderate share of the population (41.11%) engaged in three or more such actions (and therefore could be considered as having above basic digital safety skills). The most common measure was refusing the use of personal data for advertising purposes, undertaken by 48.25% of individuals, while checking that the website where personal data was provided was secure was the least common, with only 21.15% taking this action.

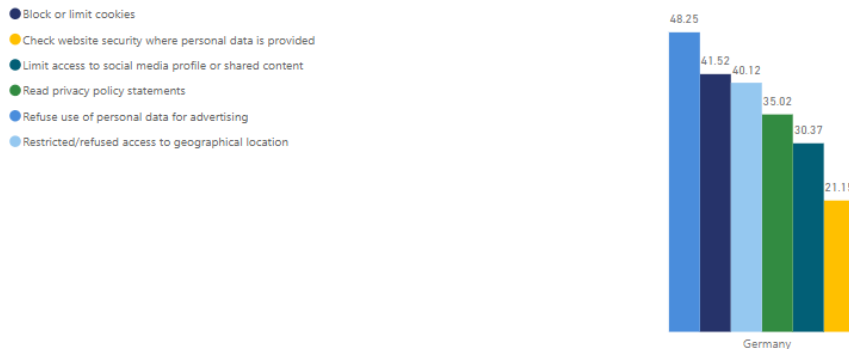
81% of Germans responded in the Eurobarometer of 2025, that improved cybersecurity, better protection of online data and safety of digital technologies, would significantly facilitate their daily use of digital technologies. This constitutes an increase of two percentage points from the previous year, indicating that Germans are increasingly cognisant around issues related to cybersecurity.

⁹ [Deutscher Bundestag - Bürokratieentlastungsgesetz IV passiert Bundestag](#)

¹⁰ National Regulatory Control Council, 2024 Annual Report: [Jahresbericht 2024](#).

¹¹ Ifo, [Der Investitionsstandort Deutschland aus Unternehmenssicht](#).

Type of activities to protect personal data online (% of individuals)



German enterprises tend to experience more incidents related to cyberattacks, but employees are also more aware of their ICT security-related obligations compared with the EU average. The proportion of enterprises that experienced ICT security incidents leading to the unavailability of ICT services due to attacks from outside (e.g. ransomware attacks, denial-of-service attacks) decreased slightly in Germany, from 3.88% in 2022 to 3.62% in 2024. However, this proportion remains above the EU average (3.43%). 96.5% of German enterprises deployed some ICT security measures (slightly above the EU average of 92.76%), but only 68.02% of enterprises made their employees aware of their obligations in ICT security-related issues, which is still above the EU average of 59.97%.

Germany is also doing well in the roll-out of Internet Protocol version 6 (IPv6) for end users, coming in second behind France. Concerning the deployment of [secure internet standards](#), Germany's roll-out of IPv6 for end users (62%, compared with the EU average of 36%) is progressing well, and is well above the EU average on the server side (34%, compared with the EU average of 17%). IPv6 is an important protocol as it ensures the scalability, stability, and security of the internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have long been depleted. The Domain Name System Security Extensions is also an important standard to be rolled out, as it introduces security features to the domain name system. German success in this field (79% compared with the EU average of 47%), may be due to [the Federal IPv6 programme](#), which helps the federal authorities and organisations to plan, prepare and implement IPv6 in 142 individual migration projects. The programme is also included in the Digital Decade's Best Practice Accelerator, in the 'Business Uptake' cluster.

Additionally, as part of the 'Cybersecurity for SMEs' initiative within Mittelstand-Digital, the "Transfer Centre for Cybersecurity in SMEs" (introduced in 2023 as the successor to the "Transfer Centre of IT Security in SMEs" and scheduled to conclude in 2027, with an option for a two-year extension) continues to play an important role in addressing the threats faced by SMEs and start-ups.

Finally, Germany reported the implementation of the 5G Cybersecurity Toolbox, as proposed by the 2024 country report.

2024 recommendation on cybersecurity: continue efforts in cybersecurity to address evolving threats and strengthen in this regard the collaboration between the state and the industry.

In 2024, Germany continued the implementation of existing measures but did not take any new measures.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

The German government is improving on most of the metrics mentioned below. However, Germany faces challenges in digital skills and public services. The country has decided to focus on allowing existing measures to take effect rather than introducing new initiatives.

Germany continues to view several of these metrics in an overarching context. It therefore relies on measures that do not target a single metric specifically, opting instead for a more holistic approach, as illustrated by the ICT specialist target. Although there still is room for improvement, the overall trend continues to be positive for Germany in issues concerning equipping people with basic digital skills, getting more ICT specialists, and e-Health. Especially in the areas of eID and the digitalisation of public services for citizens and businesses, Germany could improve the current situation.

Equipping people with digital skills

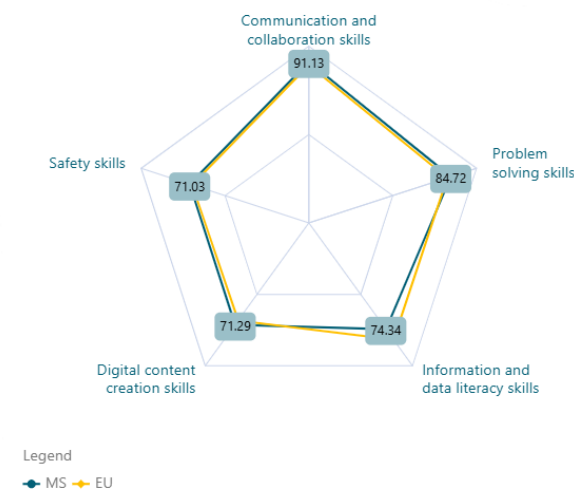
Basic Digital Skills

In 2023, just over half of Germany's population (52.22%) had at least basic digital skills, falling short of the EU average (55.56%). Although there's no data for 2024 yet, we can still spot some key areas for improvement by examining different groups within the population.

- **Gender Gap:** A gap exists between men and women in digital skills: 55.14% of men are digitally savvy compared to only 49.30% of women, creating a gap of 5.84 percentage points. This is wider than the EU average of 2.23 percentage points.
- **Education Level:** Among people with high formal education, 72.16% have at least at least basic digital skills, which is below the EU average of 79.83%. Those with no or low formal education are struggling the most, with only 31.76% having at least basic digital skills. The gap between this group and the national average is 20.46 percentage points, close to the EU average gap of 21.95 points.
- **Living Areas:** When it comes to location, rural residents face challenges too. Only 46.65% have at least basic digital skills, slightly lower than the EU rural average of 47.50%. The gap between rural residents and the national average is 5.57 percentage points, which is smaller than the EU average gap of 8.06 points.
- **Age Groups:** Looking at age, those aged 25 to 34 are the most digitally proficient at 63.76%, though still below the EU average of 70.18%. On the other end, the 65 to 74 age group has the least digital skills, with only 32.58%, although this is better than the EU average of 28.19% for that age group.
- **Digital Skills Index Components:** Breaking down the Digital Skills Index into five skill areas, Germany performs better than the EU average in four of them. The standout skill is communication and collaboration, where Germany scores 91.13%, slightly above the EU average of 89.33%. However, safety skills are a weak spot, with a score of 71.03%, just above the EU average of 69.55%.

In summary, while Germany shows strengths in certain digital skills, significant gaps remain, particularly in gender equality, education, rural access, and age disparities. Addressing these weaknesses is essential for boosting overall digital proficiency. According to the 2025 Eurobarometer, when asked how significant human support would be to helping accessing and using digital technologies and services, 78% of Germans responded 'significant', constituting an increase of 5 percentage points from last year. Furthermore, 90% of Germans believed that this policy area ought to be prioritised by the public authorities, underscoring its importance.

Digital Skills Index components
% of individuals



Germany's target for basic digital skills for its population remains at 80% in its revised roadmap, which is in line with the EU target. Germany has not introduced additional measures since last year's report, given that existing measures still need to take full effect before they show results.

A cornerstone measure for boosting basic digital skills continues to be the Digital Pact for Schools ('DigitalPakt Schule' (DPS)). The pact aims to establish new and better conditions for cooperation between the federal states, school authorities, schools, and private stakeholders. At the 2024 DPS status conference and in the 2023-2024 progress report, all the stakeholders confirmed a new culture of cooperation.

The federal states (Länder), as the implementers of the DPS, have regular joint discussions with the representatives of digital educational media providers, and exchanges with the associations of municipal school boards. This is being developed through joint projects of the Länder (Länderübergreifende Vorhaben (LÜV)) in the DPS. It is necessary from a pedagogical point of view to integrate solutions developed by digital educational media providers with digital solutions developed by school authorities together with their schools. These projects will therefore create important technical foundations, standards and framework conditions for achieving this integration.

With projects such as VIDIS (Identity Brokerage Service), licence.connect (Licence Brokerage and Management), educhek Digital (Development of a Common Testing Procedure for Digital Educational Media) and MEM (Metadata for Educational Media), central points of reference, basic technologies and support for the seamless integration and use of digital educational solutions from private sector players are created across federal states.

2024 recommendation on basic digital skills: step up cooperation at all levels of administration to boost the digital skills of the population by 2030.

In 2024, Germany continued the implementation of existing measures but did not take any new measures. The country continued to implement measures from its roadmap such as the Digital Pact for Schools. However, no new measure was proposed in the roadmap adjustment.

ICT specialists

Germany's performance in ICT training and ICT specialists shows a mixed picture when compared to the EU average.

In terms of ICT specialists, Germany's total percentage of ICT specialists as a share of total employment was 4.9% in 2023, slightly above the EU's 4.8%. By 2024, this figure rose to 5.3%, compared to the EU's 5.0%. The growth rate for ICT specialists in Germany was 8.2%, significantly higher than the EU's 4.2%. This suggests a robust growth in the ICT specialist sector in Germany.

Regarding the gender distribution among ICT specialists, the percentage of female ICT specialists in Germany was 19.0% in 2023, which is lower than the EU's 19.4%. In 2024, this figure increased to 19.2%, still below the EU's 19.5%.

In 2022, 27.32% of enterprises with 10 or more employees in Germany provided ICT training, surpassing the EU's 22.37%. However, by 2024, this figure decreased to 26.41%, still above the EU's 22.29%. The annual growth rate for enterprises providing ICT training in Germany was -1.7%, which is lower than the EU's -0.2%. This indicates that while Germany has a higher percentage of enterprises offering ICT training, the rate of decline in this area is more pronounced than in the EU.

The amended roadmap for ICT specialists introduces a new target of having ICT specialists make up 5.3% of the total workforce by 2030. This is below the EU-level target of 10%. Since Germany has reportedly already achieved the 5.3% mark, it has met its national target.

Germany has not introduced any new specific measures on ICT specialists in its adjusted roadmap. However, given the EU-wide target of employing 20 million ICT specialists by 2030 (equivalent to 10% of the total workforce), Germany should consider how it will continue to contribute to this target.

Skilled labour shortages is a significant obstacle to economic growth in Germany. Around one third of companies – and 42% of companies in the services sector – reported being affected by labour shortages¹². Skilled roles in the care and IT sectors, construction, and scientific and technical fields are particularly affected by shortages. The percentage of employers expecting labour shortages to constrain their production, met or surpassed the EU average across all industries during this period¹³.

Labour shortages are directly impacting productivity by restricting companies' ability to increase production, and indirectly by encouraging labour hoarding. Labour hoarding might be exacerbated by the extension of short-time work arrangements (*Kurzarbeit*) until the end of 2025. Improved training measures could help employees transition to new sectors, thereby boosting productivity and alleviating labour market tensions.

¹² [KfW-ifo Skilled Workers Barometer Juni 2024](#). Data for Q2 2024.

¹³ CEDEFOP-EURES.

Consequently, the labour shortages in Germany extend not only to ICT specialists, but to 183 different professions, as reported by the German authorities. The German Federal Government's [Skilled Labour Strategy](#), published in 2022, aims to address this issue as a whole and was complemented in 2024 by the [Skilled Labour Strategy: India](#), which is expected to yield positive results in attracting ICT specialists to the German market.

2024 recommendation on ICT specialists:(i) increase the attractiveness of STEM disciplines at school to boost the number of young people, including girls and women, interested in taking up ICT-related studies or careers; and (ii) design incentive schemes to attract/retain ICT specialists.

In 2024, Germany made some efforts to address the recommendation through new policy actions. Existing measures that focus on STEM education are still in effect. Nevertheless, Germany has not introduced new measures which would 'increase' the attractiveness of these disciplines at school.

Germany's Skilled Labour Strategy, which includes the India sub-branch, is a promising starting point.

[Key digital public services and solutions – trusted, user-friendly, and accessible to all](#)

In 2023, Germany's total score for digital public services for citizens was 75.83, below the EU's 79.44, by 2024, Germany's score improved to 78.94, still behind the EU's 82.32. The country is therefore on track according to its national trajectory. However, Germany's growth rate of 4.1% outpaced the EU's 3.6%. For cross-border digital public services for citizens, Germany scored 63.44 in 2023 and 64.93 in 2024, both below the EU's 68.37 and 71.28, respectively. Additionally, Germany's growth rate of 2.3% fell short of the EU's 4.3%.

In the realm of digital public services for businesses, Germany's total score was 78.58 in 2023 and 77.49 in 2024, both lower than the EU's 85.42 and 86.23, respectively. Germany's growth rate of -1.4% was below the EU's 0.9%. Even so, the country is on track according to its national trajectory. The decline in Germany was due to false positives in the Cross-border Online Availability being corrected this year. For cross-border digital public services for businesses, Germany's scores were 60.62 in 2023 and 55.06 in 2024, significantly below the EU's 73.13 and 73.76.

In contrast, Germany performs well in access to e-health records. In 2023, Germany's score was 86.96, above the EU's 79.12. Although Germany maintained this score in 2024 (2030 target of 100), the EU improved to 82.70. The country is lagging behind compared to its national trajectory.

[e-ID](#)

Germany's eID card scheme was notified under the eIDAS Regulation and the country is contributing to the development of an EU Digital Wallet. However, the country's uptake of eID solutions remains relatively low.

According to estimates provided by Bitkom, only 39% of the German population has eID. That percentage is low, considering that eID has been available in Germany since 2010. Of the Germans who have eID, only 22% use it, which suggests that its perceived usefulness is limited, even if [more organisations offer eID solutions](#). Furthermore, Germany has not introduced any new measures in its revised roadmap to address this issue.

[Eurostat numbers from 2023](#) illustrated that Germany was lagging far behind other European countries on several other metrics related to eID usage. Only 9.04% of Germans had used their eID to access online services for private purposes over the previous 12 months, compared with a European

average of 41.11%. This is the second lowest score in the EU. Furthermore, only 6.85% of Germans indicated that they had used their eID to access services provided by public authorities or public services in Germany over the previous 12 months, which is again far behind the European average of 36.14%.

The law amending the Online Access Act (OZG), which came into force on 24 July 2024, aims to boost the further digitalisation of the public administration, especially with regard to its user-friendliness and accessibility. The statutory written and printed forms for applications have thus been replaced by digital processes with online forms and eID-based identification procedures, albeit at low speed. Even though the legislative amendment is a step in the right direction, no data has been provided to demonstrate its effectiveness and there is still room for improvement in the standardisation of the digitalisation process. The importance of the measure is underscored by the 2025 Eurobarometer, where 83% of Germans stated that access to online public services is 'important'. Additionally, 74% of Germans believe that the digitalisation of public and private services simplifies their lives. As such, furthering digitalisation of public services is a central issue for Germans.

Given Germany's potential for improvement, additional measures in this area would be advisable to accelerate the digitalisation of public administration. Additionally, even if Germany were to digitalise a larger part of its public services, the low uptake of eID might also prove a separate challenge for the digital transformation.

Germany is also actively contributing to the development of the European Digital Identity Wallet by participating in all the four large-scale pilots working on various use cases: NOBID, focusing on a large-scale pilot for EU Digital Wallet payments; POTENTIAL, a consortium working on six key use cases and where Germany is the Technical Coordinator, the EU Digital Wallet Consortium (EWC), focused on digital travel credentials; Digital Credentials for Europe (DC4EU) focused on the educational and social security sectors¹⁴. In addition to several public entities, the private sector, including several banks, is involved in these projects.

Digitalisation of public services for citizens and businesses

Germany has added new targets in its amended roadmap in line with the EU-level target and is committed to achieving 100% digitalisation of public services for citizens by 2030 and for businesses by 2029.

No new measures were introduced in the adjusted roadmap to achieve this goal. The amended Online Access Act (OZG) is expected to push for the further digitalisation of public services and will presumably help achieve the targets. However, given the overall progress of the digitalisation of public services in Germany, it might be relevant to gauge whether the amended law will be enough to close the gap to the rest of EU, reach the stated target and allow for fully digitalised and effective public services, which include both front-end and back-end digitalisation.

At a federal level (föderales Programm) the most relevant public services were reported to have been developed according to the once-only principle (Einer-für-Alle) at state level. As such, the most relevant public services developed at the state level can be used by authorities at the municipal level. As part of the Recovery and Resilience Facility (RRF), Germany has made 215 services available online at federal or state (Länder) level. Studies have, however, criticised the implementation as being too

¹⁴ [What are the Large Scale Pilot Projects - EU Digital Identity Wallet.](#)

slow: at the current rate, it will take 10 years to move all services online¹⁵ and many digital solutions are used by only one federal state or municipality (*Kommune*)¹⁶.

Low usage and interoperability of digital public services remain key challenges. Similar to the very low eID uptake, Germans are also among the least likely in Europe to use the internet to interact with public authorities (63.90% compared with 74.71% at EU level). Furthermore, data registers in Germany are of low quality and are poorly connected¹⁷. As a result, Germans have significantly fewer pre-filled forms (measured as the proportion of administrative steps that provide users with pre-filled data online) at their disposal than other Europeans. With a score of 38 compared with 71, Germany has the second lowest score in the EU. Moreover, Germany also scores poorly (49 compared with 69 at EU level) in the transparency of service delivery, design and personal data.

2024 recommendation on digital public services for citizens and for businesses: accelerate the digitalisation of public services for citizens and businesses.

In 2024, Germany continued the implementation of existing measures but did not take any new measure.

Germany is currently implementing the Online Access Act (OZG), which is a central cornerstone of the digitalisation of public services for citizens and businesses. Germany did not launch any significant new measures.

e-Health

Germany maintains its target in its amended roadmap for access to e-Health records. However, Germany's current progress indicates that it is lagging behind its national trajectory.

Germany's revised roadmap still includes the Act on Accelerating the Digitalisation of Health (*Digital-Gesetz* (DigiG)), which requires healthcare providers to transfer certain types of data into the centralised e-Health records (*elektronische Patientenakte* (ePA)). All citizens with statutory health insurance, who did not opt-out, have been equipped with an ePA.

With regard to the onboarding of more healthcare providers, the group of German healthcare providers that are authorised to access the e-Health records, as well as the scope of their processing rights, will be gradually extended in several steps. The number of patients who access their health data through their ePA is reportedly also increasing.

Once the DigiG becomes available nationwide, it will initially a selection of healthcare providers to use and fill in the electronic health records as part of medical care.

A majority of healthcare professionals are already connected to the nationwide infrastructure. Following an initial regional testing, the nationwide rollout of the necessary software module for service providers' information systems began at the end of April. The use of electronic health records by healthcare providers will become compulsory from 1 October 2025.

By July 2025, both outpatient and inpatient care facilities will have to meet all the requirements to access the ePA as part of nursing care.

¹⁵ BMW, 2024, Digitalisierungsindex.

¹⁶ Bundesrechnungshof, 2024, Bericht zur Umsetzung des Onlinezugangsgesetzes.

¹⁷ National Regulatory Control Council, 2024, Annual Report: [Jahresbericht 2024](#).

There are currently no statutory deadlines for other healthcare provider groups not included in the legal act to connect to – or use – the e-Health records.

2024 recommendation e-Health:

- (i) Ensure that all data types are made available in a timely manner.
- (ii) Increase the supply of health data by onboarding more categories of healthcare providers.

Germany made some efforts to address the recommendation through new policy actions in 2024.

- (i) In Germany, all data categories in this framework are made available to individuals. However, only data in the ‘identification’, ‘e-Prescriptions’ and ‘e-Dispensations’ categories are made available in a timely manner.
- (ii) Only a limited range of categories of healthcare providers supply health data (i.e. public primary and secondary/tertiary care providers, public mental health facilities, and pharmacies). Providers outside of the statutory health insurance system can join voluntarily, but they are not obliged to do so.

Building a safe and human centric digital environment and preserving our democracy

Germany shows a positive trend concerning online participation in both political and civic matters.

In 2022, only 4.37% of the population reported taking part in online consultations or voting to decide civic or political issues. Although that percentage was well below the EU average of 8.41%, it increased to 10.88% by 2024, thereby surpassing the EU average of 10.05% in the same year. An increase was also seen in the use of the internet for expressing civic or political issues, either on websites or in social media. However, in this metric too, Germany was far behind the EU average in 2022. 6.60% of respondents reported that they engaged in such internet use, which was much lower than the EU average of 14.30%. By 2024, the German percentage had increased to 15.51%, which was only slightly below the EU average of 16.68%.

The country is a target of disinformation, especially during federal and state elections, as illustrated by reports of Russian influence in the 2025 Bundestag election¹⁸.

Meanwhile, in 2023, 25.42% of German individuals encountered hostile or degrading online messages targeting groups on the basis of factors such as racial origin or political views. This was significantly below the EU average of 33.5%. Young people (16-24) (34.11%) reported encountering such messages at rates similar to adults (25-64) (26.88%). Men (27.17%) and women (23.69%) also had similar rates of exposure to such messages. Germany’s overall rate remained among the lowest in the EU, with small differences across age groups and genders.

In 2023, 44.78% of individuals in Germany reported having encountered information or content on internet news sites or social media that they perceived as untrue or doubtful, which was slightly below the EU average of 49.25%. Of those who encountered such content, only 19.84% checked its truthfulness. Young people (16-24) (51.79%) and adults (25-64) (47.81%) reported similar exposure rates, with verification rates also being comparable, at 24.1% for young people and 21.24% for adults. Men (48.86%) reported higher exposure than women (40.71%) and they were also more likely (23.29%) to verify the truthfulness of the information than women (16.40%).

¹⁸ [Russia-linked fake videos spread German election fraud claims, authorities warn – POLITICO.](#)

Also worthy of note is the initiative 'LOOK! How your child uses media' ([SCHAU HIN! Was Dein Kind mit Medien macht](#)). This initiative supports parents and educators with practical, age-appropriate, and up-to-date recommendations for children's media usage. It provides an overview of the benefits and risks of information and entertainment. The programme has several methods of communication, and as of March 2025, its Instagram channel had tripled the number of followers it had at the end of 2022. The project also has three newsletters, which have a total of 80 000 subscribers, an increase of approximately 45% since the end of 2022. The project is a part of the Digital Decade's Best Practice Accelerator.

It is evident that the 'LOOK! How your child uses media' initiative resonates with the German populace. According to the 2025 Eurobarometer, 95 % of Germans considered the issue of social media's negative impact on children's health to be 'urgent'. Similar concerns were expressed regarding the urgency of cyberbullying and online harassment, as well as the issue of implementing age assurance mechanisms to restrict age-inappropriate content, with 93% of Germans viewing both these issues as 'urgent'.

Additionally, 79% of Germans believe that it is 'important' that the public authorities prioritise actions which will ensure that the development of AI and new digital technologies respect their rights and values.

Leveraging digital transformation for a smart greening

Germany continues to prioritise the green and digital twin transition. Some measures have been taken at federal and state levels and continue to be implemented.

The German population is also ahead on several metrics compared with the EU average. In 2024, 15.90% of Germans reported recycling an old desktop computer, compared with the EU average of 14.66%. Similarly, Germans recycle 11.15% of their phones and 12.91% of their laptops/tablets, which slightly exceeds the EU averages of 10.93% and 11.31% respectively. Although Germany contributes to raising the EU average, the number of people who recycle IT equipment remains low overall.

The Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety (BMUKN) has highlighted its Stakeholder-Community, which promotes sustainable practices in the digital transformation of industry. The initiative has organised six workshop sessions on green coding, with approximately 100 participants attending each virtual workshop. The project will organise a new workshop series with civil society organisations in 2025. The workshop series will provide knowledge about source soft- and hardware solutions, community-based social media platforms and green digital technologies.

When asked how important Germans thought digital technologies will be to help fight climate change by 2023, 70% viewed it as 'important', while 25% marked it as 'not important'. This reflects a more negative attitude than the European average, where 74% viewed it as 'important', with 22% noting it as 'not important'. Even so, 89% of Germans believe this policy area should be 'important' for the public authorities.

2024 recommendation leveraging digital transformation for a smart greening:

Continue developing a coherent approach to twinning the digital and green transitions.

First, continue promoting improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, continue supporting the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.

Demonstrate leadership and continue monitoring and quantifying the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

Share its experience in developing resource-efficient AI technologies and its best practice in using AI to increase resource efficiency and material savings.

In 2024, Germany continued the implementation of existing measures but did not take any new measure. Germany continued to implement measures.

Annex I – National roadmap analysis

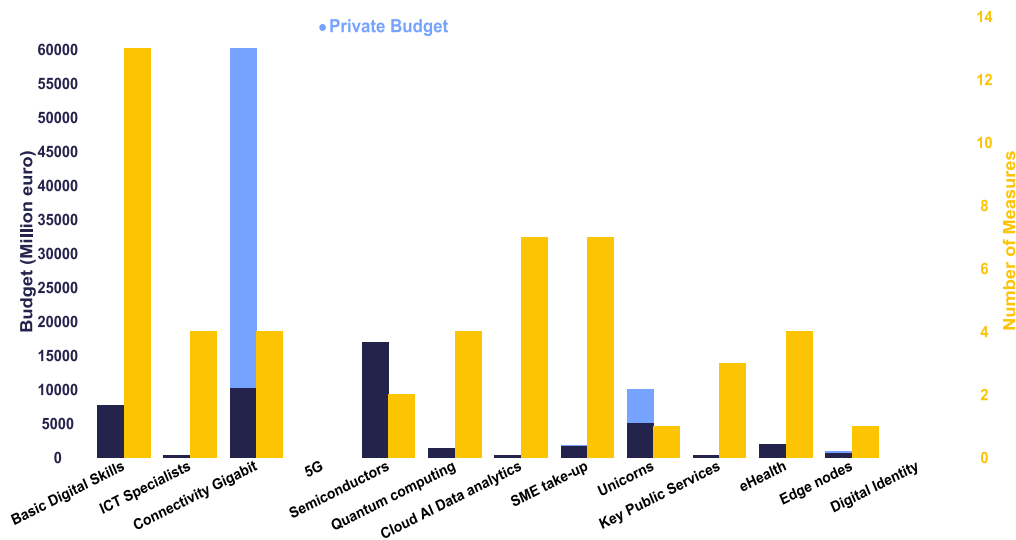
Germany's national Digital Decade strategic roadmap

Germany submitted a revised national Digital Decade roadmap on 21 December 2024, which addresses a limited number of the roadmap recommendations issued in 2024.

Germany adjusted a limited number of measures, especially in the area of gigabit connectivity and AI. It made changes to the measures' budgets and added one new measure to establish hubs for quantum computing. For other areas, Germany argued that in due time the existing measures would prove sufficient to achieve the national targets. New targets for ICT specialists (below the EU-level target) and for digital public services for citizens and businesses (in line with the EU-level target) were introduced. The revised roadmap includes stakeholder consultation.

The amended roadmap points out that several measures that were added before May 2024 are still being implemented and should be allowed to take full effect and show results before new ones are added. This approach is logically sound insofar as it concerns targets where Germany is already ahead – or close to – the EU average. However, in certain areas where Germany falls behind the EU average, and where the number and scope of measures introduced remain limited, such an approach seems overly optimistic. Specific examples of this concern efforts in the areas of basic digital skills and ICT specialists.

Measures and budget in national roadmap¹⁹



¹⁹ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Germany is working towards setting up a European Digital Infrastructure Consortium in the area of digital commons. Germany is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Germany is also a participating state in the EuroHPC Joint Undertaking (JU) and of the Chips JU²⁰.

Germany has contributed to the Best Practice Accelerator²¹, adding several best practices in the 'Digital Skills' and 'Business Uptake' clusters.

In the 'Digital Skills' cluster, Germany provided nine best practices.

1. AI Studios of the AI Observatory – AI workshops for the participatory design of AI applications in business practice.
2. Advisory Centre for Artificial Intelligence (BeKI).
3. KIPITZ for the Federal Administration.
4. The Association for Media Education and Communication Culture.
5. Digital Pact for Older People (*DigitalPakt Alter*).
6. LOOK! How your Child uses media.
7. Teenage Internetwork Conference.
8. German common digital educational media infrastructure.

In the 'Business Uptake' cluster, two best practices were added.

1. The AI Opportunity Market (MaKi).
2. The Federal IPv6 Programme.

EU funding for digital policies in Germany

Germany allocates 48% of its total recovery and resilience plan to digital (EUR 13.3 billion)²². In addition, under cohesion policy, EUR 2.2 billion (representing 11% of the country's total cohesion policy funding), is dedicated to advancing Germany's digital transformation²³. According to JRC estimates, EUR 13.1 billion directly contribute to achieving Digital Decade targets (of which EUR 12

²⁰ Corrigendum to the Digital Decade Country Report Germany 2024: Germany is not a member of the Local Digital Twins towards the CitiVERSE EDIC.

²¹ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

²² The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

²³ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

billion comes from the RRF and EUR 1.1 billion from cohesion policy funding)²⁴. The largest amounts are dedicated to the digitalisation of key public services, while followed by the modernisation of hospitals and the IPCEI on microelectronics as well as action on basic digital skills. The second payment request was disbursed to Germany in December 2024. So far, the country received EUR 19.8 billion in RRF grants and loans.

²⁴ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles²⁵



²⁵ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
{SWD(2025) 292 final} - {SWD(2025) 293 final} - {SWD(2025) 295 final}

DIGITAL DECADE 2025 COUNTRY REPORTS

Greece

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Executive summary

Greece continues its steady progress in rolling out fibre for gigabit connectivity. However, it struggles to fill the gap of ICT specialists and to address a severe digital gap in basic digital skills between different age groups and between rural and urban areas. Despite this, the country's displays an encouraging growth rate in the digitalisation of small and medium-size enterprises.

Greece shows a moderate level of ambition in its contribution to the Digital Decade having set 14 national targets, 57% of which aligned with the EU 2030 targets. The country is following its trajectories well with 88% of them being on track (based on the 2024 trajectories defined for 8 KPIs out of 8 analysed). Greece addressed 77% of the 13 recommendations issued by the Commission in 2024, either by implementing significant policy changes (31%) or making some changes (46%) through new measures.

In 2024, Greece's 5G coverage was among the highest in the EU and was very close to the Digital Decade 2030 target. Despite rapid progress, the adoption of artificial intelligence (AI) by businesses remains below par. The selection of Greece to host one of the seven first AI Factories in the EU confirms the country's commitment to help build the EU's technological leadership. The AI Factory will also contribute to developing and strengthening the start-up ecosystem in Greece. Regarding the transition of public services, although the latest data indicates limited annual progress in services for citizens, the integration of AI into the single digital portal of the public administration will improve the quality, speed and accessibility of public services. Greece has also developed a strategy and new measures for protecting minors online such as the [parental control initiative](#).

Digital Decade KPI ⁽¹⁾	Greece				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	EL	EU
Fixed Very High Capacity Network (VHCN) coverage	38.4%	46.1%	19.9%	42.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	38.4%	46.1%	19.9%	42.0%	69.2%	8.4%	100.0%	-
Overall 5G coverage	98.1%	99.8%	1.8%	88.0%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	7	13	85.7%	0	2257	90.5%	95	10000
SMEs with at least a basic level of digital intensity (2)	-	53.4%	13.9%	-	72.9%	2.8%	79.7%	90%
Cloud	18.1%	-	-	-	-	-	56.0%	75%
Artificial Intelligence	4.0%	9.8%	146.5%	6.3%	13.5%	67.2%	32.0%	75%
Data analytics	25.0%	-	-	-	-	-	40.0%	75%
AI or Cloud or Data analytics	33.5%	-	-	-	-	-	-	75%
Unicorns	3	3	0.0%	4	286	4.4%	20	500
At least basic digital skills	52.4%	-	-	-	-	-	70.2%	80%
ICT specialists	2.4%	2.5%	4.2%	3.0%	5.0%	4.2%	4.5%	~10%
eID scheme notification		No						
Digital public services for citizens	75.9	76.7	1.1%	71.8	82.3	3.6%	98.2	100
Digital public services for businesses	86.2	78.6	-8.8%	81.3	86.2	0.9%	100.0	100
Access to e-Health records	73.8	73.8	0.0%	66.6	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index (DII), which is comparable to the DII value from DESI 2023 (referring to 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (referring to 2024)

According to the special Eurobarometer on 'the Digital Decade 2025': (i) 78% of the Greek population consider that the digitalisation of daily public and private services is making their lives easier; (ii) 92% consider it important that the public authorities counter and mitigate the issue of fake news and disinformation online; and (iii) 83% consider that ensuring European companies' ability to grow and become 'European Champions' that can compete globally is important for competitiveness.

A competitive, sovereign, and resilient EU based on technological leadership

Greece is making progress in deploying gigabit connectivity infrastructure, with a 46.1% VHCN coverage in 2024. While this is below the EU average, the outlook for the 2030 targets is positive, as various operators have recently announced significant investments in the deployment of fibre optic networks across the country by 2027. Greece's high annual growth rate of 13.9% for the digital transition of small and medium-size enterprises (SMEs) resulted in 53.4% of SMEs having at least a basic level of digital intensity in 2024. However, this is still below the EU average. The adoption of AI by enterprises in general is also demonstrating an exceptional progress with more than doubling its share (from 4.0% in 2023 to 9.8% in 2024). The adjustment of the roadmap includes the 'Plan for the transition of Greece to the AI ERA', published in November 2024. This plan includes a chapter on how AI can boost innovation and enhance the business ecosystem. With regards to cybersecurity, Greece has restructured its National Cybersecurity Authority to an independent public law entity aiming at enhancing the Authority's operational autonomy and capacity, enabling it to more effectively coordinate and oversee the implementation of the NIS2 Directive which has been transposed in November 2024 and will continue to develop its national cybersecurity strategy and related policies in alignment with the EU and the national strategic priorities.

Protecting and empowering EU people and society

Increasing the number of ICT specialists in employment remains one of the biggest challenges faced by Greece in its digital transition. Additional measures to familiarise young people with digital technologies very early during their schooling have been included in the adjustment of the national roadmap to attract young people to ICT studies and careers by making them familiar with digital very early during their schooling. The initiative to reverse the serious brain drain during the economic crisis and to encourage highly skilled Greeks living abroad to return to the Greek labour market will also help to increase the number of ICT specialists in employment. The country also faces a challenge in fostering digital skills for all, with significant gaps between age groups and between rural-urban segments of the population. The annual rate of progress in the digital transformation of public services and businesses is slowing down, although the country continues to actively implement its broad strategy for the digital transformation of public services. The introduction of the services related to the Single Digital Gateway regulation (SDGR) present additional challenge for these indicators to reach the target. In 2024, Greece launched a large-scale project to set up a new eID infrastructure and also integrate it with Gov.gr Wallet and the new ID cards. However, it has not yet notified an e-ID scheme to the Commission under the eIDAS Regulation. In line with the Commission priority of protecting minors online, Greece has launched the '[Kids Wallet](#)' application as part of an overall strategy on this area.

Leveraging digital transformation for a smart greening

Greece is addressing the environmental impact of the digital transition and digital infrastructure, by stimulating private investments in green data centres and by addressing the need to optimise the

distribution of renewable energy for the growing number of digital data centres across the country. Additionally, the public sector is implementing initiatives, such as an action plan for green and innovative public procurement.

National digital decade strategic roadmap

Greece submitted adjustments to its national Digital Decade roadmap on 17 January 2025, with specific follow-up actions addressing a substantial number of recommendations issued in 2024. It includes 16 additional measures, and an in-depth analysis of the situation. In particular, Greece explained why it has not, at this stage, revised the national targets that were not aligned with the EU 2030 targets. This concerns the targets related to the digital transformation of SMEs and to the adoption of technologies (AI, cloud, data analytics), as well as the two targets related to digital skills. The updates are aligned with the new Commission's priorities, such as: (i) advancing AI technology and innovation; (ii) deploying submarine cables to increase the resilience of backbone networks; (iii) joining forces to develop capacities in edge technology, such as quantum computing; and (vi) protecting minors online. The adjustment includes reporting on the consultation of stakeholders. The roadmap and the adjustments to it continue to build on Greece's national digital transformation strategy (for 2020-2025). It contains priorities in the four pillars of the Digital Decade, while adding new measures in strategic digital technologies, such as AI and quantum computing. The updated roadmap contains 125 measures and has a budget of EUR 6.1 bn (equivalent to 2.57% of GDP). It also gives a rough estimate of EUR 7 bn in private investments over the coming years in data centres and gigabit connectivity. The revised roadmap covers the broad objectives of the Digital Decade, such as cybersecurity and resilience, building a safe and human centric digital environment, and promoting the responsible use of AI. In 2024, the Ministry of Digital Governance launched the revision of the national digital transformation strategy (for 2020-2025) by consulting the Executive Network of Digital Transformation (ENDT), a large network of public services in order to produce a national policy for aligning the future national digital transformation strategy (for 2026-2030) with the Digital Decade targets.

Funding & projects for digital

Greece allocates 21% of its total recovery and resilience plan to digital (EUR 7.4 billion)¹. In addition, under cohesion policy, EUR 2.7 billion, representing 13% of the country's total cohesion policy funding, is dedicated to advancing Greece's digital transformation².

Greece is a member of the 'Alliance for Language Technologies' European Digital Infrastructure Consortium (EDIC) and of the EUROPEUM EDIC for blockchain. The country is directly participating in the important project of common European interest on Microelectronics and Communication Technologies (IPCEI-ME/CT). Greece is also a participating state in the EuroHPC Joint Undertaking (JU) and of the Chips JU.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

Greece has contributed to the Best Practice Accelerator³ by sharing one best practice in the 'Digital Skills' cluster: 'Training Civil Servants in Cloud Computing Technologies' and one best practice in the 'Uptake of Digital Technologies' cluster: 'the Greek Data Strategy and Interoperability'.

Digital rights and principles

According to a support study, Greece has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 43 initiatives overall but no new initiatives launched in 2024. Greece is most active in digital education, training and skills while less activity has been identified with regards to Sustainability. Measures regarding sustainability appear to have most impact on the ground, in contrast to those addressing the participation in the digital public space.

Recommendations

- **ICT specialists:** continue to explore options focusing on raising the number of ICT specialists in employment.
- **Basic digital skills:** address the large digital gap in basic digital skills, between age groups and between rural and urban areas.
- **Digital public services:** address all the dimensions of online public services for citizens and businesses, including the cross-border dimension.
- **Uptake of digital technologies by businesses:** further develop the ecosystem and raise awareness of existing opportunities and resources for businesses to benefit from advanced digital technologies - such as AI - and from access to innovative process (e.g. through the European Digital Innovation Hubs (EDIHs)).
- **e-ID:** notify an e-ID scheme to the Commission.
- **Smart greening:** make efforts to leverage digital technologies for smart greening in additional sectors of the economy (e.g. transport, buildings and agriculture).

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

A competitive, sovereign and resilient EU based on technological leadership

Greece continues to implement its strategy and reforms to digitally transform the economy, with encouraging signs. Although challenges remain in terms of technological leadership. The country still suffers from a low level of private investment, but many recent signs show a growing interest in digital infrastructure and high-tech sector.

In the last five years, Greece has had an active policy to attract investments in digital technology which is starting to show results. Substantial investment plans in data centres are taking shape, and Greece could become a regional hub for data centres by 2030. The deployment of new submarine cables also reinforces the backbone digital infrastructure of the country and will contribute to connect Greece with several countries bordering the Mediterranean and beyond, putting the country on the map of the global digital communications gateway.

Greece was selected in 2024 to host one of the seven first Artificial Intelligence (AI) Factories in the EU. The 'Pharos' project aims to create an AI ecosystem in the country bringing together academia, research, industry and the public sector with a focus on health data utilisation, climate change mitigation, and fostering a Greek language model as part of the country's digital transformation strategy. The project will also foster the growth of the dynamic start-up ecosystem in Greece.

According to the Digital Decade Eurobarometer 2025⁴, 86% of respondents in Greece consider that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

Digital transformation of enterprises remains a challenge for Greece, although the business sector showed significant annual growth in 2024 in the use of AI technologies. On the digital maturity of SMEs (53.42%) Greece remained considerably below the EU average (72.91%) albeit with an impressive rate of progress (13.9%). The features of Greek business demography could explain the difficulties in seeing tangible results on this KPI. The implementation of measures foreseen in the Recovery and Resilience Plan is set to contribute to address the need for technology adaptation of businesses. Investments and reforms planned for the digital transformation of the public and private sectors should be favourable to the growth potential.

In Greece, the ICT sector represented 3.04% in gross value added in 2022 below the EU average of 5.46%. R&D spending in the ICT sector represented 25.34% of the total R&D business expenditures in 2022. R&D personnel in the ICT sector account for 34.51% of total employed R&D across the economy⁵, which is relatively high compared to other EU countries with a similar population⁶.

In the 2024 European Innovation Scoreboard, Greece is ranked as a 'moderate innovator'. Its performance has improved since last year's report but remains below the EU average. In 2024, Greece's start-up ecosystem continued to grow, but early-stage funding remained limited. However,

⁴ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

⁵ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025

⁶ Observation, in the absence of a figure for the EU average

overall in 2024, investors signalled their confidence in Greece's start-up sector despite global economic uncertainties.

In terms of sovereignty building, Greece is contributing to the European strategic autonomy with two projects for critical raw materials. In March 2025, the European Commission published a list under the critical raw materials regulation including two projects extracting and processing raw materials in Greece which are essential in technologies for digital transition and energy. As technology advances and threats evolve, Greece transposed the NIS2 Directive in 2024 and continues to develop its cybersecurity strategy.

Building technological leadership: digital infrastructure and technologies

Greece's gigabit connectivity infrastructure deployment has recently shown positive progress with good prospects of achieving the 2030 target, although challenges remain: slow fibre roll-out in sparsely populated areas and, overall, a level of VHCN coverage that is still below the EU average. However, recent announcements by various operators about significant investments in fibre optic networks across the country by 2027 are positive signs of this dynamism. At the same time, 5G networks' coverage in Greece is already almost reaching the 2030 target.

Connectivity infrastructure

Greece's very high-capacity network (VHCN) coverage stood at 46.06% in 2024, significantly lower than the EU average 82.49% but showing a growth rate of 19.9% outperforming the EU's 4.9%. For households in sparsely populated areas, the VHCN coverage was 0.00% in 2023 and rises at 3.26% in 2024 notably lower than the EU's 61.89%.

Greece's fibre to the premises (FTTP) coverage at 46.06% largely reflects total VHCN in absence of coaxial networks in the country. This result is lower than the EU average 69.24%, but with a growth rate of 19.9% significantly higher than the average EU growth rate at 8.4%. For sparsely populated areas, Greece's FTTP coverage was 3.26% in 2024 lower than the EU's 58.78%. In terms of subscriptions, the share of fixed broadband subscriptions of at least 100 Mbps services stood at 34.85% in 2024, lower than the EU's (71.88%) but showing a growth rate of 18.1% outperforming the EU's 9.1%. In 2024, 0.00% of households in Greece had a fixed broadband subscription providing at least 1 Gbps, while the EU average was 22.25%.

Greece's overall 5G coverage stood at 99.80% in 2024 higher than the EU's 94.35%. For sparsely populated areas, Greece's 5G coverage was 99.29% in 2024, significantly higher than the EU's 79.57%. In the 3.4–3.8 GHz band, Greece's 5G coverage in 2023 was already higher than the EU average. In 2024, the data confirmed the speedy deployment of this band, which enables advanced applications requiring a wide spectrum bandwidth, with 72.94% coverage higher than the EU's 67.72%. For sparsely populated areas, Greece's 5G coverage in this band was 6.21% in 2023 and grew extremely fast to 41.01% in 2024, while the EU average remains at 26.19% representing an exceptional growth rate of 560.4% in 2024, while the EU's 65.1%.

Regarding 5G spectrum, Greece was one of the few Member States to have assigned the harmonised 5G pioneer spectrum to a level of 99.17% since 2021. In 2025, this is still considerably higher than the EU average of 74.63%.

Greece remains committed to its national target of reaching 100% gigabit connectivity coverage by 2030 and the country is on track according to its national trajectory. The KPI result in 2024 is even slightly above the forecast made by Greece for that year in its national trajectories for both VHCN and FTTP, although the latest figures show a growth rate of 19.9% in 2024 compared to the annual growth rate observed last year of 37.9%.

In 2024, the regulator for the electronic communication market in Greece (EETT) made several regulatory interventions to ease the speed up the deployment of FTTH networks (e.g. decision on monthly fee for co-location and interconnection services. Regulatory measures taken by the regulator are also encouraging the FTTH uptake by allowing volume discounts for the use of the regulated fibre network.

With the recent entry of new operators on the market and major investment plans from all operators, rapid progress in the roll-out of FTTH network is expected. The incumbent plans to deploy fibre to 3 million households by 2027 (1.7 million households are already passed by representing 36% of the market). The Greek Public Power Company (DEI) has started the deployment of its own wholesale network, aiming to provide access to VHCN to 1.7 million households by 2025, is making substantial progress with the deployment of its FTTH network and is starting to promote retail FTTH offerings (internet access only).

In terms of simplification by digitalisation, the procedure and management of optical fibres' rights information system ([e-Dieleyxis](#)) is now operational and mandatory. Its purpose is to simplify and accelerate the licensing and monitoring processes for works related to the installation and maintenance of telecommunications infrastructure, reducing bureaucracy and delays. Furthermore, the automated approval process will be available to providers in second quarter of 2025, in the event of inaction by the relevant services following the approval deadline.

The copper switch-off plan in Greece is subject to a number of criteria increasing transparency and protecting access seekers and end users. EETT's data (as of 31/12/2024) indicate that more than 40 local exchanges, with more than 1 million subscribers, either fulfil or are very close to fulfilling the switch-off requirements.

In terms of addressing the digital divide, and due to the geographical challenges in Greece, the deployment of Fixed Wireless Access (FWA) is emerging as a bridging solution, and a strategic vehicle for socio-economic development.

Greece is undergoing a transformation into a major regional connectivity hub, with new submarine domestic and international interconnections, as well as new data centres, playing a key role in this process.

Greece continues to reinforce its digital infrastructure with the deployment of its submarine backbone infrastructure. The project 'High-speed Submarine Backbone for islands of the Aegean Sea' - [SEA-SPINE](#), co-funded by CEF-Digital (the digital part of the Connecting Europe Facility), will cover overall 563 km of submarine segments and 231 km of terrestrial ones interconnecting 11 islands by 2026. It will substantially increase network capacity and reduce network latency for critical applications. It will also protect telecommunications traffic by creating alternative connections. In December 2024, the telecoms provider Sparkle was granted EUR 14.1 million under the [Connecting Europe Facility](#) programmes, to deploy the BlueMed East in the eastern Mediterranean connecting

Greece (Crete), Cyprus and Israel (Tel Aviv), strengthening connectivity in the India-Middle-East-Europe Economic Corridor.

Rapid development of data centres in Greece by private and public actors is expected to significantly improve Greece's digital infrastructure by 2030. It responds to the growing demand for cloud infrastructure and data storage. Various data centres are currently operational, in the stage of permitting or in the final stage of construction in Spata and Koropi (Attika). The recently built data centre in Heraklion is the largest one in Crete in terms of capacity and will be utilised by most telecommunications providers in the Greek and international markets as one of their central telecom nodes (PoPs). It will also serve as a strategic landing station for submarine cables. In December 2024, DEI/PPC announced the first phase of a project involving an investment of EUR 150 million for infrastructure with a capacity of 12.5MW, with the prospect of expanding to 25MW. The project is currently being planned and permitted, with construction expected to begin in the first quarter of 2025, and completion of the first phase within two years. One of the big tech companies also started building its first data centre, and plans to install 3 data centres in Greece, as part of the GRforGrowth initiative. It will provide cloud services to private and public organisations.

2024 recommendation on connectivity infrastructure: Closely monitor the progress on the gigabit coverage to identify early enough any remaining investment gaps to reach the target for 2030.

Greece has fully addressed the recommendation by putting significant policy actions into place in 2024. A new measure with a budget of EUR 80 million, partially funded by the RRF, was launched in November 2024. The 'Gigabit voucher' provides a voucher of 200 EUR for two years to an expected number of 400 000 beneficiaries. This measure complements a previously reported one, 'Smart Readiness' which subsidises costs required to create the necessary infrastructure in the buildings and is expected to accelerate convergence towards the digital target.

In 2026, monitoring of progress on gigabit coverage will continue to identify remaining gaps, since currently the deployment is at full speed, with emerging actors on the market.

5G

Greece's 5G target was already set at 100% in the initial roadmap submitted end 2023. Given the excellent latest figure for 2024, with 99.8% 5G coverage, the country is on track according to its national trajectory, even well ahead of its forecast for 2025 as presented in its initial roadmap.

This success is because Greece was one of the first Member States to auction all of its 5G pioneer bands in 2020. Licensing of the 5G bands was already completed by January 2021. Some 900 and 1 800 licenses will be expiring in 2027. The switch-off of 3G has been completed by all three national operators. 2G is still in play - EETT has not imposed any switch off obligations.

EETT is monitoring the coverage of broadband services and the use of spectrum in all licensed mobile bands, based on data reported by operators. Results of measures on mobile broadband QoS (quality of service) indicators to be assessed in major cities and main national roads will be available in the second quarter of 2025.

In Greece, data usage is growing rapidly. This indicates a shift in consumer behaviour towards increased use of data services, approaching 15 GB /month per active subscriber according to the Greek Mobile Operators Association.

2024 recommendation on connectivity infrastructure: Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

Greece made some efforts to address the recommendation through new policy actions in 2024. The country is exploring the use of 5G network slicing for governmental purposes and evaluating the creation of 5G private networks across various verticals. This approach aims to unlock opportunities for SMEs while encouraging operators to accelerate the deployment of 5G standalone core networks.

In terms of use for radio spectrum licenses granted in 2020, in the frequency bands designated as pioneer 5G bands, 'Provision of Access to Vertical Market Enterprises' is included. In response to a request by an enterprise/entity operating in a vertical market, the radio frequency use rights holder shall negotiate with them in good faith regarding the provision of any type of access to its network (such as capacity leasing) or the leasing of frequencies. They must provide access on reasonable terms for their own use, subject to the rules protecting competition. To ensure this takes place as required, the EETT may also exercise its regulatory authority, as provided for in the applicable legislation.

Semiconductors

In the adjustment of its national roadmap, Greece did not report any additional developments regarding semiconductors. In 2024 public and private entities in Greece continued to implement cutting-edge projects related to research and development in semiconductors.

Edge nodes

According to the Edge nodes Observatory report, Greece is estimated to have 13 edge nodes by 2024, an increase on the seven estimated for 2023⁷. Greece emphasises that, in absence of direct survey inputs, this figure is based on extrapolated estimation generated through statistical modelling drawing on variables such as population, GDP, surface areas and investment data. It remains subject to updates as new data become available.

In the adjustment of its national roadmap, Greece did not report about additional developments to support the deployment of edge nodes across the country.

Quantum technologies

Greece continues to implement several strategic research projects included in the initial roadmap related to the development of quantum computing and quantum communication. The implementation of these projects is important for Greece, as the first national quantum strategy is under preparation. In particular, the Hellas QCI project (co-funded under the Digital Europe Programme), which runs from 2023, is positioning Greece at the forefront of quantum communications by developing a National Quantum Communication Infrastructure of a 650 km optical fibre network for secure telecommunications across Athens, Thessaloniki, and Heraklion (Crete) with Quantum Key Distribution (QKD) capabilities, that connect 13 governmental authorities and 6 academic and research institutions with the 3 Optical Ground Stations (OGSs) in Greece.

⁷ The estimation for 2023 has been revised since the publication of the SDDR24

In adjusting its national roadmap, Greece added two new projects related to the deployment of a European Quantum Communication Infrastructure (see below). Additionally, HellasQCI plans to expand via a terrestrial QKD link with Bulgaria and satellite-based connections with Cyprus, the Netherlands, Germany, Luxembourg, and Ireland to further enhance its cross-border integration.

2024 recommendation on semiconductors, quantum technologies, edge nodes: Develop additional measures in due time to accelerate the deployment of digital and data infrastructure and promote the use of digital capabilities and the access to digital technologies.

Greece has fully addressed this recommendation on quantum through new policy actions in 2024. Two additional projects reinforce the participation of HellasQCI in the broader EuroQCI Infrastructure. Greece is member of PETRUS, a project aiming at ensuring seamless integration of national QCIs into EuroQCI and reinforcing Europe's digital resilience. The NOSTRADAMUS project which started in 2024, aims to establish a robust environment for testing Quantum Key Distribution (QKD) and validate quantum-safe technologies before widespread development. **For semiconductors, Greece continued the implementation of existing measures, but did not take any new measures. For edge nodes, Greece has not communicated any measure to address the recommendation.**

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Greece shows relatively low levels of digital adoption of technologies among businesses, with the use of cloud computing, data analytics and artificial intelligence falling below EU averages. However, large enterprises consistently reported higher adoption rates than SMEs, although the gaps between these groups were generally smaller than the corresponding EU level gaps. The start-up ecosystem in Greece shows a positive trend with a growing number of new start-ups, and venture capital 15% up on last year.

SMEs with at least basic digital intensity

In 2024, over half (53.42%) of Greek SMEs had at least a basic level of digital intensity, significantly up from 41.21% in 2022⁸ and with an impressive annual growth rate of 13.9% (5 times more than the EU average annual growth). However, although this marked substantial progress, Greek SMEs' digital intensity remained considerably below the EU average of 72.91%. Moreover, looking at the SMEs with high or very high digital intensity, only 18.75% of SMEs reached such a level, well below the EU average of 32.66%.

Greece has not revised its national target initially set at 79.7% of enterprises having at least a basic level of digital intensity by 2030 (below the EU 2030 of 90%). The reason explained in the roadmap adjustment is linked to the characteristics of the Greek business ecosystem which has a particularly high share of solo and micro enterprises with less than 10 employees. Although they are not measured in the EU survey on ICT usage (the source for the KPIs on digital transformation of businesses), they are at the core of Greece's digitalisation strategy, also benefitting from the measures in place for the digital transformation of enterprises in the country. However, Greece further examined the implementation of the on-going flagship measures that contribute to this target, to monitor progress and potentially review the target.

⁸ DII performance and progress (due to DII composition: progress is calculated between 2022 and 2024)

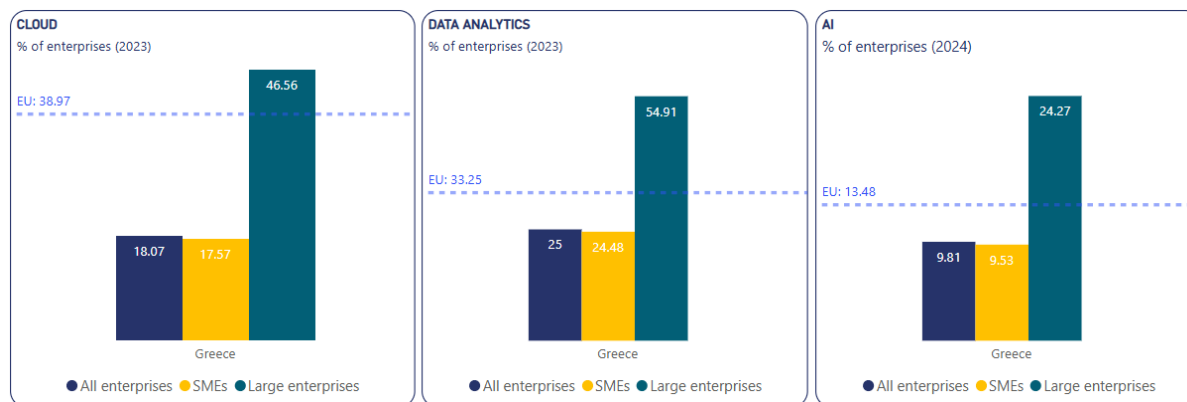
In 2024, Greece continued to implement the flagship measure ‘Digital Tools for SMEs Programmes’ included in the initial roadmap and supported by the RRF. The first phase was completed in September 2024, with a budget of EUR 97 million. The total budget for the measure is EUR 135 million. The programme provided subsidies to 46 000 enterprises in Greece. However, almost 40% of the subsidies (EUR 38 million) was allocated to 38 000 micro enterprises (80% of the total participating companies), i.e. companies which are not included in the measurement of the Digital Decade KPI for SMEs with at least a basic level of digital intensity (10-249 employees).

2024 recommendation on digital transformation of businesses: Consider reinforcing the framework conditions to enable less digitally mature SMEs to adopt digital transition.

Greece made some efforts to address the recommendation through new policy actions in 2024. Two additional measures to enhance the creation and operation of new SMEs have been planned to start in 2027, part of the total budget estimate will be dedicated to enterprises integrating digital technologies.

In 2024, Greece was home to seven European Digital Innovation Hubs (EDIHs) in total, which are contributing to the strategy for uptake of digital technologies by businesses. Four of them, financed at a 50% rate by the Digital Europe Programme, are already operational, offering services such as digital maturity assessment diagnostics to a majority of micro and solo enterprises in the country. The EDIHs also offer services like ‘Test before invest’, allowing SMEs and public sector organisations to experiment with AI services and products and assess the potential of those before investing.

Take up of cloud/AI/data analytics



According to new data collected in 2024, 9.81% of enterprises in Greece were using AI technology in 2024, still behind the EU average of 13.48%. Nonetheless, AI uptake among Greek enterprises more than doubled compared to 2023 (3.98%). At the same time, in 2024, among SMEs, the uptake rate was 9.53%, while 1 out of 4 (24.27%) large enterprises adopted AI technologies. This led to a gap of 14.74 percentage points (pp) between SMEs and large enterprises, considerably lower than the EU gap of 28.53 pp.

Neither the adoption of cloud, data analytics nor the indicator showing the three technologies (AI, cloud and data analytics) have been measured in 2024.

According to the latest available data from 2023, cloud uptake among enterprises in Greece in 2023 stood at 18.07% (less than 1 out of 5), significantly below the EU average of 38.97%. Specifically, 17.57% of SMEs adopted cloud services, while uptake among large enterprises was significantly higher

at 46.56%. This reflects a difference of 28.99 percentage points between SMEs and large enterprises in Greece, lower than the EU level gap of 31.68.

Considering data analytics, 25% of enterprises in Greece adopted data analytics in 2023, falling behind the EU average of 33.25%. The uptake was lower among SMEs, where slightly less than 24.48% used data analytics, while more large enterprises used data analytics (54.91%). This resulted in a difference of 30.43 percentage points between SMEs and large enterprises, lower than the EU gap of 39.72 percentage points.

When measuring the three technologies together, in 2023, 33.52% of enterprises (1 out of 3) in Greece engaged with AI technologies, sophisticated or intermediate cloud computing services, or data analytics, showing a significant lag compared to the EU average of 54.7%. More specifically, the uptake among SMEs was slightly lower at 32.92%, while large enterprises showed a significantly higher adoption rate of 68.11%. This indicates a percentage point difference of 35.19 in uptake between SMEs and large enterprises in Greece, which is in line with the EU level difference.

- [Cloud](#)

Greece has not revised its national target initially set at 56% of enterprises using cloud services by 2030 (below the EU 2030 target at 75%) for the same reason mentioned above. In its roadmap adjustment, Greece does not present any additional measures specifically to foster the adoption of cloud. However, the broad measures to support the digital transition of SMEs include the uptake of advanced technologies such as AI, cloud, data analytics.

- [Data Analytics](#)

Greece has not revised its national target (initially set at 40%) for enterprises using data analytics by 2030 (below the EU 2030 target at 75%). However, as the result of last year exceeded the projected forecast in the national trajectory, Greece is currently evaluating the trend for a potential revision of the target.

In its roadmap adjustment, Greece does not present any additional measures specifically to foster the use of data analytics. However, it is currently working on data governance and sharing practices in view of accelerating AI innovation. The broad measures to support the digital transition of SMEs include the use of advanced technologies such as AI, cloud, data analytics.

- [Artificial Intelligence](#)

Greece has not revised its national target initially 32% of enterprises adopting AI by 2030 (below the EU 2030 target at 75%). The country is on track according to its national trajectory.

The adjustment of the roadmap includes major new initiatives for developing AI in Greece.

2024 recommendation on digital transformation of businesses: consider reinforcing the framework conditions to enable (i) all enterprises to benefit from the data economy by a rapid adoption of advanced technology (AI, cloud, data analytics) as a competitive advantage.

Greece made some efforts to address the recommendation through new policy actions in 2024.

In November 2024, a high-level committee published a blueprint for Greece's AI transformation and will be the basis for the new AI strategy in preparation. This initiative aspires to establish Greece as a competitive force in the AI domain while balancing technological progress with ethical responsibility and societal well-being. It includes a special chapter on how AI can boost innovation and enhance the business ecosystem.

Greece will host one of the first AI Factories in Europe which will be the centre of the AI strategy. The 'Pharos' project will serve as a hub for academia, research, the public sector, and private enterprises, aiming to develop innovative AI-driven services. The project has a total budget of EUR 30 million, funded 50% by the EuroHPC Joint Undertaking and 50% by national resources. The project is scheduled to commence in March 2025, with a total duration of 36 months.

Strategic foresight research on the use of GenAI was published early 2024. It is accompanied by series of discussions and videos addressed to citizens and businesses to open the discussion and help understand the potential of using AI.

The 2025 Eurobarometer shows that 82% of respondents in Greece think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values, in line with the EU average of 83%.

The Ministry of Digital Governance liaised with the [CISERO project](#), launched in September 2024, in support of the IPCEI-CIS to ensure the wide-scale adoption and exploitation of the technologies developed under IPCEI-CIS. CISERO will facilitate collaboration between Member States, companies, research organisations, and public authorities to ensure investments made in cloud and edge infrastructures yield tangible benefits for Europe's digital future.

Unicorns, scale-ups and start-ups

At the beginning of 2025, Greece had three unicorns⁹ the same as in 2024. Greece had set a very ambitious national target of 20 unicorns by 2030 to contribute to the achievement of the EU target 2030.

In 2024, Greece's start-up' ecosystem continued to grow with sectors like AI and health tech among those most funded. The official platform built in 2020 by the Ministry of Development, [Elevate Greece](#), acting as the national registry of start-ups, includes over 930 start-ups¹⁰ (up from 820 last year) in line with the objective of reaching 1 000 start-ups by the end of 2025. The country has the advantage of a highly skilled English-speaking workforce and an IT sector that is developing rapidly.

Greece had 16 venture capital (VC) funds active, in 2024 with an increase in investment of 15% compared to previous year. In the same time, the European ecosystem showed a slight drop of 5% according to the '[Startups in Greece, Venture financing report 2024-2025](#)'. But access to VC remains difficult, especially in early-stage funding, compared to other ecosystems in Europe.

⁹ Source: Dealroom (January 2025)

¹⁰ On 01/04/2025

The newly launched project for AI Factory in Greece will also provide AI-dedicated supercomputing services in support of the AI start-up and research ecosystem. It will provide large-scale training and development, trustworthy and ethical AI models and systems, and AI user communities for the development, validation and running of emerging AI applications. The AI Factory will also foster talent development. The newly created AI-Factory with a focus on health data utilisation, climate change mitigation, and fostering a Greek language model is fully part of the digital transformation strategy implemented by the government.

Other sectorial initiatives also promote the creation of start-ups in Greece, such as the European Space Agency's business incubator (ESA BIC Greece). This will contribute to a strategic ecosystem that will benefit Europe's sovereignty, with the ESA BIC being part of the world's largest space innovation network.

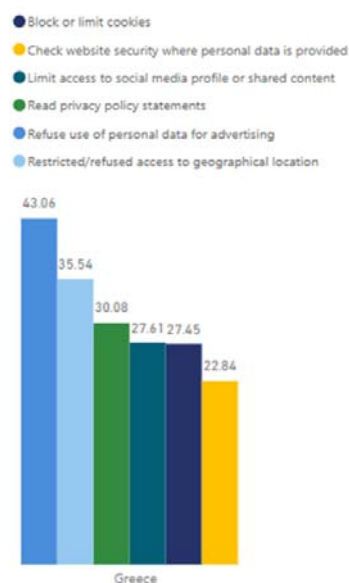
In terms of business environment, Greece introduced tax incentives for innovation and business transformation¹¹ in December 2024. As of 2025, enterprises will be able to deduct costs for R&D paid to start-ups or university research centres. Micro enterprises and SMEs will also be able to deduct costs for scientific and technological research under certain conditions. Investment incentives are also planned for angel investors, to foster innovation and start-ups creation.

Strengthening Cybersecurity & Resilience

In Greece, 2 out of 3 people have at least basic digital safety skills. 66.03% of individuals reported they had taken at least one action (see the six types of digital safety actions in the graph's legend) to protect their personal data online, just below the EU average of 69.55%. A relatively smaller share, 1 out of 3 (33.16%), took three or more such actions (and therefore could be considered to have above basic digital safety skills). The most frequent measure was refusing the use of personal data for advertising purposes, taken by 43.06%, while the least common was checking the security of websites where personal data was provided, reported by 22.84%.

Enterprises in Greece tend to experience more incidents related to cyberattacks in 2024. The percentage that experienced incidents leading to unavailability of ICT services due to attack from outside (e.g. ransomware, denial of services attacks) increased to 6.2%, compared to 5.6% in 2022. On average in the EU only 3.4% of enterprises reported they had experienced cybersecurity incidents, practically the same level as in 2022 (3.5%). But in terms of incidents leading to destruction or corruption of data (e.g. due to infection of malicious software or unauthorised intrusion, hardware or software failure), the enterprises in Greece reported fewer incidents (3.5%) than the EU average (5%). As regards countermeasures taken by enterprises, 71.8% of them deployed some cybersecurity measures

Type of activities to protect personal data online (% of individuals)



¹¹ Law 5162/2024

(lower than the EU average of 92.8%), but only 31.7% made their employees aware of their obligations regarding cybersecurity-related issues, significantly below the EU average (60%).

The adoption of new internet standards to ensure scalability, stability and security of the internet presents a mixed picture in Greece. By the third quarter of 2024, 53% of internet hosts in Greece had already deployed the latest version of the Internet's main communication Protocol version 6 (IPv6) for end users (significantly higher than the EU average 36%). Regarding protection for servers, at 24% Greece is also higher than the EU average 17%. However, the adoption of Domain Name System Security Extensions (DNSSEC) to protect the integrity of the Domain Name System (DNS) internet infrastructure (ensuring interoperability and the security of global cyberspace) is low in Greece - 19% compared to the EU average of 47%.

Greece transposed the NIS2 directive¹² into national legislation on 28th of November 2024¹³. In the coming months, several measures will continue to be deployed to facilitate the implementation of NIS2. The National Cybersecurity Authority (NCSA) established in 2024, as the supervisory authority for cybersecurity, is the NIS2 competent authority and single point of contact responsible for cybersecurity and for the supervisory tasks referred to in the Directive. In this context, it oversees the development, implementation and monitoring of the cybersecurity strategy which will be updated by the third quarter of 2025 to consider the new landscape of cybersecurity and better monitor the supply chain security. According to the Digital Decade Eurobarometer 2025, 88% of the respondents in Greece think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies.

To address the cybersecurity skills shortage in the EU, Greece is leading on the creation of a Cybersecurity Skills Coalition in collaboration with other Member States to create a European digital infrastructure consortium (EDIC). The objective is to support the implementation of the Cybersecurity Skills Academy initiative¹⁴ and boost capacity building and resilience for public authorities, industries, and SMEs across EU Member States. Both EU and national resources—through co-financing by the Digital Europe Program and national funds—have already been allocated to cybersecurity skills development projects, such as CADMUS and AKADIMOS, which are currently under implementation.

¹² EE 2022/2555

¹³ Law 5160/2024

¹⁴ COM(2023) 207 final

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

In its digital transformation, Greece faces a challenge in developing digital skills for all which could slow down inclusion in the digital society. Significant gaps between different population segments can be observed. The lack of ICT specialists in employment also represents a barrier to digitalisation. Greece continues to actively implement its strategy of transformation for public services and businesses, although it is showing a slowdown in its annual progress rate. It has notably included AI technologies in the transformation of public services. According to the 2025 Eurobarometer, 88% of the respondents in Greece think that accessing public services online will be important for their daily life by 2030. The country also recently presented its strategy to protect minors online, for which the development of the Greek Wallet will play a role.

Equipping people with digital skills

Basic Digital Skills

According to data from 2023, only 52.40% of the population (age 16-74) in Greece had at least basic digital skills compared to the EU average of 55.56%, showing no progress since 2021. Despite the lack of new data collected in the EU in 2024, an analysis of different population groups provides interesting insights:

- **Gender Gap:** The gender gap in Greece is small, with 53.15% of men and 51.67% of women possessing at least basic digital skills. This gap of 1.48 percentage points is smaller than the EU average of 2.2 percentage points.
- **Education Level:** Those with higher education in Greece are doing well digitally, with 83.19% having at least basic digital skills, which is higher than the EU average of 79.83%. However, people with minimal formal education are much less digitally skilled, with just 20.14% having at least basic digital skills. Comparing with the national average, the resulting gap of 32.26 percentage points is wider than the EU average (21.95pp).
- **Living Areas:** In rural Greece, only 36.04% of residents have at least basic digital skills, falling below the EU average for rural areas (47.50%). The digital divide in Greece is significant, with a 16.36 percentage point gap between rural and national averages, which is much larger than what is seen across the EU (8.06pp).
- **Age Groups:** Greece's young adults aged 25 to 34 are digitally proficient, with 79.46% having basic digital skills, surpassing the EU average (70.18%). In contrast, only 12.84% of 65 to 74-year-olds have at least basic digital skills, considerably lower than the EU average in this age group (28.19%).

Digital Skills Index components: Out of the five components of the Digital Skills Index, Greece surpasses the EU average only on 'information and data literacy' skills. The highest score is seen in communication and collaboration skills (82.30%), but this is still below the EU average (89.33%). The lowest score is in digital content creation skills at 63.46%, also below the EU average (68.28%).

In summary, Greece shows a mixed picture in its population's digital skills, with some strengths observed in those with higher education and, overall, a smaller gender gap, proportionally. But significant challenges remain, especially a severe digital divide in terms of education, with only 20.1% of people with a lower level of education having at least basic digital skills. A rural-urban divide, and an age-group divide are also observed.

Digital Skills Index components
% of individuals



Greece's target for the population share with at least basic digital skills is 70.2%, below the EU target 2030 (80%). In the adjustment of its roadmap, the target was not revised but additional action is included to help improve the situation and align the country with the Digital Decade objectives. The country also continues to implement the broad initiatives foreseen in the roadmap, notably the digital transformation of the education system. Enhancing basic digital skills for everyone is crucial for the Greek government. Many RRF investment measures will also enhance people's digital skills, with a large reform of the vocational and education system with a focus on digital and green skills.

2024 recommendation on digital skills: Review and consider whether additional targeted measures to train the population are sufficient to reach the target, boost the resilience of the economy and society and achieve inclusive growth.

Greece made some efforts to address this recommendation through new policy actions in 2024. Two additional measures for the 'development of digital content in schools', and for 'upgrading the digital information system for primary and secondary education' have been added in the roadmap. It aims to contribute to the digital reform of the education system by creating an open and innovative digital education model in Greece.

By integrating digital skills into school curricula and ensuring access to technology and the internet across both urban and rural areas, Greece aims to prepare its citizens for jobs in today's digital world. It's not just about learning to use technology, but also understanding how to find reliable information online and communicate effectively using digital tools. This includes teaching people how to use computers and the internet safely and effectively. Through collaboration with businesses and community organisations, the country strives to ensure that everyone, regardless of their location or background, can acquire these essential skills, thereby fostering economic growth and success in the digital society.

ICT specialists

Greece has 2.5% of ICT specialists in employment in 2024, significantly below the EU average (5.0%) with a similar growth rate to the EU's (4.2%). The country is lagging behind compared to its national trajectory. In 2023, the percentage of ICT specialists in total employment in Greece was 2.4%, compared to the EU's 4.8%.

The percentage of women ICT specialists in Greece (19.8%) in 2023 was slightly higher than the EU average (19.4%). However, by 2024, this figure had decreased to 16.0%, below the EU's 19.5%. This suggests that Greece is not effectively retaining or attracting female talent in digital career and ICT sector. In 2022, the percentage of enterprises employing 10 persons or more providing training in ICT in Greece was 13.44%, significantly lower than the EU's 22.37%. By 2024, this figure had slightly decreased to 13.27%, while the EU's percentage also decreased to 22.29%. Greece's annual growth rate of -0.6% for this metric is lower than the EU's -0.2%.

Greece's target for ICT specialists is 4.5%, below the 2030 EU target (10%). In the adjustment of its roadmap, Greece has not revised the target but has added additional measures to develop the pipeline of ICT talent. The roadmap adjustments also present a monitoring of other parameters that have an impact on the share of ICT professionals, such as ICT graduates and demand on the labour market.

In terms of demand from the labour market, Eurostat's experimental statistics based on web scraping show that in Greece, the profiles of 'software and applications developers and analysts' are the most sought after, representing 49.1% of online job advertisements for ICT specialists (58.0% at EU level). Two types of profile are significantly more in demand in Greece than in the EU in average: 'information and communications technology service managers' (7% of online job advertisements for ICT specialists; EU average 3.8%) and 'information and communications technology operations and user support technicians' (13% while the EU average is 10.4%). The profile of 'database and network professionals' (11.6% of online job ads) is also above the EU average (10.1%).

Increasing the number of ICT specialists remains admittedly one of the biggest challenges faced by Greece in its digital transition. The country has been confronted with an unprecedented 'brain drain' during the economic crisis, and finding and retaining talent is of particular importance while also fostering an entrepreneurial mindset through education and training. Greece set up the '[Rebrain Greece](#)' initiative, a mechanism to give visibility to Greek talents abroad, who would have the high skills looked for by businesses in Greece, which include the ICT sector. The platform publishes highly specialised posts encoded by businesses in Greece using the European multilingual classification of Skills, Competences and Occupations (ESCO). Furthermore, official data from the Mechanism of Labour Market Diagnosis regarding ICT professionals indicate increasing demand for ICT professionals, with a prevalence for software and multimedia developers and analysts.

Primary and secondary education constitute a critical stage in motivating children towards obtaining an ICT degree. Therefore, enhancing digital skills of pupils as early as possible gives them a higher chance of becoming ICT professionals. To this end, the Ministry of Education, Religious Affairs and Sports, in cooperation with the Institute of Educational Policy, has launched a comprehensive package of measures aimed at enhancing digital skills for pupils in Greece and orientating them towards ICT-related degrees.

2024 recommendation on ICT specialists: Reinforce the strategy and the measures to increase the number of ICT specialists and retain the best talents.

Greece fully addressed the recommendation by putting significant policy actions into place in 2024. Greece added four additional measures to develop the pipeline of future ICT talents by giving children an early access to digital technology with (i) the project for Skills Workshops: robotics and STEM-supply of robotics and STEM equipment for kindergartens, primary and secondary schools to become familiar with programming and robotics. (ii) 'Competence Labs - 21+ Skills Workshops' which aim to develop skills necessary for the 21st century for students including STEM,

entrepreneurship, creative thinking; (iii) digital library of teaching material for all levels; (iv) supply and installation of interactive learning systems in primary and secondary schools.

Greece also added a measure aiming at having more ICT graduates with the Schools of Advanced Vocational Training (SAEK). Until 2024 there were no programme in Greece covering ISCED 5 (short-cycle tertiary education) - a 2-year adult post-secondary vocational education training (VET) that, among others, offers 9 professional graduate qualifications in ICT.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

For digital public services for citizens, in 2024 Greece scores at 76.72, below the EU average of 82.32, with a growth rate of 1.1%, significantly lower than the EU's 3.6%. The country is on track according to its national trajectory. For cross-border digital public services for citizens, Greece scored 60.71 in 2024 below the EU's 71.28, with a growth rate of 3.7%, lower than the EU's 4.3%.

For digital public services for businesses, Greece's score in 2023 (86.20) was higher than the EU average (85.42), but it dropped to 78.64 in 2024, below the EU's 86.23. The country is on track according to its national trajectory. For cross-border digital public services for businesses, although Greece's score was 75.83 in 2023, it dropped to 62.5 in 2024, significantly lower than the EU's 73.76. This decrease is partially related to the introduction of new services related to the Single Digital Gateway regulation (SDGR) in the e-government survey in 2024, which were not yet found online. This lowered the average score of the KPI on digital public services for businesses. Additionally, some corrections have been made compared to last year's assessment, which have also had an impact on the average score. However, since 2021 constant and significant progress have been made in the digitalisation of public services progressively closing the gap with the EU average.

Regarding access to e-health records, Greece's score in 2024 remains the same as in 2023 (73.81). This is widening its gap to the EU average (82.70), which has grown by 4.5%. The country is on track according to its national trajectory. This lack of apparent progress can be explained by the fact that while there is ongoing activity in the background, it has not yet been implemented in full to allow conditions on the ground to change and to be factored into the score. This does not necessarily mean no change, just that these changes may not materialise until a future date.

In 2024, the percentage of people who had used the website or apps of Greek public authorities in the last 12 months (76.25%) remains above the EU average (74.71%).

e-ID

Greece has not yet notified the European Commission of an electronic identification scheme under the eIDAS regulation. However, the country is currently issuing IDs for its citizens, which will include a unique 'personal number', planned to be the basis of the eIDAS scheme. By end of 2024, 1.5 million ID had been issued. Given that Greece has 6.5 million adult citizens, a system of automating the process and reducing the service time has been put into place by the Ministry of Digital Governance.

In its roadmap adjustment, Greece added one new measure to continue to upgrade and expand the Greek Gov.gr Wallet.

2024 recommendation on e-ID: Greece should notify to the Commission an e-ID scheme under the eIDAS Regulation

Greece made some efforts to address the recommendation through new policy action in 2024, however, the country has not yet notified the European Commission about an electronic identification scheme under eIDAS. A new e-ID infrastructure and the integration with Gov.gr Wallet and the new ID cards started in 2024 (budget EUR 15.8 million). The project aims to enhance the digital identification and authentication for citizens. New actions for digital services, documents and data standards will be needed for integration, facilitating the secure and efficient interaction between citizens and the state and private entities. The compliance with the European eIDAS 2.0 and EUDI Wallet standards is foreseen in the project which will run until 2026, but it is not clear under which e-ID scheme of assurance level high will be issued.

Greece and Cyprus are cooperating so that Cypriot identities and documents are recognised and identified in each country as equivalent to national documents. The country is working and planning to pre-notify in due time.

Greece is also participating (with ten public and private entities) in the consortium 'Advanced Project for Trusted Identity Technologies and Unified Digital Ecosystem' (APTITUDE), that will pilot the usage of EUDI Wallets. The project focuses on advancing the use of wallets in 4 use cases: payments, mobile vehicle registration certificates, digital travel credentials, and tickets and travel check-in. Led by France, APTITUDE will involve strong public and private engagement across 11 Member States and Ukraine, bringing together over 110 participating bodies. Greece is also participating in the consortium [WE BUILD](#) dedicated to deploying 13 high-impact use cases to develop production-ready solutions for the EU Digital Identity Wallet, and jointly led by Sweden and the Netherlands.

Digitalisation of public services for citizens and businesses

Greece still aims to reach a score of 100 for the digitalisation of public services for citizens and businesses, in line with the 2030 EU targets. In its roadmap adjustment Greece did not add additional measures, but it continued to implement the very broad strategy for digital transformation in the public sector and public services, including reforms and investments supported by the RRF. The Ministry of Digital governance continued to develop and add services on Gov.gr, the national portal for online public services with more than 2 100 services online by end of March 2025.

Greece is starting to use advanced digital technologies in the transformation of its public services. A European Digital Innovation Hub (EDIH) dedicated to the Digital Governance - GR digiGOV-innoHUB - is supporting the development of public services based on advanced digital technologies (AI, ML, IoT, Blockchain, HPC), while enabling SMEs and start-ups to pilot innovative solutions.

In early 2025, Greece launched a new digital platform to simplify the licensing process for businesses. The new system, OpenBusiness, is a vector for simplification relieving the administrative burden and reducing the costs and time involved in establishing and operating a business, thereby improving the services to business.

e-Health

Greece still aims to reach a score of 100 for access to medical records, in line with the 2030 EU target. Currently the country is implementing several projects to digitalise its health sector. In particular, the measure for the digital transformation of the health sector included in the initial roadmap, and funded

by the RRF, is expected to contribute to the KPI by the end of 2025, with potentially effects on the measurement of the KPI in 2026.

According to the Digital Decade Eurobarometer 2025, 86% of the respondents in Greece think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) during their daily life by 2030.

In its roadmap adjustment, Greece added one measure with a budget of EUR 19.06 million (described below). Furthermore, the project 'National Electronic Health Record' (EHR) included in the initial roadmap shall be enriched with the pathology laboratories by the end of December 2024. It will also benefit from data coming from the new measure added in the roadmap adjustment and described below.

2024 recommendation on e-health: (i) Make the data types of medical imaging reports and medical images available to people through the online access service, (ii) Ensure that the online access service complies to web accessibility guidelines.

Greece has fully addressed the recommendation through new policy actions in 2024. Greece added a new measure for the 'Installation of RIS/PACS systems and transcription of medical acts and opinions in public hospitals and Primary Health Care (PHC) structures of the country'. Once implemented, the medical imaging reports and medical images will be available to doctors and citizens. The implementation plans to integrate 88 hospitals into the system by December 2024. And the last 22 hospitals by May 2025. Furthermore, a new data portal is being prepared to have the metadata of all available health data under the National Single Information Point of the Data Governance Act.

Building a safe and human centric digital environment and preserving our democracy

The data on online participation in political and civic life in Greece shows this has grown recently. In 2024, 28.37% of people used digital tools to participate in the democratic life, such as taking part in online consultations or voting on civic or political issues and expressing opinions on civic or political issues on websites or in social media. This share is much higher than the EU average (20.45%). It also shows a rapid trend upwards compared to 2022 (18.28%) which was slightly above the EU average (17.59%).

At the same time, the percentage of people encountering hostile and degrading online messages in Greece is significantly below the EU average. Data shows that in 2023, in Greece, 25.73% of individuals encountered such messages (based on factors such as religion, racial origin, or disability). This figure was significantly below the EU average of 33.5%. Young people (group age 16-24) reported higher exposure (39.03%) than adults in the group aged 25-64 (27.39%). In turn, men (26.07%) and women (25.40%) reported very similar exposure rates, indicating minimal gender-based variation.

Regarding disinformation, the percentage of people evaluating data, information and digital content is significantly lower than in the rest of the EU. In 2023, 34.55% of individuals in Greece stated that they had encountered untrue or doubtful information or content on internet news sites or social media, significantly lower than the EU average of 49.25%. Of those who reported coming across such content, only 18.66% verified its truthfulness, suggesting relatively low engagement in verifying the

reliability of information. Young people (age group 16-24) (41.58%) reported higher exposure than adults (age group 25-64) (37.77%), and their verification rates also differed slightly, at 25.49% for youth and 20.18% for adults. Males (35.77%) and females (33.36%) reported similar levels of exposure, with verification rates being almost equal, at 19.06% for males and 18.28% for females.

The 2023 data on online interactions in Greece reveals a relatively low prevalence of perceived hostile and degrading online messages, with rates below the EU average. Similarly, a lower-than-EU-average proportion of individuals in Greece encountered potentially misleading information online, although only a relatively small proportion of them verified its accuracy. Overall, these findings suggest that Greece presents a more positive picture in terms of online interactions compared to EU trends. Nevertheless, there is still room for improvement, and for continued efforts to promote digital literacy and critical thinking, to further enhance online engagement and information evaluation skills.

In the adjustment of its roadmap Greece presented the new national strategy ‘Protecting minors from internet addiction’ launched in March 2025. The strategy seeks to provide children and minors with a trustworthy online environment where they are given the same rights as everywhere else in their lives. It includes priorities addressing algorithmic addiction, educational and informational initiatives, and the development of protective measures and mechanisms for minors.

Alongside this strategy, Greece is preparing the launch of a ‘Kids Wallet’ to verify user’s age and reinforce the protection of minors online. The app will determine the age of the child based on the Greek civil registry which represents a tighter security. This project is in line with the priority of the Commission to reinforce protection of minors online, included in its action for digital fairness.

In April 2024, the platform stop-bullying.gov.gr was launched for the prevention and response to violence at school. It enables incidents of domestic violence and bullying to be reported by parents or pupils. It is based on the law ‘We live together in harmony - Breaking the silence’¹⁵ which provides regulations for the prevention and treatment of violence and bullying in schools.

According to the Digital Decade Eurobarometer 2025, people in Greece strongly think that the action of the public authorities is urgent to protect children online regarding the negative impact of social media on children’s mental health (97% of respondents), cyberbullying and online harassment (96%) and to put in place age assurance mechanisms to restrict age-inappropriate content (97%).

In June 2024, to comply with the Digital Services Act (DSA), EETT issued a regulation on the operation of the registry of intermediary service providers. EETT, in its capacity as national Digital Services Coordinator, will handle the registry of all domestic providers (such as hosting providers, online platforms, and online search engines) which must be registered by October 2024.

¹⁵ Law 5029/2023 (A55)

Leveraging digital transformation for a smart greening

Greece is active in developing renewable energy to reduce the energy costs and with the objective of becoming self-sufficient. In 2024, renewables production (wind and solar) covered almost half of the country's electricity needs. Given the increasing energy consumption by digital infrastructure, such as data centres and the need to reduce the related environmental impact of the digital sector, Greece is taking some actions to address the environmental impact of digital transition and digital infrastructure. In particular, the government actively stimulates private investments in green data centres and edge computing. The Ministry of Digital Governance also launched an initiative with the Greek independent energy operator to create the first energy map for data centres to optimise the distribution of renewable energy.

The Ministry of Digital Governance is promoting efficient coding to reduce the energy consumption. It organised a workshop in 2024 on software quality assurance, with an environmental dimension to evaluate the programming results. Based on the decision on Green public Procurement in 2024, Greece issued recommendations for its public services. Furthermore, the General Secretariat of Information Systems and Digital Governance of the Ministry of Digital Governance (GSISDG) is preparing a set of guidelines for the efficient implementation of public services considering the computational power required for operations and, therefore, energy consumption requirements.

A national action plan for Green and Innovative public procurement has been prepared by the General Secretariat of Commerce of the Ministry of Development. In this regard specific guidelines have been produced for public sector bodies. According to the Digital Decade Eurobarometer 2025, 75% of the respondents in Greece consider digital technologies important to help fight climate change (slightly above the EU average of 74%). 82% answered that ensuring that digital technologies serve the green transition should be an important action for the public authorities, also above the EU average of 80%.

According to Eurostat, in 2024, in Greece, one person in four (25.44%) considered energy efficiency to be an important characteristic when buying ICT devices, while the EU average is only at 19.35%. The eco-design of the device is also more important for consumers in Greece (17.71%) than in the EU on average (12.04%). However, price remains by far the most important criteria for 68.78% of buyers in Greece well above these two eco-friendly criteria. In terms of recycling, people in Greece tend to recycle their old mobile or smartphone much more (24.63%) than the EU on average (10.93%). As regards enterprises' awareness and preparedness about the green aspects of their digital sector, half of those with 10 or more employees (50%) apply some measures, affecting the energy consumption of ICT equipment, while in the EU the average only 44.1%. Recycling of old equipment by enterprises is slightly lower in Greece (72.6 %) than the average in the EU (77.4%).

In 2024, the national telecom regulator (EETT) published a [study on the sustainability of the ICT sector in Greece](#) with a focus on telecoms networks. Although the EETT's remit does not include the environmental sustainability of electronic communications networks and services, it follows the work of the BEREC working group on sustainability. And the study is part of EETT's actions to improve the development and competitiveness of the Greek market, while contributing to the goals of the European Green Deal (climate neutrality by 2050). The study examines the carbon footprint of ICT in

the Greek market, with a focus on telecoms networks, and provides suggestions on policy actions towards mitigating this.

2024 recommendation on green ICT: (i) Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular datacentres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.

(ii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

Greece has made some efforts to address the recommendation through new policy actions in 2024. Additional measures included in the adjustment of the roadmap help to better assess the impact of the ICT sector on energy consumption and propose solutions for the public sector in optimising its consumption, such as the development of an energy map of data centres; green procurement guidelines for public services, and optimisation of coding and use of information system (described above).

However, the roadmap adjustment does not display measures to support deployment of digital technologies for smart greening in additional sectors of the economy (e.g. transport, buildings, agriculture)

Annex I – National roadmap analysis

Greece's national Digital Decade strategic roadmap

Greece submitted adjustments to its national Digital Decade roadmap on 17th January 2025 with specific follow-up actions to the country recommendations made in 2024. It includes 16 additional measures and an in-depth analysis of the situation. The updates align with the new Commission's priorities on AI; deployment of submarine cables to increase the resilience of the backbone; joining forces in developing capacities in edge tech such as quantum, and on the protection of minors online. However, the adjustment lacks additional targeted support to address the current shortfall of ICT specialists in employment, while new measures to build a strong ICT talent pipeline have been included in the adjustment.

The roadmap's adjustment addresses a substantial number of recommendations issued in 2024:

Targets: consider in due time reviewing all the national targets that are not aligned with the EU's 2030 targets, and in particular the take up of cloud, data analytics and AI by enterprises, the target which is currently low on ambition.

- The adjustment presents a detailed analysis of the rationale for setting this national target. It will serve as a tool to track the progress of each indicator against the forecast, and eventually revise the targets which are currently low on ambition compared to the 2030 EU target.
- Greece also added two new measures planned for encouraging the creation and operation of SMEs, after the end of the current flagship's measures in 2027. The precise arrangements are still to be defined.
- On AI uptake: the new Greek AI-factory will create an ecosystem helping to develop innovative AI-driven services and play a crucial role in fostering the growth of and ongoing support for an innovative and competitive ecosystem of start-ups and SMEs.

Measures: review and reinforce the strategy and measures to contribute to the targets that are the most challenging to reach, such as digital infrastructure, ICT specialists.

- Digital infrastructure: Four new measures were added contributing to the strategy for digital infrastructure: (i) one measure to incentivise the take-up of fibre connection, adding to an existing measure for incentivising the development of the cabling to the house; (ii) a broad project of submarine cable to extend the fibre optic network to several islands; (iii) two new measures to support the deployment and testing of quantum communication infrastructure jointly with other Member States.
- ICT specialists: five measures to stimulate young people's eagerness for ICT technology and reinforce the pipeline of potential ICT students. No targeted measures to address the current lack of ICT specialists in employment has been added.

Measures: review and reinforce the strategy and measures to contribute to the targets that have a low level of ambition, the take-up of cloud, data analytics and AI by enterprises.

- The creation of the Greek AI factory and building of an ecosystem around it for harnessing AI's potential for growth.

Provide more information on the implementation of the digital rights and principles, including the national measures that contribute to it.

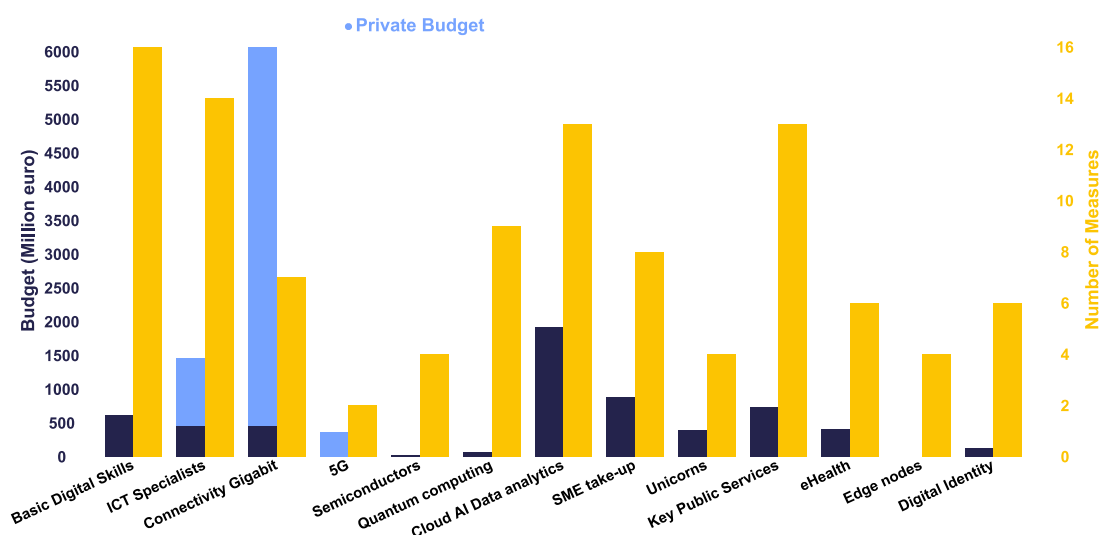
Greece has a new strategy for protecting minors online. It also launched a new online platform for the school community to report and stop bullying. Overall, a digital readiness principle applies for each piece of legislation.

The adjustment of the Greek national roadmap reinforces the already mostly complete roadmap submitted in 2023. Apart from additional policy and measures contributing to the target and objectives of the Digital Decade, the adjustment contains a detailed analysis of the national targets which were originally set below the EU's 2030 targets, based on which Greece decided not to revise the targets for digital skills, and for the digital transformation of businesses.

Additional measures were taken directly linked to the objective of the declaration on digital rights and principles, such as the strategy for protecting minors online.

After the publication of the country report 2024, the Ministry of Digital Governance organised several meetings and workshops specifically on the Digital Decade targets with the members of the 'core working group' of the Executive Network of Digital Transformation (ENDT), i.e. representatives of the organisations responsible for implementing most of the digital transformation activities, to validate and further specify the set of measures in the national roadmap.

Measures and budget in national roadmap¹⁶



Overall, the roadmap reflects a high ambition in terms of national targets, scope of measures and planned investments. The national roadmap includes **125 measures representing total public funding estimated at EUR 6.1 billion** (about 2.57% of GDP) **and an additional estimate of EUR 7 billion in private investments** for the coming years in connectivity and data centres, for a total of EUR 13.1 billion. The adjustment of the roadmap with additional new initiatives in line with the national digital transformation strategy demonstrates the commitment to take action to reach the Digital Decade and objectives set in the roadmap. But there is still room to reinforce the range of measures in certain areas, to ensure that the targets are met by 2030.

¹⁶ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Greece is a member of the Alliance for Language Technologies EDIC and of the EUROPEUM EDIC on blockchain. Greece is also a candidate to host two EDICs in the making, in the area of connected public administration and cybersecurity skills. Greece is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Greece is also a participating state in the EuroHPC Joint Undertaking (JU) and the Chips JU.

Greece has contributed to the Best Practice Accelerator by sharing a best practice in the Digital Skills cluster with the title: 'Training Civil Servants in Cloud Computing Technologies'. The goal of this initiative is to enhance the cloud computing knowledge and digital literacy of civil servants, particularly executive managers in public administration and local government who have an ICT-related educational background. Greece also provided a best practice in the Uptake of Digital Technologies cluster sharing a best practice for the 'Greek Data Strategy and Interoperability'. This initiative was focusing on big data and reporting depending on different open datasets and initiatives from several organizations.

EU funding for digital policies in Greece

Greece allocates 21% of its total recovery and resilience plan to digital (EUR 7.4 billion)¹⁷. In addition, under cohesion policy, EUR 2.7 billion (representing 13% of the country's total cohesion policy funding), is dedicated to advancing Greece's digital transformation¹⁸. According to JRC estimates, EUR 8.2 billion directly contribute to achieving Digital Decade targets (of which EUR 6.5 billion comes from the RRF and EUR 1.7 billion from cohesion policy funding)¹⁹.

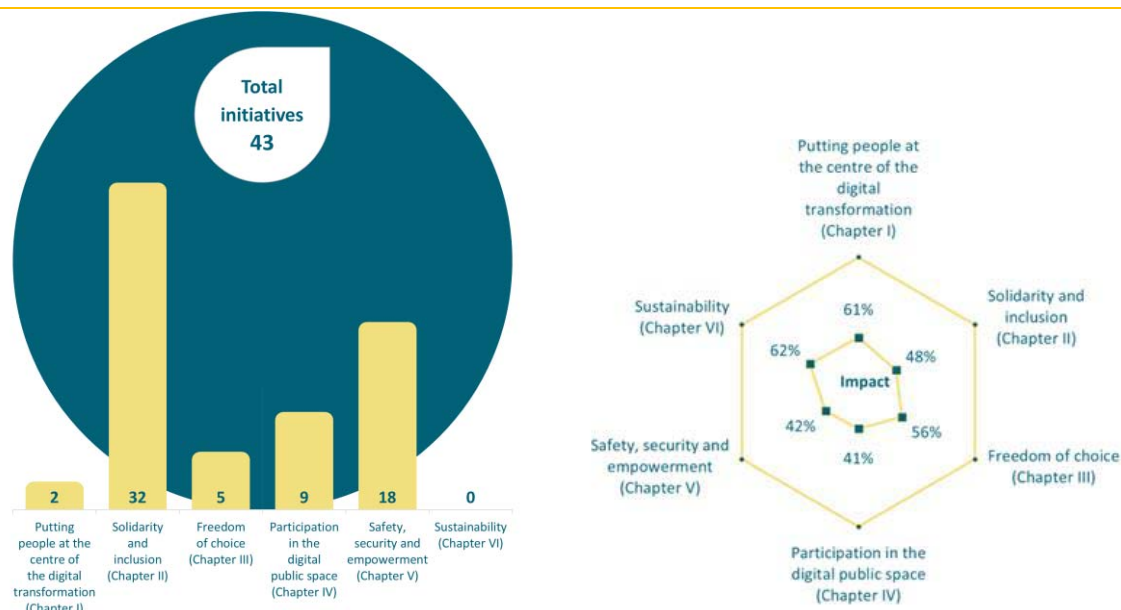
The largest investment from Greece's recovery and resilience plan (RRP) is dedicated to measures for digitalising the public sector and public services (EUR 2.18 billion), reinforced by support from the cohesion funds (EUR 370 million). In addition, investment to develop e-health records is also included in the RRP and the cohesion funds. The RRP also includes investment dedicated to measures supporting the development of digital skills and ICT specialists (EUR 755 million) with EUR 61 million from the cohesion policy.

¹⁷ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹⁸ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹⁹ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles²⁰



Activity on Digital Rights and Principles (figure 1)

Greece has been relatively active in implementing digital rights and principles, with 43 initiatives overall. No information is available on new initiatives launched in 2024. Greece is most active in the area of Digital education, training and skills (II). There is room for improvement, especially with regards to Sustainability (VI) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Greece (mainly national government) and how these are perceived by citizens.

The indicators suggest that Greece is most successful in implementing commitments related to Sustainability (VI). Greece should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Participation in the digital public space (IV).

According to the Special Eurobarometer 'Digital Decade 2025', 30% of citizens in Greece think that the EU protects their digital rights well (a 3% decrease since 2024). This is below the EU average of 44%. Citizens are particularly confident about getting more freedom of expression and information online (47%, below the EU average of 60%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (65%, above the EU average of 48%).

²⁰ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

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DIGITAL DECADE 2025 COUNTRY REPORTS

Hungary

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Executive summary

Hungary boasts a very good digital infrastructure, but it still lags behind in the digitalisation of businesses despite recent progress, while access to e-Health records is above the EU average. Hungary shows a moderate level of ambition in its contribution to the Digital Decade having set 14 national targets, 43% of which are fully aligned with the EU 2030 targets. The country is following its trajectories well with 75% of them being on track (on the basis of the 2024 trajectories defined for all 8 KPIs analysed). Hungary addressed 13% of the 16 recommendations issued by the Commission in 2024 by making some changes through new measures.

In 2024, Hungary continued to make progress increasing broadband connectivity, expanding basic 5G coverage, and driving digitalisation in SMEs, in particular the adoption of cloud. However, significant challenges persist in the area of digital skills, especially in the adoption of advanced technologies such as AI by Hungarian enterprises. Hungary's digital policies are focused on improving digitalising key public services and boosting digital skills.

Digital Decade KPI ⁽¹⁾	Hungary				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	HU	EU
Fixed Very High Capacity Network (VHCN) coverage	84.1%	86.0%	2.2%	86.0%	82.5%	4.9%	97.0%	100%
Fibre to the Premises (FTTP) coverage	76.2%	79.9%	4.9%	80.0%	69.2%	8.4%	95.0%	-
Overall 5G coverage	83.7%	85.6%	2.3%	70.0%	94.3%	5.9%	99.0%	100%
Edge Nodes (estimate)	8	16	100.0%	16	2257	90.5%	82	10000
SMEs with at least a basic level of digital intensity (2)	-	57.4%	5.4%	-	72.9%	2.8%	89.0%	90%
Cloud	37.1%	39.8%	7.2%	-	-	-	75.0%	75%
Artificial Intelligence	3.7%	7.4%	101.4%	7.5%	13.5%	67.2%	24.0%	75%
Data analytics	53.2%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	65.6%	-	-	-	-	-	-	75%
Unicorns	0	0		-	286	4.4%	2	500
At least basic digital skills	58.9%	-	-	-	-	-	70.0%	80%
ICT specialists	4.2%	4.5%	7.1%	4.9%	5.0%	4.2%	8.3%	~10%
eID scheme notification		No						
Digital public services for citizens	73.4	77.7	5.9%	76.8	82.3	3.6%	96.3	100
Digital public services for businesses	74.9	80.0	6.9%	80.6	86.2	0.9%	97.2	100
Access to e-Health records	86.0	86.0	0.0%	94.3	82.7	4.5%	100.0	100
(1) See the methodological note for the description of the indicators and other metrics (2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index. (3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)								

According to the 2025 special Eurobarometer on the Digital Decade, 81% of Hungarians consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 91% consider it important to counter and mitigate the issue of fake news and disinformation online. And on competitiveness, 90% consider it important to ensure that European companies can grow and become 'European Champions' capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Hungary is equipped with solid digital infrastructures and continued to progress on deployment. It should, however, focus more on the deployment of AI technologies. On infrastructures, Hungary is above the EU average for very high capacity networks (VHCN) and is also very close to the EU's average for 5G coverage. Despite the continued increase in the take-up of advanced technologies, most businesses, in particular SMEs, are not yet reaping all the benefits, due to a lack of digital skills. This in turn has a negative impact on the competitiveness of the economy. A new measure has been added to the updated national roadmap, focusing on the digitalisation of SMEs. Although Hungarian employees are less aware of their ICT security-related obligations compared to the EU average, enterprises in the country tend to experience less incidents related to cyberattacks. However, the recent hacking of Hungary's defence procurement agency (VBÜ) by foreign hackers, shows that Hungary could be victim to similar attacks in the future.

Protecting and empowering EU people and society

Hungary is focusing on further increasing at least basic digital skills among 16-74 year-olds, aiming to reach 70% by the end of the decade, driven by demographic impacts, public policy measures and projects. Although the new target is lower than the overall EU target, it is 10 percentage points higher than the commitment in the previous version of the Hungarian roadmap and is considered to be feasible within the scope of the existing measures. In terms of ICT specialists, Hungary is making progress, getting closer to the EU average. Hungary also plans to focus on improving gender convergence and the proportion of ICT graduates, in which Hungary is currently ahead of the EU average. Hungary has not yet notified an e-ID scheme to the Commission under the eIDAS regulation. The country plans to do so in the second half of 2025. This could also help to improve the currently stagnating indicator for eHealth and the slowly growing indicators for digital public services for citizens and for businesses.

Leveraging digital transformation for a smart greening

Although, none of the measures planned in Hungary's national roadmap are specifically aimed at the green transition, they can contribute indirectly to the uptake of greener technologies due to the nature of digitalisation. Hungary also contributed with a best practice within the Green IT cluster of the Digital Decade's Best Practice Accelerator: all-year waste heat reuse solution of the country's Hungary's largest supercomputer, Komondor.

National digital decade strategic roadmap

Hungary submitted a fully revised national Digital Decade roadmap on 16 May 2025, containing two additional measures and revised trajectories. It includes reporting on the consultation of stakeholders. It addresses a substantial number of roadmap recommendations issued in 2024. The updated roadmap has raised the national targets for fixed VHCN and at least basic digital skills and has provided a target value for fibre-to-the-promises (FTTP) coverage; however, these national targets are still below the EU-level targets set for 2030. Additionally, Hungary has increased the 2030 targets for Cloud and Data analytics to align them with the EU goals for 2030. The target set for the adoption of AI technologies continues to be significantly below the EU level target (75%), as Hungary aims at a 24% adoption rate by 2030. The revised roadmap continues to prioritise digital skills and digital

infrastructure. It contains of 44 measures with a budget of EUR 2.489 billion, comprising EUR 1.822 billion from public budgets (equivalent to 0.88% of GDP), with the EU being the major contributor towards the public budget. It still covers all objectives of the Digital Decade such as those relating to the competitiveness, sovereignty, leadership, and resilience, including cybersecurity.

Funding & projects for digital

Hungary allocates 29% of its total recovery and resilience plan to digital (EUR 1.7 billion)¹. In addition, under cohesion policy, EUR 2.6 billion, representing 12% of the country's total cohesion policy funding, is dedicated to advancing Hungary's digital transformation². Hungary is a member of the Alliance for Language Technologies European Digital Infrastructure Consortium (EDIC). Hungary is directly participating in the Important Project of Common European Interest on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Hungarian bodies are indirect and associated partners in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Hungary is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Hungary has contributed to the Best Practice Accelerator³, submitting three best practices, one in each of the Digital Skills, the Business Uptake and the Green IT clusters.

Digital Rights and Principles

According to a support study, Hungary has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 71 initiatives overall and 2 new initiatives launched in 2024. Hungary is most active in the area of digital education, training and skills. Less activity has been identified with regards to interactions with algorithms and artificial intelligence systems. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing sustainability.

Recommendations

- **Digitalisation of SMEs:** Continue efforts through new support programmes and incentives to accelerate the digital transformation of SMEs, no matter what their size, and increase resources for existing schemes.
- **ICT specialists and advanced skills:** Closely monitor implementation of existing measures to boost the number of ICT specialists in the shorter term and continue measures to increase the percentage of women in ICT careers; increase efforts to reduce the cybersecurity skills gap.
- **e-ID:** Notify an e-ID scheme under the eIDAS Regulation to the Commission.
- **Advanced technologies take-up:** Support the adoption of advanced digital technologies (with a particular attention to AI and cloud) by enterprises via the creation of local ecosystems that enables technologies and best practices to be spread across the whole business sector.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

- **Basic digital skills:** Accelerate the country's efforts to bridge the digital divide by developing and investing in inclusion policies that focus on vulnerable groups, such as those with lower levels of formal education and those living in rural areas.
- **Cybersecurity:** Continue efforts to address evolving threats, particularly for enterprises and administration.
- **Digital public services:** Speed up the digitalisation of public services for citizens and businesses.
- **e-Health:** Make the data type of medical images available to citizens through the country's online access service, expand the availability of health data by onboarding public and private geriatric nursing homes, strengthen the authentication method for logging in to the online access service by using a notified or pre-notified eID scheme and ensure that all access modes comply with web accessibility guidelines.
- **Smart greening:** Support digital players to accelerate the transition of their network infrastructure to greener, less energy intensive solutions.

A competitive, sovereign and resilient EU based on technological leadership

Hungary is equipped with strong digital infrastructures and is making good progress on deployment and on digitalising its businesses. Despite the recent increase in the take up of cloud and data analytics technologies, most businesses, in particular SMEs, are not yet reaping all the benefits of these digital technologies. This is due to a lack of digital skills, which has a negative impact on the competitiveness of the economy.

The Hungarian ICT sector represented 5.48% of the gross value added in 2022 ⁴. This was smaller than the 2021 value, but slightly higher than the EU average of 5.46%. R&D in the ICT sector represented 15.12 % of total R&D expenditure by businesses and the number of R&D personnel in the sector made up 19.08% of total R&D personnel.

Hungary's digital economy and society index shows mixed results. While Hungary leads the EU in VHCN and FTTP coverage for all households and those in sparsely populated areas, it lags behind in overall 5G coverage and 5G spectrum assignment. Hungary's growth rates for VHCN, FTTP, and overall 5G coverage are lower than the EU's, but it outperforms the EU's growth rates for 5G coverage in the 3.4-3.8 GHz band.

According to the 2025 Eurobarometer⁵, 90% of Hungarian people think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

Building technological leadership: digital infrastructure and technologies

Hungary' continued its progress in the roll-out of connectivity infrastructure and the country is on track to reach the targets set for both fibre and 5G networks. However, these targets set are slightly below the EU-level ones as, according to Hungary, the EU-level targets for 2030 cannot realistically be met.

Connectivity infrastructure

Hungary's VHCN coverage is 86% (2030 national target: 97%), after growth of 2.2% in 2024, and stands above the EU average of 82.49%. However, its annual growth rate is lower than the EU's 4.9%. For households in sparsely populated areas, Hungary's coverage is also higher than the EU's, at 75.9% in 2024, compared to the EU's 61.89%. The annual growth rate of 8.3% is also lower than the EU's 11.3%.

Hungary's FTTP coverage is 79.86% (2030 national target: 95%), after growth of 4.9% in 2024, and stands far above the EU average of 69.24%. However, the growth rate of 4.9% is lower than the EU's 8.4%. For households in sparsely populated areas, Hungary's FTTP coverage was 68.54% in 2024, above the EU's 58.78%. The annual growth rate of 6.0% is lower than the EU's 11.9%. **The country provided a trajectory for FTTP coverage in the updated roadmap.**

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Hungary's 5G coverage is 85.6% (2030 national target: 99%), after growth of 2.3% in 2024, and is below the EU average (94.35%). The country is ahead of its national trajectory for 2024. The growth rate of 2.3% is lower than the EU's 6.0%. For households in rural areas, Hungary's 5G coverage was 57.9% in 2024, below the EU's 79.57%. The annual growth rate for this indicator was 0.7%, significantly lower than the EU's 11.9%. Hungary's 5G coverage in the 3.4–3.8 GHz band for all households was 53.4% in 2024, lower than the EU's 67.72%. The annual growth rate of 41.6% is higher than the EU's 32.6%. On 5G spectrum, Hungary's assignment of harmonized spectrum in 5G pioneer bands was 59.17% in 2025 (same value as 2024), below the EU's 74.63%.

In Hungary, fixed broadband take-up indicators are excellent, but the mobile ones are below the EU average. In 2023, 84.07% of fixed broadband subscriptions in Hungary were at speeds of 100 Mbps or higher, surpassing the EU's 65.9%. This figure rose to 88.36% in 2024, still ahead of the EU's 71.88%. However, the growth rate between 2023 and 2024 for this indicator in Hungary was 5.1%, which is lower than the EU's 9.1%, which is due to the fact that Hungary is ahead in terms of the development curve. For subscriptions at speeds of 1 Gbps or higher, Hungary is also ahead of the EU average. In 2024, Hungary's share reached 39.81%, while the EU's was 22.25%. However, Hungary's annual growth rate of 7.0% lagged behind the EU's 20.5%. The share of the population using 5G SIM cards in Hungary was 7.41% in 2023, lower than the EU's 21.7%. By 2024, this share increased to 20.79%, still below the EU's 35.56%. But Hungary's annual growth rate in this area was 180.6%, outperforming the EU's 63.9%.

VHCN and FTTP

As part of the updated roadmap submitted in 2025, Hungary increased its VHCN target to 97% and provided a target of 95% FTTP coverage with a completion date by 2030. The country is on track according to its national trajectory and given the latest figures and pace of roll-out, both targets seem realistic. These goals are expected to be achieved mainly through service providers' commitments and, where development would not be commercially viable, around 400 000 endpoints could be covered through state-funded programmes that are part of the measures in Hungary's roadmap. Cohesion policy, through the European Regional Development Fund (ERDF) contributes with 207,5 million EUR to broadband development, including 5G. All three major telecom operators in Hungary have already signed a strategic agreement with the government, committing to coverage targets set out in the National Digitalisation Strategy.

One of the incumbent operators, Magyar Telekom has already started to switch-off its copper network. The switch-off process is progressing on the basis of batches of municipalities that are already covered with fibre, but it has not set a target date for completion. Across the country, a massive migration to fibre subscriptions can be observed, which has been made possible by the widespread availability of the service. Operators are competing on infrastructure coverage as the first one covering an area with fibre usually gains a competitive advantage among consumers.

5G

Following the roadmap adjustment, Hungary's 5G target remains at 99% with a completion date by 2030, as set out in the initial roadmap submitted in 2023. The country is on track according to its national trajectory and given the latest good figures and pace of roll-out, the target seems realistic.

The three operators continue to deploy 5G sites, but they follow different strategies on the use of the 3.6 GHz, the 700-800 MHz and 1.8-2.1 GHz bands.

2024 recommendations on connectivity infrastructure: (i) Sustain and increase efforts to ensure full gigabit and 5G coverage, in line with the EU level of ambition. (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

In 2024, Hungary continued the implementation of existing measures but did not take any new measures. Despite Yettel switching to a 5G stand-alone service, the biggest barrier to the rollout remains the lack of available end-user devices. Due to the lack of demand from consumers, manufacturers are not bringing new devices to the market.

Semiconductors

Hungary does not currently have a significant domestic industry for semiconductor production. However, in future revisions of the Hungarian roadmap, the domestic commitment may change in the light of future market events.

Edge nodes

According to the Edge Node Observatory, Hungary is estimated to have deployed a total of 16 edge nodes by 2024, up by 100% from 2023. This is in line with the trajectory in Hungary's updated roadmap. However, Hungary maintains the position that it is not currently possible to determine the realistic number of edge nodes required to reach sufficiently low latency.

Quantum technologies

Hungary is involved in the preparation of the EuroHPC quantum computer development (EuroHPC Levente tender) and the national quantum communication network (QCIHungary). The QCIHungary project is laying the foundations for a national quantum communication infrastructure in Hungary, with the aim of contributing to the development of a wider pan-European quantum network. As part of the initiative, Hungary is implementing and testing a Quantum Key Distribution (QKD) system between Budapest and three cities in different directions from it (Győr, Nagykanizsa and Szeged), which will establish cross-border relations with Austria, Slovakia, Slovenia, Croatia and Romania. In addition, a metropolitan quantum network is being developed and tested in Budapest. One measure remains in the updated roadmap of Hungary, which strives to build a quantum computer by 2027 to support Hungarian education, R&D and industrial activities. The new supercomputer, Komondor, which was launched in 2023, is already operating at full capacity.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

SMEs with at least basic digital intensity

In Hungary, 57.44% of SMEs had at least a basic level of digital intensity (2030 national target 89%) after average growth 5.4% annually between 2022 and 2024. Despite this growth, however, Hungary remained well below the EU average of 72.91%. The digitalisation of Hungarian SMEs is showing a positive trend but still lagging behind EU peers. Looking specifically at the top digitalised SMEs, only 22.24% of SMEs in Hungary reached a high or very high level of digital intensity, falling significantly short of the EU average of 32.66%. Overall, Hungary made progress in the digital intensity of its SMEs, but there is still room for improvement, particularly in advanced digital intensity. The data shows that Hungary's SMEs require stronger support to close the digital gap with the EU and reach the Digital Decade targets.

As part of the Digital Decade Best Practice Accelerator, Hungary has put in place a self-assessment tool for SMEs to measure their digital intensity as part of the Technology Uptake cluster. The tool aims to support reaching Digital Decade targets as companies applying for certain public programmes are expected to reach at least basic digital intensity by the end of their projects and those already at a basic level are expected to increase their intensity level by at least 1 point in line with Digital Intensity Index indicator criteria, which typically involves the adoption of an advanced technology. This digital intensity assessment method can be easily replicated by other EU Member States as the assessment is based on widely accepted indicators (Digital Intensity Index - DII) used by Eurostat. This ensures compatibility with EU-wide digitalisation strategies, with a methodology that is data-driven, transparent, and structured, making it adaptable to different national digital transformation programmes. While maintaining the core assessment criteria, Member States can modify specific indicators based on local industry needs and technological priorities.

Hungary still aims to have 89% of SMEs achieving basic level of digital intensity, which is slightly below the EU target for 2030. On the digitalisation of businesses, the updated roadmap sets out ambitious measures to ensure that the 2030 target will be reached, including a new measure called 'Develop the internet presence of local micro and small enterprises'. This new development programme - 'Every company should have its own website' - aiming at the development of the internet presence of the Hungarian micro and small enterprises. It is funded fully by the national budget and was launched at the end of 2024 with the involvement of Hungarian telecommunication and IT service providers.

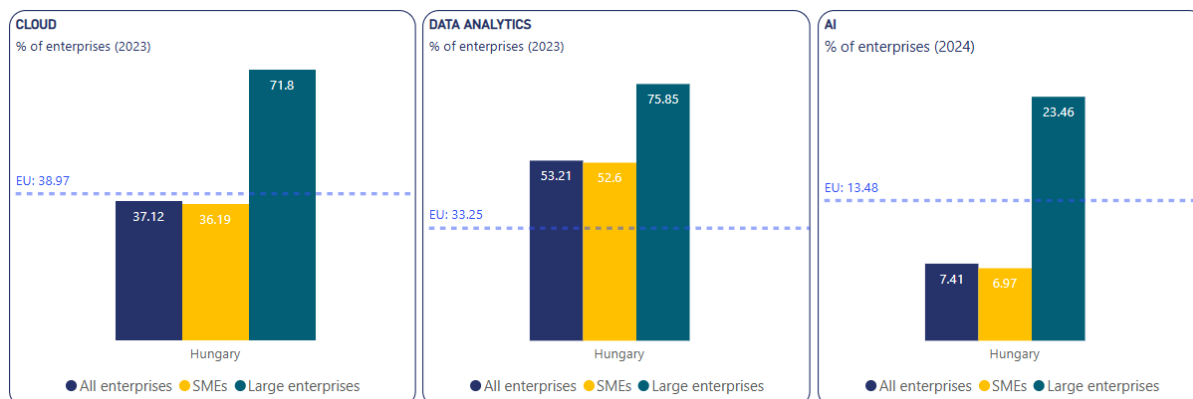
2024 recommendation on the digitalisation of SMEs: Continue its efforts through initiating new supporting programmes and incentives- to support the digital transformation of SMEs and increase resources for existing schemes, including a focus on cloud adoption by SMEs.

Hungary made some efforts to address the recommendation through new policy actions in 2024. To tackle the low digitalisation level of SMEs, Hungary set out a new measure 'Develop the internet presence of local micro and small enterprises', aiming to improve of the internet presence of Hungarian micro and small enterprises.

In 2024, five EDIHs were operating in Hungary, all funded under the Digital Europe Programme. These are the Agricultural European Digital Innovation Hub (AEDIH), the Artificial Intelligence European Digital Innovation Hub Hungary (AIEH), the Hungarian Data EDIH, the DigitalTech EDIH and the Establishing High Performance Computing European Digital Innovation Hub in Hungary (HPC EDIH HU).⁶

⁶ The European Digital Innovation Hubs (EDIH) Network is the driving force behind Europe's digitalisation. EDIHs work as one-stop shops throughout all EU regions. [EDIH Catalogue](#) | [European Digital Innovation Hubs Network](#)

Take up of cloud/AI/data analytics



In 2024, 7.41% of Hungarian enterprises adopted AI (2030 national target is 24%) after growth of 101.4% in a year, doubling the 2023 value. Although this 101.4% growth rate is much higher than the EU level growth rate (67.2%), AI adoption in Hungarian enterprises is significantly below the EU average of 13.48%. SMEs had an AI uptake rate of 6.97%, whereas large enterprises had a higher rate of 23.46%. This resulted in a gap of 16.49 percentage points (pps) between SMEs and large enterprises, which was lower than the EU gap of 28.53 pps.

Adoption of cloud, data analytics, and the three technologies together were not measured in 2024.

In 2023, 37.12% of Hungarian firms adopted cloud technologies (2030 national target is 75%), which is being close to the EU average of 38.97%. However, SMEs exhibited a lower adoption rate of 36.19%, whereas 71.8% of large enterprises adopted advanced cloud services. This resulted in a gap of 35.61 pps in uptake between SMEs and large enterprises in Hungary, higher than the EU gap of 31.68 pps.

Data from 2023 showed that 53.21% of Hungarian firms adopted data analytics technologies (2030 national target is 75%), well above the EU average of 33.25%. 52.6% of SMEs adopted data analytics, but the uptake was considerably higher among large enterprises at 75.85%. There is a difference of 23.25 pps in uptake between SMEs and large enterprises, lower than the EU gap of 39.72 pps.

In 2023, when taking the three technologies together in 2023, 65.63% of enterprises in Hungary used either AI, cloud, or data analytics technologies, well ahead of the EU average of 54.7%. The uptake among SMEs was slightly lower than the national average, at 64.92%, while large enterprises had a markedly higher rate of 92.24%. There is a difference of 27.32 pps in uptake between SMEs and large enterprises in Hungary, which is lower than the EU gap of 32.97 pps.

Indicators on the adoption of cloud computing, data analytics, and AI technologies in Hungary showed mixed performance relative to EU averages, with a strong uptake of data analytics, a moderate levels of cloud adoption, and low uptake of AI. Large enterprises consistently reported significantly higher adoption levels across all technologies compared to SMEs. Despite SMEs making up the vast majority of enterprises in Hungary, their contribution to economic value added remains substantially lower than that of large enterprises. These findings highlight the need for targeted measures to bridge the digitalisation gap and boost the competitiveness of SMEs.

In its adjusted roadmap, based on the current rate of progress Hungary revised the national targets and trajectories for both cloud uptake and data analytics uptake, in order to reach the EU-level targets. The adjustment comes with updated trajectories for each technology. Following trends in recent data published in the last Digital Decade report, Hungary increased the cloud services adoption

target from 60% to 75%, and the data analytics target from 30% to 75%. The country did not change the target for AI adoption, which is 24%.

- [Cloud](#)

In 2024, Hungary continued the implementation of existing measures but did not take any new measures. The implementation of the IPCEI-CIS in Hungary is progressing as planned. It will be possible to assess dissemination activities at a later stage. According to a study commissioned by IVSZ (Alliance of Digital Enterprises) titled [Cloud Computing in Hungary: Economic Impact Study June 2024](#), companies in the logistics and warehousing sector are the most likely to use cloud services, while agriculture and mining are the least likely. The most significant barriers to technology in Hungary are lack of skills, lack of understanding, security concerns, budgetary constraints, regulatory obstacles and contractual obligations. According to the study's calculation, Hungarian companies using cloud services have an annual revenue per employee of nearly EUR 6 000 more than their competitors not using such services. Using this result, they examined the macroeconomic impact of cloud adoption over the next 10 years: a further increase in cloud usage in that period could add an average of 1.7%-2.7% to Hungary's GDP annually (as a percentage of the 2023 baseline).

- [Data Analytics](#)

In Hungary, Act CI of 2023 on the system for the utilisation of national data assets and certain related services was adopted in December 2023, and entered into force in 2024. The legislation is a milestone in terms of the development of the data-based economy, as it institutionalizes those data utilization support services that aim to create safe, legal and controlled conditions for secondary data use (data reuse). The data utilisation support services provided by the National Data Asset Management Agency expand the data analysis opportunities available to businesses. Thereby the system not only supports state decision-making, but also contributes to increasing the competitiveness of enterprises, the responsible and targeted utilization of data assets, and the sustainable development of the digital economy.

- [Artificial Intelligence](#)

The country is on track according to its national trajectory, but despite the strong progress over the last year, the adoption of AI among Hungarian enterprises remains limited and difficult especially for SMEs. Recent surveys highlight that one of the main barriers to AI adoption among micro and small enterprises is the lack of the necessary digital skills. The Hungarian government is currently updating its AI Strategy, originally developed in 2020 and it planned to be available by Q2 2025.

[Unicorns, scale-ups and start-ups](#)

At the beginning of 2025, Hungary had no unicorns (2030 national target of two). There are no measures planned on unicorns in Hungary's updated roadmap. As there are two potential future unicorns have been identified in Hungary, the national target seems achievable.

[Strengthening Cybersecurity & Resilience](#)

In Hungary, about 3 out of 4 people have a basic level of digital safety skills. 74.81% of individuals reported taking at least one action (see the six types of digital safety actions in the graph's legend) to protect their personal data online in 2023, slightly above the EU average of 69.55%. More specifically,

1 out of 2 (46.43%) individuals are considered as having above basic digital safety skills (i.e. engaging in three actions). The most common action taken by individuals was refusing the use of personal data for advertising purposes, with 48.71% of individuals taking this step. Checking if websites that request personal data were secure was the least frequent action, reported by only 31.98%.

Hungarian enterprises tend to experience less incidents related to cyberattacks but employees are less aware of their ICT security related obligations compared to the EU. The number of enterprises that experienced ICT security incidents (e.g. ransomware attacks, denial of service attacks) leading to the unavailability of ICT services slightly decreased in Hungary, from 2.63% in 2022 to 2.45% in 2024.

It remains below the EU average (3.43%). Hungarian enterprises are also less prone to incidents related to hardware or software failures (7.77%) than their EU peers (17.97%). 84.75% of enterprises deployed some ICT security measures (below the EU average of 92.76%) but only 47.94% of enterprises made their employees aware of their obligations when facing ICT security-related issues, significantly below the EU average (59.97%). Hungary's defence procurement agency (VBÜ) was attacked by foreign hackers in November 2024, which shows that the Hungarian government is already the target of specialised international groups, targeting high-value, sensitive information.

Type of activities to protect personal data online
(% of individuals)



Hungary progressed in the roll out of the secure Internet Protocol version 6 (IPv6) for end users. On the deployment of [secure internet standards](#), Hungary is above the EU average in the roll-out of IPv6 for the end users (47%, EU average: 36%) and is below the EU average on the server side (7%, against 17% for the EU). IPv6 is an important protocol as it ensures the scalability, stability, and security of the internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have been long depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out as it introduces security features to DNS. In Hungary, the DNSSEC validation rate (i.e. checks on the authenticity of responses sent by name servers to clients, using a digital signature technology) is 11% (Q3 2024), significantly below the EU average of 47%.

According to the Digital Decade Eurobarometer 2025, 80% of Hungarian citizens think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies.

Hungary reported that it has implemented the provisions of the NIS2 Directive in [Act LXIX of 2024 on the Cybersecurity of Hungary](#) and related lower-level legislation.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Hungary's digital skills landscape shows mixed results. Despite recent progress, Hungary continues to face digital skills gaps, leaving parts of the population more vulnerable to online risks and less equipped to benefit from digital transformation. These skills shortages hinder Hungary's potential for innovation and competitiveness. However, the country has made strong progress in digital public services and is a frontrunner in developing e-Health solutions.

According to the 2025 Eurobarometer, 88% of Hungarian people think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 79% consider it would improve their daily use of digital technologies, and 90% think public authorities should consider it important to ensure that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services.

Equipping people with digital skills

Basic digital skills

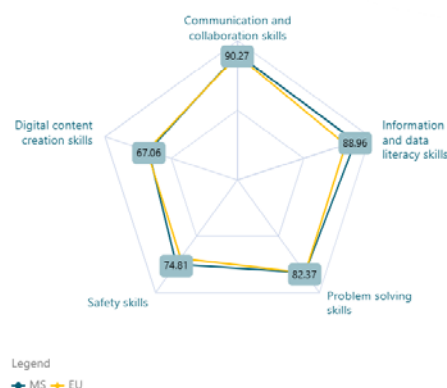
According to data from 2023, 58.89% of the Hungarian population had basic digital skills (2030 national target 70%), standing above the EU average of 55.56%. While there is no new data for 2024, a breakdown by demographic factors provides for some of insights.

- **Gender gap:** The gender gap in Hungary is relatively small, with 59.65% of men and 58.16% of women having at least a basic level of digital skills, resulting in a gap of 1.49 pps. This is less than the EU average (2.23pps), suggesting a more balanced digital skillset between men and women in Hungary.
- **Education level:** Educational attainment appears to be significantly correlated to digital skills. In Hungary, 83.48% of those with higher education levels have at least a basic level of digital skills, surpassing the EU average (79.83%). However, those with no or low levels of formal education are at a disadvantage, with only 33.36% having at least a basic level of digital skills. This means a gap of 25.53 pps from the national average, which is higher than the EU gap (21.95pp).
- **Living areas:** Residents of rural areas in Hungary have lower digital skills, at 48.11%, which is just above the EU average for rural areas (47.50%). The gap between rural areas and the national average (10.78pps) is more substantial than the EU average (8.06pps), indicating a significant digital divide.
- **Age groups:** Young Hungarians aged 16 to 24 are the most digitally skilled, with a 76.86% proficiency rate, higher than the EU average (69.98%). Those aged 65-74 are the least digitally skilled at 28.43%, on par with the EU average for that age group.

Hungary

- Digital Skills Index components:** Hungary performs well in the Digital Skills Index competencies, with scores above the EU average in three out of five areas. The country's strongest area is communication and collaboration skills at 90.27%. However, it falls slightly short in digital content creation skills, with a score of 67.06%, and in safety skills, with a score of 74.81%, just below the EU average.

Digital Skills Index components
% of individuals



In summary, Hungary's overall digital skills are good, with a particularly strong showing among the young people and those with higher education. The challenges lie in reducing the digital divide between urban and rural areas and improving the skills of those with lower levels of formal education or being unemployed. With targeted efforts in these areas, Hungary could further improve its standing in digital skills.

As part of the Digital Decade Best Practice Accelerator, Hungary has implemented the EDU&FUN Digital Experience Centre as an example of how innovative, experiential education methods can support the development of digital skills, thus contributing to the Digital Decade's objectives. The best practices of the EDU&FUN Centre focus in particular on the development of labour market skills and innovation in digital education. The aim of the Centre's programmes is to provide an interactive and experiential learning environment to empower students, teachers and parents, to use ICT tools with confidence. The measure can be successfully adapted and replicated in other Member States, as it is based on a flexible and modular educational model that can be easily adapted to specific local needs.

Hungary raised its target of 70% for the population's basic digital skills, which is considered achievable with the existing measures in place. However, it is below the EU's 2030 target. As there are no new measures in the roadmap adjustment, the 2024 Digital Decade report conclusions still apply: the current rate of progress calls for efforts to be intensified to reach this target.

2024 recommendation on basic digital skills: Accelerate its efforts to bridge the digital divide through developing and investing in inclusion policies focusing on vulnerable groups, such as the low-skilled, the unemployed, people over 55, persons with disabilities and the Roma.

In 2024, Hungary continued the implementation of existing measures but did not take any new measures. Hungary continued to implement measures in its roadmap such as 'Digital Renewal OP Plus Priority 4 Digital skills', with some elements specifically targeted at disadvantaged people / vulnerable groups /disadvantaged groups including low-skilled and elder people, and continued the reinforcement of the digital training facilities available for teachers and students. However no new measure was proposed in the roadmap adjustment. Hungary also increased national funding for certain measures, replacing EU funding.

ICT specialists

In Hungary, ICT specialists accounted for 4.5% of total employment (2030 national target 8.3%), up by 7.1% from 2024 and stands below the EU average of 5.0%. The country is lagging behind its national trajectory of 4.9%. Hungary's growth rate was higher than the EU's (4.2% in 2024), showing that Hungary is making progress and getting closer to the EU average.

Progress on gender balance among ICT specialists and the provision of ICT training show concerning trends. The share of female ICT specialists in Hungary was 15.3% in 2023, lower than the EU's 19.4%. By 2024, this figure decreased slightly to 15.2%, while the EU's share increased to 19.5%. Hungary's - 0.7% growth rate of female ICT specialists between 2023 and 2024 lagged behind the EU's 0.5%. This suggests that Hungary is not effectively retaining or attracting female talent in the ICT sector. In 2022, the percentage of enterprises with 10 or more employees providing ICT training in Hungary was 18.19%, compared to the EU's 22.37%. By 2024, this figure rose to 18.9% in Hungary, while the EU's figure slightly decreased to 22.29%. Hungary's annual growth rate of 1.9% in this area outperformed the EU's rate of -0.2%.

In term of demand from the labour market, Eurostat experimental statistics based on web scraping show that **the profiles of 'software and applications developers and analysts' are the most sought after in Hungary, representing 48.8% of online job advertisements for ICT specialists (58.0% at EU level).** Three types of profiles are wanted more in Hungary than in the EU on average: 'Database and network professionals' (10.9% of online job advertisements for ICT specialists), 'Electronics and telecommunications installers and repairers' (16.3%), and 'Other information and communications technology specialists' (15%).

Hungary still aims to reach its target of having ICT specialists make up 8.3% of people in employment by 2030. Although no new measures were set out in Hungary's updated roadmap, based on the recent growth in this area, the target seems realistic.

2024 recommendation on ICT specialists: (i) Keep up their high rate of ICT graduates but focus more on attracting women to the study field; (ii) Monitor closely the implementation of existing measures to boost the number of ICT specialists in the shorter term and continue measures to increase the percentage of women in ICT careers; (iii) Increase efforts to reduce the cybersecurity skills gap.

In 2024, Hungary continued the implementation of existing measures but did not take any new measure.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

For digital public services for citizens, Hungary scored 77.68 in 2024 (2030 national target of 96.3 out of 100), after growth of 5.9%, but is below the EU average of 82.32. The country is slightly above its national trajectory. In 2023, this score was 73.36, lagging behind the EU's 79.44. However, Hungary's growth rate of 5.9% outpaced the EU's 3.6%. For cross-border digital public services for citizens, Hungary's score was 52.38 in 2023 and 60.42 in 2024, both below the EU's 68.37 and 71.28, respectively, having a higher growth rate (15.3%) than the EU (4.3%). However, the share of people using government websites or apps is increasing year after year in Hungary, from 81.02% in 2022 to 84.46% in 2024, which was above the 2024 EU average of 74.71%.

For digital public services for business, Hungary scored 80.0 in 2024 (2030 national target of 97.2 out of 100), after growth of 6.9%, but is below the EU average of 86.23. The country is also slightly below its national trajectory. Hungary's total score was 74.86 in 2023 lower than the EU's 85.42. Hungary's growth rate of 6.9% between 2023 and 2024 was substantially higher than the EU's 0.9%. For cross-border digital public services for businesses, Hungary's score was 49.72 in 2023 and 60.0 in 2024, both below the EU's 73.13 and 73.76, respectively, having a higher growth rate (20.8%) than the EU (0.9%).

In terms of access to e-Health records, in 2024, Hungary scored 85.98, (2030 national target of 100). This was unchanged from 2023 but above the EU average of 82.7. The country is below its national

trajectory. This result confirms the good performance of Hungary in 2023, when the country had reached a score of 85.98 compared to the EU's 79.12.

e-ID

Hungary has not yet notified an e-ID scheme to the Commission under the eIDAS regulation; however, Hungary's roadmap still sets out a 2030 target of 100% in terms of access to e-ID. Hungary continued implementation of the seven measures presented in its national roadmap that will support the development of e-ID, with cohesion policy support. The measures will focus on the development of the new Digital Citizenship Mobile Application, which Hungary plans to use for the notification, planned for the second half of 2025.

Hungarian stakeholders are actively contributing to the development of the European Digital Identity Wallet (EUDI Wallet) by participating in three of the four large scale pilots working on various use cases: POTENTIAL, a consortium working on six key use cases (e.g. e-Prescriptions, bank account opening, SIM card registration); the EU Digital Wallet Consortium (EWC), focused on digital travel credentials; and Digital Credentials for Europe (DC4EU) focused on the educational and social security sectors⁷.

2024 recommendation on e-ID: Notify to the Commission an e-ID scheme under the eIDAS Regulation.

In 2024, Hungary continued the implementation of existing measures but did not take any new measures. Hungary is currently working on the documentation necessary for the notification, which is planned for the second half of 2025.

Digitalisation of public services for citizens and businesses

Hungary still aims at reaching a score of 96.3 for the digitalisation of public services for citizens and a score of 97.2 for the digitalisation of public services for businesses. The national targets were set slightly below the EU-goal of 100 due to legal constraints, as Hungarian law requires an individual's physical presence for certain procedures (e.g. company registration and modification). Currently, there are no plans to amend the relevant legislation in the near future.

2024 recommendation on key digital public services: Accelerate its efforts to digitalise public services for citizens and businesses.

In 2024, Hungary continued the implementation of existing measures but did not take any new measures. Hungary continued to implement measures set out in its roadmap including solutions that support cross-border services for cooperation between national registers and specialised systems and to connect to the Single Digital Gateway. However no new measures were proposed in the roadmap adjustment. Hungary also increased national funding for certain measures, replacing EU funding.

e-Health

Hungary's e-Health maturity score is the same as in 2023. The country is lagging behind compared to its national trajectory. Hungary still aims to score 100 for access to medical records, in line with the EU 2030 target. Although there was no progress last year, the target is realistic, and Hungary plans

⁷ Large scale pilots are test driving the specifications of EU Digital Identity Wallets in a wide range of use cases, before their roll-out in Member States. Learn more about who they are and the work they are doing: [What are the Large Scale Pilot Projects - EU Digital Identity Wallet -](#)

to already reach it by 2027 based on the trajectory. Moreover, in its roadmap adjustment, Hungary added a new measure supporting evidence-based government decisions and the use of available data, with a budget of EUR 18.2 million, from EU cohesion policy funding. In other developments, Hungary is expanding the features of its existing e-Health mobile application by adding a pharmacy search, screening information sheet, and a patient satisfaction survey.

According to the 2025 Eurobarometer, 89% Hungarian people think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) during their daily life by 2030.

2024 recommendation on e-Health: (i) Make the data type of medical images available to citizens through the online access service. (ii) Enhance the authentication method for logging in to the online access service by using a (pre)notified e-ID. (iii) Ensure that the online access service complies to web accessibility guidelines.

Of the 13 data types investigated, only medical images are still unavailable to citizens. All categories of health care providers investigated, except public and private geriatric nursing homes, are connected and supplying data.

Hungary's e-Health mobile application is compliant with web accessibility guidelines; however, the online portal is not fully compliant (developments are ongoing and expected to be finalised in 2025). Another issue is the inability to authenticate with an eIDAS-compliant eID.

Building a safe and human centric digital environment and preserving our democracy

In Hungary, online participation in political and civic life started to decline after 2023. In 2024, 19.0% of people used the internet to participate in consultations, to vote or to share opinions online. This share is below the EU average and decreased significantly compared to the previous year (29.95% in 2023), which runs counter to the trend at EU level (18.31% in 2023 and 20.45% in 2024).

Only 1 out of 4 Hungarian internet users declare checking the truthfulness of doubtful online information. In 2023, 51.35% of Hungarian people declared having encountered untrue or doubtful information or content on internet news sites or social media, above the EU average of 49.25%. Of these individuals, 26.27% checked the content's truthfulness, representing a modest level of critical evaluation among those who perceived such content as misleading. Young people (aged 16-24) (58.42%) and adults (aged 25-64) (53.66%) reported similar levels of exposure. Similarly, the rates of people checking such content was higher among young people (35.09%) than among adults (27.52%). Males (53.41%) and females (49.38%) reported similar exposure rates, but more males reported checking untrue or doubtful information (29.39%) than females (23.31%).

A high share of the Hungary population, especially young people, often encounter hostile and degrading messages online. Data shows that in 2023, 43.72% of individuals encountered such messages towards groups based on factors such as ethnicity or religion. This figure was significantly above the EU average of 33.5%. Young people aged 16-24 (49.93%) were slightly more exposed to such messages than adults aged 25-64 (45.55%), indicating a modest age-related gap. Males (44.75%) and females (42.73%) experienced nearly the same level of exposure.

According to the Digital Decade Eurobarometer 2025, 91% Hungarian people think it should be urgent the action of the public authorities to protect children online regarding the negative impact of social media on children's mental health, cyberbullying and online harassment and to put in place age

Hungary

assurance mechanisms to restrict age-inappropriate content. The 2025 Eurobarometer also shows that 89% of Hungarian people think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values. It is higher than the EU average (83%), reflecting the interest of the citizens at this respect.

Leveraging digital transformation for a smart greening

None of the measures planned in Hungary's roadmap are specifically aimed at the green transition. However, Hungary still plans to leverage the digital transformation for smart greening as all the planned measures can contribute indirectly to the uptake of greener technologies due to the nature of digitalisation. In Hungary, **progress is slow in embracing the circular economy**. According to 2023 data, Hungary's circular material rate of 5.9% was substantially below the EU average (11.8%) and no convergence can be observed. A national circular economy strategy is under preparation to tackle open issues.

The Hungarian population recycles only a small amount of its ICT equipment. Hungarian people recycled their laptop and desktop devices (7.79% for laptops and tablets, 11.44% for desktops) less than the EU average (11.31% and 14.66%, respectively) but recycled their mobile phones more (11.98%, 10.93% for the EU). However, 25.50% of people considered energy efficiency as important when purchasing ICT devices (EU: 19.35%) and the eco-design of the device was also considered important by 12.63%, which is also above the EU average (12.04%). However, those two eco-friendly criteria take on less importance for the buyer than the price, performance, and the design of the ICT device.

As part of the Digital Decade Best Practice Accelerator, Hungary is implementing a sustainable cooling and all-year waste heat reuse solution for the country's largest supercomputer, Komondor. Direct to chip warm water cooling is a new paradigm in computing due to the excessive heat generated by the latest computing elements. In the data centre used for hosting Komondor, a cold water liquid based cooling system was installed in closed racks to increase cooling efficiency. However, high performance elements require more advanced cooling solutions, so Hungary decided to use warm liquid cooling for Komondor, and installed an adiabatic chiller solution into its data centre. The waste heat reuse use case is unique in the region, especially reusing waste heat from ICT elements using direct-to-chip warm liquid cooling technology.

According to the Digital Decade Eurobarometer 2025, 87% Hungarian people consider digital technologies important to help fight climate change (standing significantly above the EU average of 74%, despite showing a decrease of two percentage points since last year), while 85% of Hungarian respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities (above the EU average of 80%).

2024 recommendation on green ICT: (i) Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular datacentres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.

(ii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

(iii) Support digital players, including telecom service providers, to accelerate the transition of their network infrastructure to greener, less energy intensive solutions.

Hungary

In 2024, Hungary continued the implementation of existing measures but did not take any new measures.

Although, none of the measures planned in Hungary's roadmap are specifically aimed at the green transition, they can contribute indirectly to the uptake of greener technologies due to the nature of digitalisation.

Annex I – National roadmap adjustment

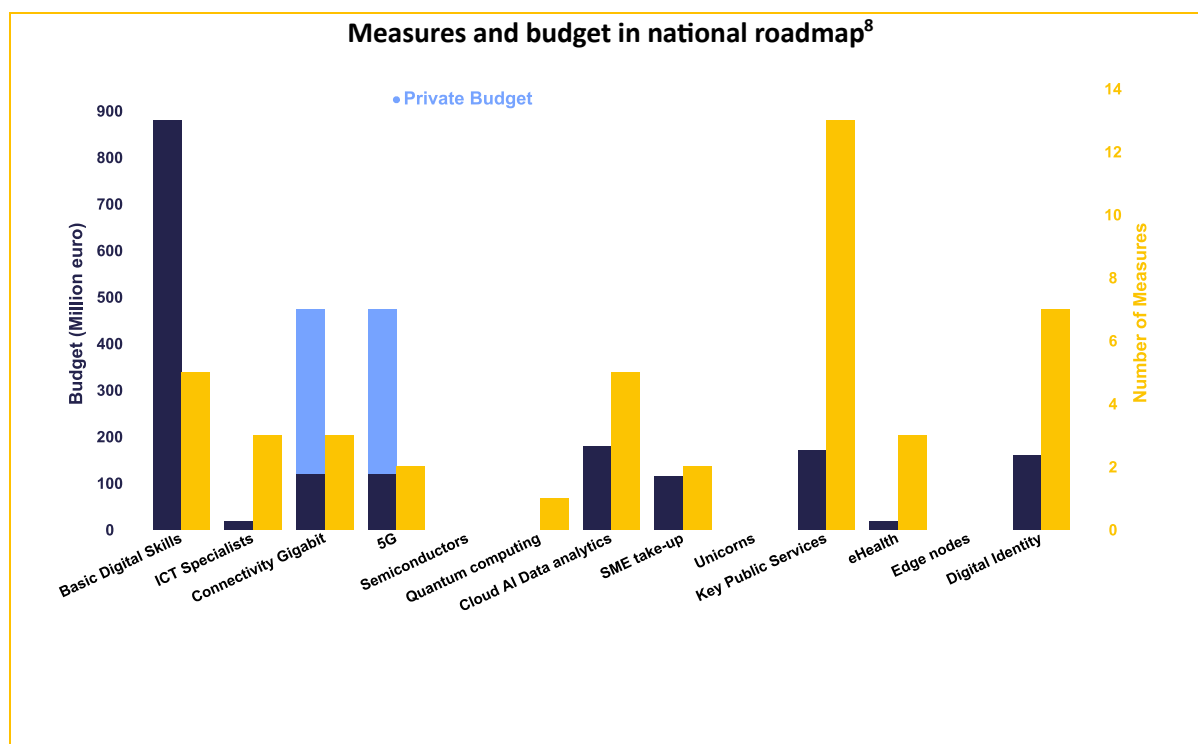
Hungary's national Digital Decade strategic roadmap

Hungary submitted a fully revised national Digital Decade roadmap on 16 May 2025, which contained two additional measures and revised trajectories. The revised roadmap continues to prioritise digital skills and digital infrastructure, and it includes reporting on the consultation of stakeholders. It still covers all objectives of the Digital Decade such as those relating to the green transition, competitiveness, sovereignty, leadership, resilience, and cybersecurity.

The adjusted roadmap addresses a substantial number of roadmap recommendations issued in 2024, which are described below along with action taken by Hungary.

- *Propose national target values and trajectories for edge nodes, and formalise the trajectory for FTTP.* Based on the methodology provided by the European Commission and the second Edge Observatory report published in 2024, Hungary's assumed development path was indicated in the revised document together with an objective of deploying 82 edge nodes by 2030. However, Hungary maintains the position that it is not yet possible to determine how many edge nodes are realistically needed to achieve sufficiently low latency, given its relatively advanced domestic network infrastructure and current and expected user needs. Hungary also added a separate formal trajectory for FTTP, with a target of 95% coverage by 2030.
- *Increase the VHCN target to be closer to the EU's target, given the country's good starting point and its current rate of progress.* Based on the current rate of progress Hungary revised the trajectory of VHCN network development. The country considers it possible to increase the 2030 national target from 95% to 97% with the existing measures in place.
- *Consider more ambitious targets for the cloud and data analytics technologies take-up by enterprises to be closer to the EU's targets, as the current performance of these indicators are already above the targets defined in the roadmap of Hungary.* Based on the current rate of progress Hungary revised the trajectories for both cloud uptake and data analytics uptake and increased them both to 75%, which are the same as the EU's Digital Decade targets.
- *Define a more ambitious target for digital skills closer to the EU's target, as the current national target is almost achieved according to the 2023 value.* Based on the current rate of progress Hungary revised the trajectory for digital skills. The country considers it possible to increase the 2030 national target from 60% to 70% with the existing measures in place.
- *Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it.* Hungary provided more information on initiatives and their implementation during the second monitoring study of the Declaration on Digital Rights and Principles. The country states that most of the measures in the revised roadmap contribute to the values of the Declaration.

The revised roadmap has 44 measures, which are backed by a budget of EUR 2.489 billion, 1.2% of GDP.



⁸ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Hungary is a member of the Alliance for Language Technologies EDIC, and is also working on setting up an EDIC in the area of connected public administration. Hungary is directly participating in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Hungarian organisations are indirect and associated partners in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Hungary is a participating state in the EuroHPC Joint Undertaking (JU) and the Chips JU.

Hungary has contributed to the Best Practice Accelerator⁹ by sharing three best practices in the Technology Uptake cluster (KKV Digital – a self-assessment tool for measuring digital intensity for SME), the Digital Skills cluster (EDU&FUN Digital Experience Centre) and the Green and Digital cluster (Sustainable cooling of the Komondor HPC and all-year waste heat reuse).

EU funding for digital policies in Hungary

Hungary allocates 29% of its total recovery and resilience plan to digital (EUR 1.7 billion)¹⁰. In addition, under cohesion policy, EUR 2.6 billion (representing 12% of the country's total cohesion policy funding), is dedicated to advancing Hungary's digital transformation¹¹. According to JRC estimates, EUR 2.9 billion directly contribute to achieving Digital Decade targets (of which EUR 1.2 billion comes from the RRF and EUR 1.7 billion from cohesion policy funding)¹².

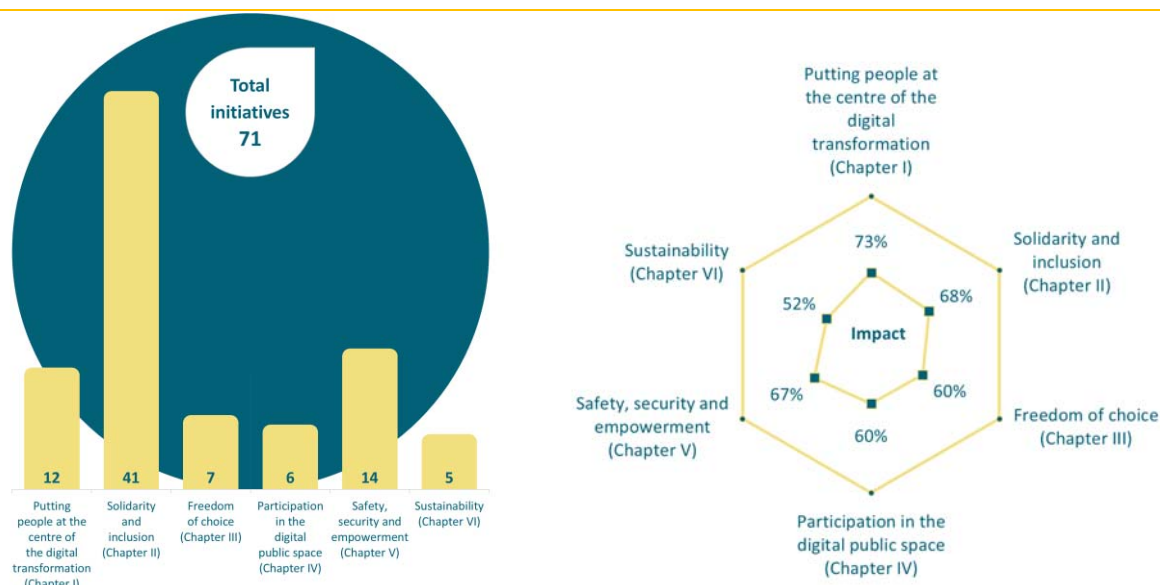
⁹ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are available to all Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

¹⁰ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹¹ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹² Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹³



Activity on Digital Rights and Principles (figure 1)

Hungary has been relatively active in implementing digital rights and principles, with 71 initiatives overall and 2 new initiatives launched in 2024, showing limited progress towards its commitments. Hungary is most active in Digital education, training and skills (II). There is room for improvement, especially with regards to Interactions with algorithms and artificial intelligence systems (III) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Hungary (mainly national government) and how these are perceived by citizens.

The indicators suggest that Hungary is most successful in implementing commitments related to Putting people at the centre of the digital transformation (I). Hungary should strengthen efforts in areas where the impact of digital rights initiatives appears to be limited, notably on Sustainability (VI).

According to the Special Eurobarometer 'Digital Decade 2025', 55% of citizens in Hungary think that the EU protects their digital rights well (a 5% decrease since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting basic and advanced digital education, training and skills (67%, above the EU average of 60%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (38%, below the EU average of 48%).

¹³ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
{SWD(2025) 292 final} - {SWD(2025) 293 final} - {SWD(2025) 295 final}

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Ireland

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Executive summary

Ireland shows good progress in digital infrastructure and should further improve access to e-health records building on visible progress made in 2024. The country positions itself as a cybersecurity leader, particularly through strong implementation of the 5G Cybersecurity Toolbox and public cloud control investments.

Ireland shows a high level of ambition in its contribution to the Digital Decade, having set 11 national targets, 91% of which are very well aligned with the EU's 2030 targets. The country is following its trajectories moderately well, with 50% of them being on track (on the basis of the 2024 trajectories defined for 6 KPIs out of 8 analysed). Ireland addressed 64% of the 11 recommendations issued by the Commission in 2024, either by implementing significant policy changes (9%) or making some changes (55%) through new measures.

Fibre and very high-capacity network (VHCN) coverage continued to register strong growth in 2024, including in rural areas, and 5G coverage reached 89.9%, approaching 90%. The digitalisation of SMEs remains just above the EU average, while adoption of advanced technologies, such as AI, is broadly in line with the EU average. Ireland piloted the European Digital Identity Wallet and advanced the preparations for its eIDAS notification. The country also expanded initiatives to reduce the environmental footprint of public sector digital infrastructure, including by creating a new public service data centre and promoting green public procurement. Cyber resilience efforts were extended to SMEs and key sectors, with targeted actions in the health system.

Digital Decade KPI ⁽¹⁾	Ireland				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	IE	EU
Fixed Very High Capacity Network (VHCN) coverage	78.5%	87.2%	11.0%	93.5%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	61.6%	73.5%	19.3%	-	69.2%	8.4%	-	-
Overall 5G coverage	85.3%	89.9%	5.4%	87.1%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	20	39	95.0%	18	2 257	90.5%	-	10 000
SMEs with at least a basic level of digital intensity (2)	-	73.4%	-0.5%	-	72.9%	2.8%	90.0%	90%
Cloud	53.1%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	8.0%	14.9%	86.0%	18.0%	13.5%	67.2%	75.0%	75%
Data analytics	37.1%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	64.1%	-	-	-	-	-	-	75%
Unicorns	12	13	8.3%	-	286	4.4%	-	500
At least basic digital skills	72.9%	-	-	-	-	-	80.0%	80%
ICT specialists	6.2%	6.3%	1.6%	7.5%	5.0%	4.2%	9.6%	~10%
eID scheme notification		No						
Digital public services for citizens	81.2	87.1	7.2%	82.0	82.3	3.6%	100.0	100
Digital public services for businesses	100.0	100.0	0.0%	100.0	86.2	0.9%	100.0	100
Access to e-Health records	11.4	24.5	115.8%	-	82.7	4.5%	80.0	100

(1) See the methodological note for the description of the indicators and other metrics.

(2) DESI 2025 reports Version 4 of the Digital Intensity Index, which is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of annual progress. It is not comparable to the national trajectory, which is based on Version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI 2025 (year 2024).

According to the 2025 special Eurobarometer on the Digital Decade, 77% of Irish people consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 92% consider it important to counter and mitigate the issue of fake news and disinformation online. And on competitiveness, 93% consider it important to ensure that European companies can grow and become 'European Champions' capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Ireland's strong digital economy, driven by a dynamic ICT sector and a vibrant start-up ecosystem, benefits from high foreign direct investment and proactive innovation policies. Fixed infrastructure indicators (VHCN, fibre to the premises (FTTP)) are above the EU average, and Ireland is consolidating its role as a strategic digital gateway. 5G deployment continues steadily, although deployments in the 3.6 GHz band remain limited and there is a lack of demand for spectrum in the 26 GHz band. Ireland maintains a high level of SME digitalisation, but growth has been stagnating since 2022. Nevertheless, the uptake of advanced technologies, such as cloud, AI, and data analytics, remains strong. National strategies on semiconductors, edge computing, and quantum technologies advance the country's technological leadership. Moreover, cybersecurity resilience is being strengthened through targeted initiatives across enterprises and critical infrastructure.

Protecting and empowering EU people and society

Ireland continues to perform strongly on digital skills and gender inclusion, with one of the narrowest rural-urban divides in the EU. However, significant disparities persist across education levels. Growth in the number of ICT workers remains modest, and a decline in employer-led training may undermine long-term readiness. Digital public services are a national strength, particularly for businesses, but further back-end integration is needed to improve efficiency and accessibility. Ireland advanced its eID roll-out and digital health strategy in 2024; however, access to electronic health records remains limited, and onboarding healthcare providers is at an early stage. Progress on online safety, media regulation, and electoral integrity accelerated, strengthening Ireland's commitment to a human-centric and trusted digital environment. Complementary tools provided by the national regulator, including broadband availability checkers, telecom comparison platforms, and anti-scam measures, further support digital empowerment and consumer protection.

Leveraging digital transformation for a smart greening

Ireland is strengthening the link between digital innovation and sustainability, with public strategies promoting energy-efficient infrastructure, green procurement, and support to SMEs' sustainable adoption of digital technologies. Projects, like Build Digital, and the Digital Transition Fund are advancing the decarbonisation of key sectors, and new policies encourage environmental criteria in ICT and construction. However, the absence of a unified system to monitor emissions reductions with digital solutions is still an issue. Green skills development has also been prioritised to ensure workers are ready for the twin transitions.

National Digital Decade strategic roadmap

Ireland submitted its adjusted Digital Decade strategic roadmap in November 2024. It expands the total number of measures to 81, including 22 new initiatives, with a total budget of EUR 9.2 billion, of which EUR 4.8 billion is from the public budget (equivalent to 0.90% of GDP). Maintaining its original structure and funding priorities, the roadmap confirms Ireland's strong focus on SME digitalisation,

public service digitalisation, digital skills, and cybersecurity. Although no new national targets were introduced, Ireland reiterated its commitment to gigabit coverage by 2028 and sustained investment in digital inclusion and connectivity. Based on the national strategy, Harnessing Digital, the roadmap continues to prioritise digital infrastructure, digital skills, cybersecurity, and support for innovation and scale-ups. All targets align with the EU's 2030 goals, except the one access to e-Health records (80% compared to the EU objective of 100%). Ireland has made some efforts to follow up the 2024 roadmap recommendations through new policy measures and updates.

Funding & projects for digital

Ireland allocates 34% of its total recovery and resilience plan to digital (EUR 312 million)¹. In addition, under cohesion policy, EUR 54 million, representing 5% of the country's total cohesion policy funding, is dedicated to advancing Ireland's digital transformation².

Ireland is a member of the Alliance for Language Technologies European Digital Infrastructure Consortium (EDIC) and of the Local Digital Twins towards the CitiVERSE EDIC. Ireland is directly participating in the Important Project of Common European Interest on Microelectronics and Communication Technologies (IPCEI-ME/CT). It is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Ireland has contributed to the Digital Decade's Best Practice Accelerator³ by sharing four practices, including three in the Digital Skills cluster (SuCCeS, INGENIC, and TU Dublin's mentoring model for women in ICT) and one on the green transition (Build Digital). These initiatives reflect Ireland's strategic focus on skills, innovation, and sustainable infrastructure.

Digital rights and principles

According to a monitoring study, Ireland has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 89 initiatives overall and 4 new initiatives launched in 2024. Ireland is most active in the area of digital education, training and skills. Less activity has been identified with regards to a fair digital environment and sustainability. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing freedom of choice.

Recommendations

- **e-Health:** Accelerate the onboarding of healthcare providers and enable full access to electronic health records for everyone, including legal guardians and authorised persons, building on the implementation of the national Digital Health Strategy.
- **Artificial intelligence:** Continue to support applied AI innovation and skills development to strengthen Ireland's leadership in responsible, human-centric AI and accelerate its adoption by SMEs.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

- **Cybersecurity:** Strengthen efforts to address evolving threats, particularly for SMEs and public services.
- **ICT specialists and advanced skills:** make digital training and reskilling opportunities more accessible and more relevant to job market needs. Address the stagnation in gender participation in the digital sector through dedicated national measures.
- **Take-up of advanced technologies:** Support the adoption of advanced digital technologies (particularly AI and cloud) by businesses through the creation of regional ecosystems and industrial use-case pilots. Encourage the use of sovereign European solutions.
- **SMEs:** Improve the digitalisation of SMEs, including by prioritising support to those with lower levels of digital maturity, regardless of their size. Ensure the continuity of existing schemes beyond their current RRF funding.
- **5G:** Encourage the assignment of 5G mid-band spectrum and promote the deployment of stand-alone 5G networks and industrial use cases, including in rural and underserved areas.
- **eID:** Notify an eID scheme under the eIDAS Regulation to the Commission.

A competitive, sovereign and resilient EU based on technological leadership

Ireland's economy is characterised by a strong performance in several sectors, particularly technology and pharmaceuticals, which are largely driven by foreign direct investments (FDI). These investments have positioned Ireland as a major player in digital markets. The country's GDP growth was forecast to be around 3.3% in 2025, indicating a robust economic environment conducive to maintaining and boosting competitiveness.

Ireland has a significant footprint in the global digital economy, particularly in high-tech sectors. It holds substantial market activity in information and communication technologies (ICT)⁴. The Irish ICT sector represented 34.8% of the gross value added of the country in 2022, by far the highest share in the EU⁵. The presence of multinational enterprises heavily influences this sector, benefiting from Ireland's favourable corporate tax rates and skilled workforce.

Despite its strengths, Ireland faces challenges in public investment in R&D, which remains relatively low compared to EU averages. Nonetheless, the country has made significant strides in business digitalisation, performing above the EU average in several digital areas. In particular, R&D business expenditure in the ICT sector accounted for 42.98% of the total R&D expenditure in 2021, and the number of R&D personnel in the ICT sector as a percentage of the total number of R&D personnel was 44.65%. Ireland ranks as a 'strong innovator' in the European Innovation Scoreboard, with significant performance in the private sector R&D, indicating a robust innovation ecosystem that is crucial for maintaining technological leadership. The Irish Government is updating its National Digital Strategy in 2025, to set out a coherent vision for Ireland's ambition as a digital, AI and innovation leader; the revised Strategy will continue to align with the Digital Decade programme and its targets.

Ireland is advancing in AI, with increased adoption rates and initiatives to support digital transformation in SMEs. This includes funding from national initiatives and participation in European Digital Innovation Hubs, which are vital for fostering an environment conducive to technological innovation and competitiveness.

The start-up ecosystem in Ireland is vibrant, with a growing number of start-ups and unicorns. This sector benefits from proactive governmental policies and a supportive business environment that encourages innovation and entrepreneurship.

Digital infrastructure in Ireland is well-developed, with high rates of digital service use among citizens and businesses. This includes a leading role in digital public services for businesses and a strong push towards using digital IDs and digital credentials⁶. However, the country still faces challenges, such as the need for greater access to e-Health records, indicating areas where further improvement could boost overall digital competitiveness.

⁴ The Economist Intelligence Unit. (2025). EIU One-Click Report: Ireland.

⁵ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

⁶ European Commission. (2025). European Semester Annex on Effective Institutional Framework: Ireland.

Building technological leadership: digital infrastructure and technologies

Ireland continues to expand its digital infrastructure in line with EU connectivity targets, showing strong progress in FTTP and VHCN coverage and moderate progress in 5G, particularly in rural areas. These efforts underpin broader ambitions in technological sovereignty and resilience.

Connectivity infrastructure

Ireland's VHCN coverage reached 87.2% in 2024 (2030 national target: 100%), surpassing the EU average of 82.5% and with a strong annual growth rate of 11.0%. However, the country remains below its national trajectory. Rural coverage (72.19%) also exceeded the EU average (61.89%).

FTTP coverage increased significantly, reaching 73.48% in 2024, above the EU average of 69.24%, with an annual growth rate of 19.3%. Coverage in sparsely populated areas also rose to 72.11%, outperforming the EU average of 58.78%. The rural annual growth rate of 27.2% confirms strong momentum. The country did not provide a national trajectory point for 2024⁷.

Ireland's 5G coverage rose to 89.94% in 2024, still below the EU average of 94.35%, with a modest annual increase of 5.4%. The country is on track according to its national trajectory. Ireland took a significant step forward in late 2022 through the Multi Band Spectrum Award, which allocated 465 MHz of spectrum—a 46% increase in total assignments—across the 700 MHz, 2.1 GHz, 2.3 GHz, and 2.6 GHz bands. Each of the three mobile network operators (Eir, Three, and Vodafone) received more than 100 MHz of mid-band spectrum. These licences come with robust population-based coverage obligations to be met progressively between 2026 and 2030. In rural areas, coverage reached 76.37%, lagging behind the EU's 79.57%, but Ireland's annual growth rate of 22.6% nearly doubled the EU's 11.9%, signalling targeted rural acceleration. However, 5G deployment in the strategic 3.4-3.8 GHz band remains low: total coverage rose to 58.83% (3.8%), below the EU's 67.72%, with national authorities reporting insufficient demand. In rural areas, this band reached 18.48% coverage, growing by 75.8% but still below the EU average of 26.19%, highlighting the need for further spectrum-based action.

Indicators on Ireland's broadband take-up show a mixed performance. In 2024, 69.05% of fixed broadband subscriptions were faster than 100 Mbps, slightly below the EU average of 71.88%, but Ireland's annual growth rate (13.1%) outpaced the EU's (9.1%). The share of subscriptions to speeds faster than 1 Gbps stood at 13.2%, well below the EU average of 22.25%, yet grew rapidly at 39.2%, nearly double the EU's 20.5%, suggesting significant demand potential. As fibre roll-out accelerates, especially in rural areas, 1 Gbps take-up is expected to rise. The National Broadband Plan (NBP) continues to drive progress: by end-2024, over 111,000 premises had been connected, with more than 326,000 premises (58% of the intervention area) able to order or pre-order a connection. Over 46,000 new premises were connected in 2024 alone, and NBP adoption is running ahead of schedule.

Ireland's 5G SIM penetration grew from 24.43% in 2023 to 31.97% in 2024. Despite being above the EU average in 2023, it fell behind the EU average of 35.56% in 2024. Moreover, Ireland's annual growth

⁷ Due to improved data availability and additional analysis, Ireland has provided detailed new data for the year 2024. The data for 2024 is more accurate given this improved data availability, but the change in approach has resulted in a decrease in FTTP coverage and only a very minor increase in Fixed VHCN coverage for the year 2024 vs what was previously published in this report for the year 2023. This is due to differences in the calculation methodologies and data sources used by Comreg vs the calculation methodologies and data sources used in previous years where the figures were estimated using data collected directly from operators. To mitigate the impact of the change in approach and provide a more accurate insight into the actual year-on-year changes that have occurred, Ireland have provided revised figures for the year 2023.

rate (30.9%) lagged behind the EU's 63.9%, indicating a relative slowdown in 5G adoption momentum that could reflect either market saturation or bottlenecks in commercial offerings.

VHCN and FTTP

Ireland's VHCN and FTTP targets remain at 100% with a completion date set for 2028, as set out in the initial roadmap submitted in 2023. Based on the sustained growth rates recorded in 2024 and coverage now exceeding EU averages in both total and rural segments, the targets are considered realistic. It is therefore justified that the existing strategy, led by NBP, remains the primary measure, with no additional connectivity-related actions introduced in the roadmap adjustment. The NBP has expanded its reach to all counties and now includes 10 island communities. In 2024 alone, more than 65 000 premises were connected, with over 205 000 premises passed to date.

While no copper switch-off has yet occurred in practice, Eircom's intention to pursue copper switch-off was first publicly expressed in 2021. Following industry engagement and public consultation, in November 2023, ComReg (national regulatory authority) adopted a Copper Switch-Off (CSO) framework, which Eircom must follow when decommissioning its regulated legacy network services. In line with the ComReg Decision, the first step in the process of migration from legacy to modern infrastructure is for Eircom to submit a Switch Off Proposal to ComReg for consideration and, if appropriate, subsequent approval. On 12 May 2025, Eircom submitted such a proposal. Fibre subscriptions continue to rise, particularly in areas where open-access infrastructure allows for increased competition and provider choice. The [rollout of FTTP by National Broadband Ireland \(NBI\)](#) under the NBP has improved retail competition in rural areas. Recent data on broadband subscriptions indicates a fast-growing demand base.

There is currently no reported decline in network investment levels, but capacity challenges—particularly a shortage of skilled workers and local permitting delays—remain potential obstacles for the last mile of rollout. The government's continued coordination with stakeholders, including local authorities and telecom providers, was a key success factor for sustaining rollout momentum.

Ireland's position as a strategic gateway for EU connectivity is further strengthened by the EU-funded **PISCES subsea cable system**, which links Ireland with France, Spain and Portugal and enables interconnection with global transatlantic networks. While not nationally managed, this infrastructure project contributes directly to EU digital sovereignty and resilience goals.

5G

Ireland's 5G target remains at 100% population coverage by 2030, as set out in the initial roadmap submitted in 2023. While 5G rollout is advancing, spectrum assignment at 3.6 GHz although available, is not receiving sufficient demand. The roadmap adjustment submitted in 2024 does not include new dedicated measures for 5G deployment, relying instead on continued operator-led expansion and licensing frameworks.

Ireland's assignment of harmonised available spectrum in the 5G pioneer bands stood at 62.5% in 2025, unchanged since the previous year and significantly below the EU average of 74.63%. However, focusing exclusively on pioneer bands (700 MHz, 3.6 GHz, and 26 GHz) does not provide a full picture of spectrum assignment. In practice, 5G in Ireland is deployed across a broader range of bands, including 700 MHz, 1800 MHz, 2100 MHz, 2.3 GHz, 2.6 GHz, and 3.6 GHz. The 26 GHz band, while part of the EU-designated pioneer bands, remains unassigned due to a lack of demand by operators, rather than policy or regulatory delay. This can be explained by coverage and technical limitations of the band,

such as shorter range and limited equipment availability which combined with Ireland's relatively low population density, discourages operators from investing in network deployment in that specific band.

Although rural deployment in the 3.6 GHz band grew strongly, overall coverage in this frequency range remains limited. In parallel, Ireland has not yet launched or announced any national strategy for 5G stand-alone core deployment or vertical-specific use cases, such as network slicing.

Despite these gaps, the country's three main operators continued to expand 5G networks throughout 2024. Government **stakeholders highlighted persistent challenges in planning processes, staffing capacity, and backhaul delivery**. These included the **limited availability of skilled contractors**, the **capacity of the market to deliver at the required scale**, and **delays linked to local authority permitting**, particularly in rural and harder-to-reach areas. The absence of targeted state support or incentive mechanisms for advanced deployments may slow progress on industrial applications and rural densification over time.

Ireland's roll-out remains more market-driven and less supported by dedicated public incentives or national vertical strategies. As a result, industrial use cases and 5G stand-alone development remain limited.

Ireland's 5G infrastructure is also subject to increasing scrutiny in terms of security and resilience. As more than one third of the **EU's digital infrastructure traffic is routed through Ireland**, national authorities have intensified efforts to safeguard strategic telecom infrastructure. In particular, coordination between the Department of Environment, Climate and Communications, the **National Cyber Security Centre (NCSC)**, and key telecom providers has focused on assessing systemic risk and ensuring the continuity of critical digital services. This includes both preventive cybersecurity measures and the physical protection of network assets. Given 5G's central role in powering future societal and economic functions, **Ireland's risk management approach** reflects the growing strategic importance of secure and resilient digital infrastructure.

Moreover, recent **climate-related events**, particularly in the west of Ireland, have caused disruptions to mobile services, triggering **cross-sectoral engagement on natural disaster preparedness**. In the case of the mobile networks, 84% of the network impacts were due to power loss. While some infrastructure was affected for the most part all such impacts were rectified quickly after power restoration. Risk mitigation now forms part of 5G infrastructure planning in exposed areas, with increased attention to backup power, redundancy, and access in flood-prone or wind-exposed zones. Although these efforts are ongoing, **they have not yet been translated into a new measure in the 2024 roadmap**.

2024 recommendation on connectivity: (i) Continue efforts to ensure full gigabit and 5G coverage, including by addressing operational bottlenecks such as permissions for telecoms mast deployment to extend mobile coverage. (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

In 2024, Ireland continued the implementation of existing measures but did not take any new measures. In 2024, Ireland recorded high growth rates in VHCN and FTTP coverage, with rural areas also seeing strong improvements, confirming a trajectory aligned with national and EU targets. However, no new measures were introduced to tackle long-standing bottlenecks in planning and permitting, which continue to affect infrastructure roll-out. While rural 5G coverage expanded significantly, spectrum assignment remained unchanged, and no national plan for supporting 5G

stand-alone deployment or B2B use cases was launched due to the lack of demand. The roadmap adjustment did not add new measures in these areas.

Semiconductors

Semiconductors remain a priority in Ireland's digital strategy. In May 2025, [Ireland published its National Semiconductor Strategy](#), Silicon Island. Developed following a public consultation with 42 contributions from industry, academia, and public stakeholders, the strategy fully aligned with the objectives of the EU Chips Act and Digital Decade, it sets out clear actions to grow the national semiconductor ecosystem through high-value job creation, skills development, international positioning, and infrastructure investment.

Key priorities include attracting leading-edge fabrication facilities, promoting R&D and start-ups, and establishing the industry-led Semiconductor Advisory Council. While no new semiconductor-specific measures were included in the 2024 roadmap adjustment, Ireland continues to engage actively in European-level initiatives under **the EU Chips Act**, including its role in **the European Semiconductor Board** and the **OECD Informal Semiconductor Network**. Ireland is also participating in the **IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT)**, with Analog Devices Inc., which announced a EUR 630 million investment to expand its Irish operations. A national **Chips Competence Centre** has already been established under the Chips Act framework.

Edge nodes

In 2024, Ireland continued implementation of existing measures but did not take any new measures. According to estimates, the number of edge nodes in Ireland increased from 20 in 2023 to 39 in 2024. Ireland's national roadmap includes a target of deploying 23 public sector edge nodes by 2025. This target is supported by a dedicated measure titled 'Public sector edge node project', which has already received EUR 41.5 million in public investment, with an additional EUR 63.4 million planned measure. The measure is being monitored by the Office of the Government Chief Information Officer (OGCIO), and implementation continues as planned.

Further expansion of edge infrastructure – particularly for far-edge services requiring sub-5 millisecond latency – may be shaped by the future emergence of relevant use cases and clearer signals of market demand.

2024 recommendation on edge nodes: Explore opportunities for public-private partnerships and leverage funding mechanisms to support the roll-out of edge node infrastructure.

In 2024, Ireland continued implementation of existing measures but did not take any new measures. Edge node deployment progressed under public investment, but no new public-private partnership initiatives or funding mechanisms were reported.

Quantum technologies

Ireland launched its Quantum 2030 national strategy at the end of 2023, setting out its ambition to become an internationally competitive hub in quantum technologies by 2030. The strategy is structured around five pillars: **research, talent, collaboration, entrepreneurship, and awareness**, and is currently in its early implementation phase. Working groups have been established involving

enterprises, academia, and expert stakeholders. These groups are developing operational recommendations in areas such as micro-credentials, SME engagement, and skills planning.

While the roadmap does not set a specific quantum target, Ireland continues to support quantum-related R&D and talent development under its research and innovation framework. Ireland is also participating in the **EuroQCI** initiative, with a fibre-based quantum communication infrastructure linking Dublin, Waterford, and Cork now at the final stages of implementation. This infrastructure is being used to explore quantum key distribution (QKD) use cases in collaboration with government networks and the NCSC.

No new quantum-specific measures were introduced in the 2024 roadmap adjustment, but Ireland's involvement in **EuroHPC** and emerging EU collaboration on satellite-based quantum communication (with Germany, Luxembourg, and Greece) underscores its contribution to European sovereignty in this domain.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Ireland boasts a dynamic digital start-up ecosystem, with a high adoption rate of advanced technologies among large firms and well-established infrastructure for innovation. However, progress in SME digitalisation has stalled, and the share of SMEs with at least a basic level of digital intensity stagnated in 2024 compared to 2022. This persistent gap between digitally advanced firms and less advanced firms risks limiting Ireland's long-term competitiveness. As highlighted in the Draghi report⁸, improving the adoption of key digital technologies – particularly AI and data analytics – across enterprises of all sizes is essential to lifting productivity and boosting economic resilience.

SMEs with at-least-basic digital intensity

In 2024, 73.38% of SMEs in Ireland had at least a basic level of digital intensity (2030 national target: 90%), which was nearly unchanged from 74.05% in 2022. This stagnation contrasts with the broader EU trend, which saw an annual increase of 2.8%. Nevertheless, Ireland remains slightly above the EU average of 72.91%. Looking more closely at advanced adoption, 39.56% of Irish SMEs reached a high level or a very high level of digital intensity, significantly exceeding the EU average of 32.66%. This highlights a clear divide between a group of digitally advanced firms and a group of slower-moving firms, which continues to present a structural challenge.

Ireland's policy mix to support SME digitalisation has gradually expanded since the launch of its **national recovery and resilience plan** (RRP) and the **National Digital Strategy**. In 2024, the country maintained the abovementioned 90% target and strengthened several national instruments. The **Digital Transition Fund** had approved EUR 46.15 million for 498 companies by the end of 2024, while the **Grow Digital Voucher**, launched in September 2024, offers up to EUR 5 000 to SMEs for adopting digital tools. Although initial uptake was modest, demand increased by late 2024, in part due to its link with the more established **Digital for Business** initiative, which continued to receive strong engagement through the **Local Enterprise Offices**.

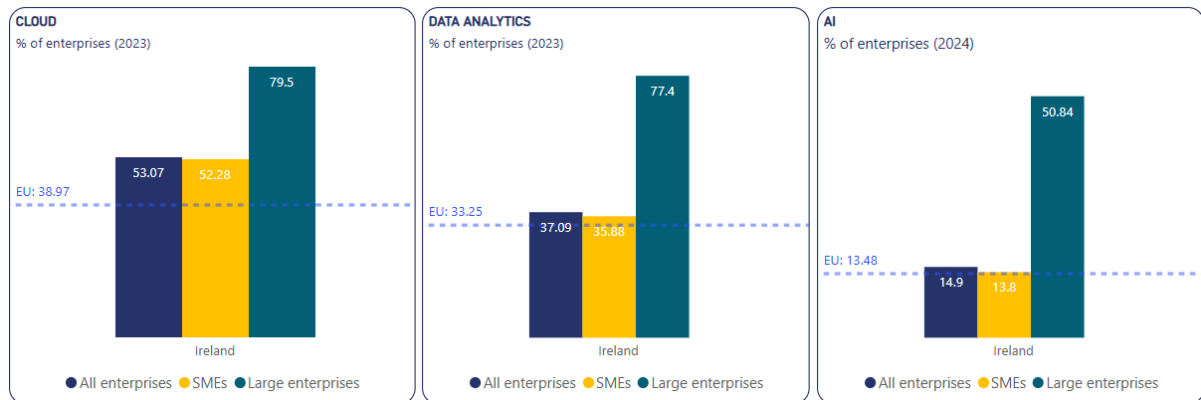
Complementing these financial supports, the **Grow Digital Portal**, launched in July 2024, offers SMEs a self-assessment tool and a tailored digital roadmap. Together, these instruments form a coherent support package. However, this has yet to yield measurable progress on the Digital Intensity Index.

Ireland's **four European Digital Innovation Hubs (EDIHs)** are now fully operational and serve as a vital bridge between the national strategy and local enterprise needs. Co-funded by the Recovery and Resilience Facility (RRF) and the Digital Europe Programme, the EDIHs had provided 490 services to 265 companies by the end of 2024, including test-before-invest, access to AI and cybersecurity tools, and digital skills training. In addition, 62 public sector bodies also received support. EDIH services are fully funded for SMEs under *de minimis* State aid rules (which allow for small amounts of State aid to be provided without needing approval from the European Commission). After the initial set-up, the number of engagements by the Irish EDIHs is significantly increasing and is expected to reach full delivery capacity.

Looking ahead, Ireland will need to further improve outreach to SMEs with lower levels of digital maturity and secure sustainable funding beyond the current EU and RRP cycles to ensure the continuity and impact of its Digital Decade targets and objectives.

⁸ Draghi, M., [The future of European competitiveness](#), Part A – A competitiveness strategy for Europe, 2024.

Take-up of cloud/AI/data analytics



According to 2023 data, 64.10% of enterprises in Ireland used either AI technologies, sophisticated or intermediate cloud computing services, or data analytics – well above the EU average of 54.7%. Although these results indicate a strong overall performance, the adoption gaps between large firms and SMEs persist (29.68 percentage points (pps)) but it is lower than the EU gap (32.97 pps). In 2022, SMEs accounted for 20.6% of national value added in the economy despite representing 97% of all enterprises with more than 10 employees, underscoring the importance of accelerating digital uptake in this segment to support inclusive growth and economic resilience.

Ireland maintains the EU 2030 target of achieving 75% adoption for each of the three technologies. While current uptake is encouraging, the pace of SME digitalisation is insufficient to meet the target without further targeted support. No new dedicated national programme was introduced in 2024, but several horizontal instruments continued to support adoption. These include the **Digital for Business initiative** (now expanded to firms with up to 50 employees), the **Grow Digital Voucher**, and the **Grow Digital Portal**, launched in September 2024. These instruments are delivered via the Local Enterprise Offices and cover AI, cloud, and data analytics.

A national awareness campaign focused on boosting SME uptake of these technologies is planned for 2025. In parallel, Ireland's four EDIHs continue to provide services across all three technology areas. The EDIHs are expected to scale up further as demand increases. Strategic coordination is supported by the **SME and Entrepreneurship Growth Taskforce** under the SME Growth Plan and the **Enterprise Digital Advisory Forum (EDAF)**, which provides guidance on emerging digital technologies based on input from government, enterprises, and academic stakeholders.

2024 recommendation on enterprises and SMEs: Develop targeted programmes and incentives to encourage enterprises and SMEs to adopt data analytics and AI and leverage their potential for innovation and growth.

Ireland made some efforts to address the recommendation through new policy actions in 2024. While relevant horizontal support measures remain in place and adoption has grown, the recommendation was **only partially addressed** as no new dedicated incentive or strategic stream was launched for these technologies.

- **Cloud**

Adoption rates of cloud computing continue to be some of Ireland's strongest digitalisation indicators. In 2023, 53.07% of Irish enterprises adopted cloud services, well above the EU average of 38.97%.

SMEs' adoption of the technology reached 52.28%, compared to 79.5% for large enterprises, resulting in a gap of 27.22 pps – below the EU average of 31.68.

Ireland has not formally joined the **IPCEI on Cloud Infrastructure and Services (IPCEI-CIS)** but continues to monitor its evolution. In parallel, the **Department of Enterprise, Trade and Employment (DETE)** is contributing to the design phase of the **IPCEI on Computing Infrastructure (IPCEI-ECI)**. Although Ireland has not yet formally endorsed the IPCEI-ECI, it is actively exploring national participation and retains the option to join once the structure is finalised. Participation in such a project could strengthen Ireland's position in secure and sovereign next-generation cloud services and support wider EU objectives.

2024 recommendation on cloud: Promote the uptake of next-generation cloud infrastructure and services, including through engagement with EU-level initiatives such as the IPCEI-CIS.

In 2024, Ireland continued implementation of existing measures but did not take any new measures. While cloud adoption continued to grow and support measures remain available, Ireland has not formalised its participation in the IPCEI-CIS

- [Data analytics](#)

In 2023, 37.09% of Irish enterprises reported using data analytics, above the EU average of 33.25%. SME uptake was 35.88%, while large enterprises reported a rate of 77.4%, resulting in a gap of 41.52 pps – broadly in line with the EU average.

Ireland maintains a national target of achieving 75% uptake of data analytics by 2030. While analytics is acknowledged as a strategic priority in the roadmap, no new dedicated measure was introduced in 2024. Instead, data analytics remains an eligible area for support under the **Grow Digital Voucher**, the **Digital for Business initiative**, and the **Grow Digital Portal**.

- [Artificial intelligence](#)

In 2024, 14.90% of enterprises adopted AI (2030 national target: 75%), slightly above the EU average of 13.48%; this is a significant increase from 8.01% in 2023 (86%, above the EU's 67.2%). The country is lagging behind its national trajectory. Despite this strong annual growth, adoption remains highly uneven across firm sizes: only 13.8% of SMEs reported using AI, compared to 50.84% of large enterprises – a gap of 37.04 pps, significantly wider than the EU average.

The Enterprise Digital Advisory Forum (EDAF) contributes to policy alignment, and [CeADAR](#) – Ireland's National Centre for Applied AI – delivers AI-focused training and test-before-invest services as part of the European Digital Innovation Hub network. In 2024, CeADAR introduced targeted training to support AI literacy obligations under the EU AI Act, drawing positive feedback from both enterprises and public organisations.

Ireland's AI strategy, 'AI – Here for Good', continues to provide the national vision, focusing on trustworthy, human-centric AI, and its implementation is reportedly on track. However, a more structured use-case policy or sector-specific deployment initiative has not yet materialised.

[Unicorns, scale-ups and start-ups](#)

At the end of 2024, **Ireland had 13 unicorns**, up from 12 in 2023. One additional unicorn is expected to be confirmed shortly, reflecting the dynamism of Ireland's digital and innovation-driven economy. While no national unicorn target has been set, Ireland continues to strengthen its support ecosystem

for digital firms with high potential, with a focus on software as a service (SaaS), fintech, and deep-tech sectors.

The 2024 roadmap reconfirms **digital entrepreneurship and scale-up growth** as strategic priorities. Several new and scaled-up funding instruments were introduced to support enterprises throughout their growth cycle. The **Seed and Venture Capital Scheme 2025-2029** was renewed with a EUR 250 million allocation (an increase of EUR 75 million), aiming to increase Series A and growth-stage equity financing and improve the domestic capital environment.

The EUR 90 million **Irish Innovation Seed Fund Programme (IISF)** was launched through a partnership between Enterprise Ireland, the European Investment Fund, and the Ireland Strategic Investment Fund. The IISF focuses on highly innovative early-stage enterprises, particularly in areas like AI, advanced computing, climate, and clean tech.

To address structural gaps in scale-up finance, the government established a **Finance for Scaling Group**, which published its first report in July 2024. The report recommends creating new public instruments to support scale-ups, improving the mobilisation of institutional capital, and revising tax policy to align it with long-term investment needs. An implementation Action Plan to develop the recommendations into concrete policy actions is being prepared.

Access to finance in Ireland continues to improve. Venture capital investment reached 0.4% of GDP in 2023 – slightly below the EU average of 0.5% – while private equity remained at 0.2%, below the EU average of 0.4%. Access to institutional capital remains constrained by the low engagement of pension funds and insurance companies, despite targeted public-private dialogues held in 2024.

Ireland's **start-up and scale-up ecosystem** is supported by a wide range of Enterprise Ireland schemes, including the **Pre-Seed Start Fund**, **Competitive Start Fund**, **High Potential Start-Up Fund**, and **New Frontiers** programme. These tools are delivered through an expanding network of innovation hubs and founder supports. A **National Start-Up Hub** is under development and expected to launch in 2025, centralising ecosystem access and improving service delivery for early-stage founders.

Ireland's broader strategic approach was set out in '**Delivering for Ireland – Strategy 2025-2029**', published in January 2024. The strategy outlines Ireland's ambition to support 1 000 start-ups by 2029, strengthen global competitiveness, and prioritise sectors such as AI, health tech, and sustainability. A dedicated **Start-Up Ireland Plan**, referenced in the strategy, is currently under preparation to consolidate and coordinate national start-up supports.

2024 recommendation on unicorns and scale-ups: Increase funding mechanisms such as the Digital Transition Fund and Seed and Venture Capital Scheme to support digital entrepreneurship and nurture potential unicorns.

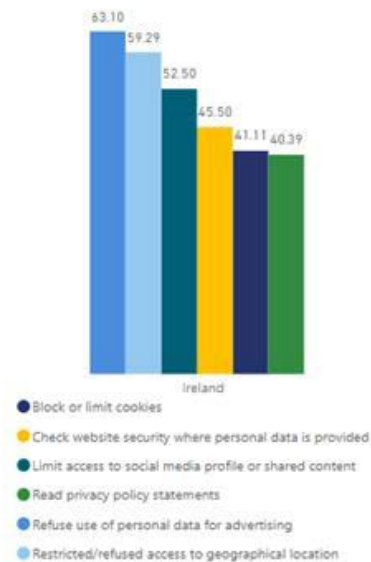
Ireland fully addressed the recommendation by putting significant policy actions into place in 2024. Major new financial instruments were launched in 2024, and structural finance reforms are actively being developed to improve scale-up readiness and long-term competitiveness.

Strengthening cybersecurity & resilience

Ireland has taken significant steps to strengthen its cybersecurity and digital resilience architecture, with progress observed across individual awareness, enterprise preparedness, regulatory frameworks, and strategic capacity building.

Digital safety awareness and behaviour among individuals remain high. In 2023, 80.69% of individuals took at least one action to protect their personal data online – well above the EU average of 69.55%. Moreover, 59.23% took three or more protective measures, indicating widespread above-basic digital safety skills. Refusing the use of personal data for advertising was the most common behaviour (63.1%), while only 40.39% of individuals read privacy policies.

Type of activities to protect personal data online
(% of individuals)



Cyber resilience among Irish enterprises is improving. In 2024, the share of businesses reporting ICT outages due to external cyberattacks dropped to 1.22%, down from 2.1% in 2022 and well below the EU average. However, 10.37% of enterprises reported other types of ICT-related incidents, such as internal system failures. As of 2022, 86.22% of firms had put in place some form of ICT security measures, and 69.16% included staff awareness-raising and training actions.

On secure internet protocols, mixed progress was observed. Ireland continues to lag behind in IPv6 adoption – only 23% of end users and 10% of servers used IPv6 as of Q3-2024 (below the EU averages of 37% and 16%, respectively). However, it leads on DNS Security Extensions (DNSSEC), achieving a validation rate of 49% (EU average: 43%).

Transposition of the NIS2 Directive is still pending. [Ireland missed the 17 October 2024 transposition deadline](#), although drafting the legislation was prioritised by the Irish government in July 2024. Until it is adopted, entities are not required to register, and reporting portals remain offline. Ireland is one of several Member States facing delays.

In parallel, the **Resilience of Critical Entities Directive** was transposed into Irish law via S.I. No. 559/2024, enabling the identification of Critical Entities in the digital infrastructure sector. ComReg has been designated as the Competent Authority for Digital Infrastructure and will assume supervisory responsibilities under this framework, including following the full transposition of the NIS2 Directive.

Strategic governance measures have expanded. A mid-term review of the National Cyber Security Strategy 2019-2024 was conducted in 2023. Notable outcomes include the expansion of the National Cyber Security Centre (NCSC), the establishment of a Counter-Ransomware Task Force, and improved cross-sector information-sharing. In 2024, a National Cybersecurity Coordination and Development Centre (NCC-IE) was launched with EUR 4.2 million in joint EU-national funding.

Efforts to secure 5G networks have advanced. The Communications Regulation and Digital Hub Development Agency (Amendment) Act 2023 provides the legal basis for 5G vendor restrictions, which entered into force on 1 September 2024. A Technical Stakeholder Consultation was held between June-August 2024. Based on the responses to that consultation, guidelines on the implementation of technical and organisational measures to manage the risks posed to the security of networks and

services will be drafted for the purpose of providing practical guidance to providers. The NCSC organises quarterly CORE (Cyber Operational Readiness Engagement) meetings with mobile operators to strengthen joint response preparedness.

Cybersecurity support for SMEs has expanded. The Cybersecurity Review Grant, launched in 2024 under the Digital Transition Fund, enables SMEs to assess and upgrade their defences. This is complemented by services from Ireland's European Digital Innovation Hubs (EDIHs), which provide fully funded cybersecurity, AI, and HPC support for SMEs.

Skills development and awareness-raising initiatives are growing. Ireland supports enterprise-led cybersecurity training through the National Apprenticeship Alliance and Skillnet Ireland. Awareness campaigns are promoted by Enterprise Ireland and the Small Firms Association, with targeted outreach in schools via digital safety teaching support.

Longer-term resilience is being fostered through innovation. The National Challenge Fund's Digital for Resilience Challenge supports applied research on cyber risk and continuity. One flagship project – 'Digital Resilience for SMEs' – focuses on preparedness and reducing exposure among small firms.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Ireland's digital transformation is underpinned by a strong foundation of high-skill levels and wide digital access, yet persistent inequalities require continuous, targeted action. The national approach recognises that digital progress must also tackle the barriers faced by lower-income groups, older adults, and those with lower levels of educational attainment. Policy efforts increasingly emphasise not just access to infrastructure but also the capacity of individuals and communities to engage meaningfully with digital services and the online environment. Digital upskilling is increasingly embedded across public service delivery, labour market activation, and education planning, supported by evolving coordination between national and local actors.

While structural programmes are in place, fragmentation and under-coverage remain challenges – particularly for hard-to-reach populations. Moreover, digital divides continue to intersect with broader social and regional disparities, making inclusion a cross-cutting policy concern. However, Ireland has taken significant institutional steps to ensure a secure and rights-respecting digital environment, with recent reforms in online safety regulation, media supervision, and democratic protection. These include an independent oversight of harmful content, strengthened electoral resilience, and better cooperation between regulators, education providers, and civil society. Overall, Ireland's digital transition is characterised by strong digital maturity, but inclusiveness now stands as the critical frontier to sustain progress and ensure that no group is left behind.

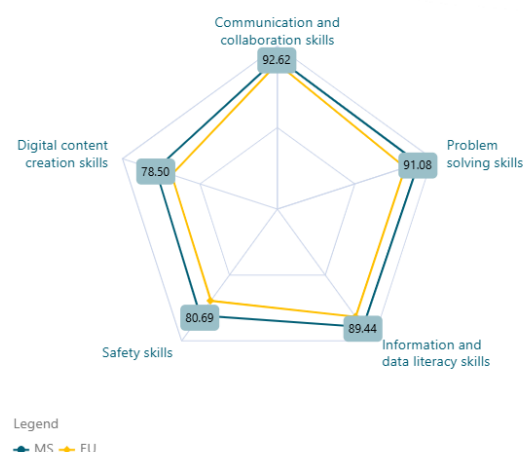
Equipping people with digital skills

Basic digital skills

In 2023, 72.91% of the Irish population had at least a basic level of digital skills, placing Ireland significantly above the EU average of 55.56%. Although no new data was released in 2024, Ireland remains one of the EU's best performers. A demographic breakdown shows this strength to be widely shared across age, geography, and gender, though notable gaps remain based on education level.

- **Gender gap:** 74.43% of men and 71.45% of women in Ireland had at least a basic level of digital skills – with a gender gap of 2.98 pps, slightly above the EU average of 2.23 pps.
- **Education level:** The digital divide is widest between educational groups. While 88.23% of those with tertiary education possess at least a basic level of digital skills, only 14.43% of individuals with low or no formal education do, creating a gap of 58.48 pps – one of the highest in the EU.

Digital Skills Index components
% of individuals



- **Living areas:** Digital skills are widespread in rural communities, with 71.55% of residents having at least a basic level of digital skills. The rural-urban gap is just 1.36 pps, far below the EU average (8.06 pps).
- **Age groups:** The highest levels of digital skills are observed among those aged 25-34 (87.99%). The lowest is among those aged 55-64 (46.74%), but this is still well above the EU average.
- **Digital Skills Index:** Ireland scores above the EU average in all five digital competence areas. Communication and collaboration scored highest (92.62%), while digital content creation was the lowest at 78.50%.

Ireland retains its 2030 national target of achieving 80% basic digital skills among its population, which appears realistic given the current good performance. Several major initiatives launched or scaled up in 2024 support this trajectory and are described below.

The **Adult Literacy for Life (ALL)** Strategy remains Ireland's overarching policy for lifelong learning, with a strong digital component. In 2024, it funded 103 community-based projects focused on digital and literacy inclusion. Applications opened in December 2024 for the 2025 Collaboration and Innovation Fund. The purpose of the fund is to pay for collaborative and innovative projects that support adults with unmet literacy, numeracy, digital and financial literacy needs, and create a more literacy friendly and equal society. Also in 2024, The ALL-programme Office – housed in SOLAS - provided additional funding to Age Action on expanding their digital literacy programme for older people. 1023 people completed the competency-based digital skills training, of which: 406 older learners completed their pre-course assessment measuring skills and confidence, and 246 of whom also completed their post-course assessment.

The **Social Inclusion and Community Activation Programme (SICAP)** delivers digital inclusion support across 30 contract areas, including loans of digital devices, IT workshops, and outreach to marginalised communities. As of 2024, 34 IT courses were active across seven regions, and three local organisations implementing the courses were focused entirely on digital access initiatives.

Libraries continue to play a vital role in digital access. In 2024, Ireland upgraded the digital infrastructure across 330 public libraries, providing free access to new PCs, laptops, and tablets. These spaces also complement ALL by offering accessible internet and training environments for underserved groups.

From an employment perspective, the **Pathways to Work** strategy provides targeted upskilling and digital training to jobseekers and those outside the labour force. Irish authorities have highlighted as a vital measure to connect national policy with local delivery efforts.

Ireland also continues to integrate digital skills across the education system. The **Digital Strategy for Schools to 2027 sets out the Department of Education and Youth's policy to embed the use of digital technology across the curriculum in teaching, learning and assessment in primary and secondary schools.** The **STEM Education Policy Statement 2017-2026** promotes STEM teaching, learning and assessment practices using digital technologies at primary and secondary levels. Additionally, the **new Literacy, Numeracy and Digital Literacy Strategy (2024–2033)** ensures the development digital literacy skills, knowledge, and dispositions from early childhood to the end of secondary education..

Under Ireland's RRP, a EUR 64 million investment **supports digital inclusion across the education spectrum.** The package combines infrastructure such as the provision of high-speed broadband of 100Mbps for almost 1000 primary schools and funding for a once off grant scheme for all recognised

primary and post primary schools in the free education scheme to support learners at risk of educational disadvantage through the digital divide. These investment projects were aligned with strategic reforms including the Digital Strategy for Schools to 2027, the Adult Literacy, Numeracy and Digital Literacy Strategy, measures to increase the number of ICT graduates, and supports for further and higher education institutions to provide laptops to disadvantaged students. This holistic investment reinforces Ireland's ambition to address digital divides across all education levels⁹.

At enterprise level, Skillnet Ireland, the National Apprenticeship Alliance, and Local Enterprise Offices remain central delivery points for demand-led upskilling. A **pilot SME Training Cost Recovery Scheme** is under development to subsidise small businesses when allowing employees take time off for digital skills training.

ICT specialists

In 2024, Ireland reached 6.3% of ICT specialists in total employment (2030 national target: 226 000, around 9.6% of employment), well above the EU average of 5.0%. However, this represents only a marginal increase of 0.1 pps from 6.2% in 2023, with an annual growth rate of 1.6%, significantly below the EU average growth of 4.2%. This relatively slow increase takes place against the backdrop of a 1.1 % growth in the number of people in employment in Ireland between Q2 2023 and Q3 2024¹⁰. While Ireland maintains a strong baseline, progress remains too slow to meet the national target, and the country is lagging behind its expected trajectory. **To reach the objective, Ireland would need to add around 8 700 new ICT specialists annually, a pace that has not yet been achieved under current trends.**

Ireland continues to outperform the EU average in closing the gender gap. Women accounted for 24.4% of ICT specialists in 2024, compared to 19.5% at EU level. However, the annual growth rate was modest (0.4% vs 0.5% in the EU), signalling a stagnation that risks limiting further convergence. There is still a need for renewed momentum to close this gender gap.

Meanwhile, ICT training provision in enterprises declined. In 2022, 23.21% of Irish firms with more than 10 employees provided ICT training, slightly above the EU average (22.37%). By 2024, this had fallen to 21.58%, below the EU average (22.29%). The annual contraction reflects a fall in employer-led upskilling, pointing to a structural fragility in Ireland's overall training system despite its otherwise advanced digital landscape.

The Irish labour market remains focused on high-value digital roles. Based on Eurostat data from online job advertisements, **the most sought-after profiles in 2024 were software and applications developers and analysts (56.5% of postings), followed by ICT operations and user support technicians (13.5%) and other ICT specialist roles (15.2%).** The 'other ICT specialist roles' category exceeds the EU average and comprises experts in cybersecurity, AI, and advanced digital systems. Demand for telecommunications and hardware roles remains low, suggesting a continued shift to expert digital profiles.

Ireland reaffirmed its policy commitment to raise the number of ICT specialists in the 2024 roadmap, which maintains a package of nine core measures supported by EUR 957 million. A structural reform of the **National Training Fund** is central to this approach, allocating **EUR 1.485 billion** to tertiary and higher education between 2025 and 2030. Apprenticeship budgets were increased by **EUR 67.4 million in 2024 then over 77 million in 2025. 244 active ICT apprentices** were reported in 2023 which grew

⁹ Recovery and Resilience Scoreboard: Thematic analysis Digital skills and education, December 2024.

¹⁰ Data available at: <https://www.cso.ie/en/statistics/generalstatisticalpublications/irelandtheyearinnumbers/>

to 447 in 2024. At the end of Q1 2025, there 484 active ICT apprentices, with 42 ICT apprentice registrations being recorded in Q1 2025. Further growth is planned through 2025.

Upskilling and reskilling mechanisms also remained active. **Springboard+** and **Skillnet** Ireland continued throughout 2024, targeting both employed and unemployed individuals. The upcoming Springboard+ call in 2025 will prioritise digital and ICT programmes. A **new Digital Technology Skills Roadmap** is also under preparation to forecast demand in advanced specialist roles, such as cybersecurity, AI, and quantum technologies. However, no new gender-specific or expert-focused actions were included in the 2024 roadmap.

Ireland's stronger-than-average share of female ICT professionals may partly reflect successful institutional efforts. As part of the EU's Best Practice Accelerator¹¹, Ireland presented three high-impact higher education initiatives to EU Member States: (i) the **SuCCeS programme** (Technological University Dublin), launched in 2021, supporting recruitment and retention of women in ICT academia; (ii) **INGENIC** (Trinity College Dublin), a 2023 national network coordinating institutional gender strategies across computing departments; and (iii) Technological University Dublin's long-running **mentoring model for female students in computing**, operational since 2012. While not government-led, these initiatives illustrate scalable approaches to boosting gender inclusion across the EU.

2024 recommendation on ICT Specialists: Expand apprenticeship programmes and reskilling and upskilling initiatives to meet the growing demand for ICT specialists through a structural reform of the National Training Fund. Efforts should be continued in bridging the gender gap.

Ireland made some efforts to address the recommendation through new policy actions in 2024. Structural reforms and significant financial commitments advanced the apprenticeship and reskilling agenda, but more targeted national action will be needed to accelerate gender equality in ICT careers.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

In 2024, Ireland confirmed its position as one of the EU's top performers in the provision of digital public services, especially for businesses. The country achieved a score of 87.08 for digital public services for citizens (2030 national target: 100), well above the EU average of 82.32, and a significant improvement from 81.21 in 2023 (up 7.2%). This annual growth rate was double the EU's 3.6%, placing Ireland on a promising path. Cross-border services for citizens saw equally strong progress, rising from 78.69 in 2023 to 85.79 in 2024 – again ahead of the EU benchmark and with an annual growth rate of 9.0% (EU: 4.3%). **The country is on track to meet both its national and EU-level targets for digital public services by 2030.**

Digital public services for businesses remain Ireland's top strength. Since 2020, Ireland has maintained a perfect score of 100 for both domestic and cross-border digital services for businesses – one of only three EU countries to do so. Maintaining this leadership will require sustained attention to usability, accessibility, and back-end interoperability.

¹¹ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are available to all Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Despite this strength, e-Health remains a structural weakness. In 2024, Ireland's score for access to e-Health records rose to 24.52, up from 11.37 in 2023 – an impressive growth rate of 115.8%. Nevertheless, this remains far below the EU average of 82.7. Ireland is therefore progressing quickly from a low baseline but still faces major gaps in availability and access across medical providers and service categories.

Meanwhile, the **proportion of individuals interacting with public authorities online** remained strong, albeit with a slight decline. The share of users stood at **90.09% in 2024**, down from **91.53% in 2023**, but still significantly above the EU average of **74.71%**. This small drop does not appear to reflect a structural issue as citizen uptake in Ireland continues to rank among the highest in the EU.

eID

Ireland continues to perform strongly in digital identification. The share of **eID** users reached 73.8% in 2024, well above the EU average of 41.1%. The **MyGovID** system has been widely adopted and continues to, with over 2.7 million verified accounts as of December 2024, representing close to 65% of the adult population. Ireland has set an ambitious target of reaching 80% coverage among eligible individuals by 2030.

Ireland is actively participating in EU-level pilots related to the **European Digital Identity Wallet (EUDI)**, including Digital Credentials for Europe. In 2024, Ireland conducted a pre-notification compliance assessment for MyGovID and coordinated with the European Commission and the Cooperation Network in preparation for formal eIDAS notification, expected in 2025. A pilot of the EUDI Wallet was carried out with 500 public servants, and broader implementation is in preparation. MyGovID is also being tested across sectors such as banking and social security. No major strategic changes were introduced in 2024, but implementation continues in line with the eIDAS 2.0 framework.

2024 recommendation on eID: Notify an eID scheme under the eIDAS Regulation to the Commission, while leveraging digital schemes such as MyGovID and the EU Digital Identity Wallet to improve access to essential services under eIDAS.

Ireland made some efforts to address the recommendation through new policy actions in 2024. Preparations for eIDAS notification advanced, and the EUDI Wallet was piloted. However, Ireland did not yet submit a formal notification in 2024. Further steps are planned in 2025.

Digitalisation of public services for citizens and businesses

Ireland's roadmap reconfirms the 2030 target of achieving 100% availability of key digital public services for both citizens and businesses. Progress in 2024 was supported by streamlined service delivery and improved integration across systems, with a strong emphasis on human-centric design.

Ireland's latest Programme for Government reinforces the role of the Minister for Public Expenditure and Reform in driving digitally enabled transformation for the benefit of citizens and wider society. A roadmap for the all-embracing transformation of Public Services will be published in June 2025. This will set out how Ireland will go beyond the EU 2023 targets by having 100% of applicable public services online and these services being consumed online by at least 90% of people.

Administrative simplification and digital-by-default approaches were strengthened through **Gov.ie** improvements and the ongoing development of the **Public Service Transformation 2030** strategy. Irish authorities highlighted recent improvements in back-end integration, interoperability standards, and

the reusability of government-held data – building on the **‘only once’ principle**. The **Interoperability Framework** piloted in 2024 underpinned these developments, particularly in health and social protection services.

Ireland’s public service cloud strategy was also refined. While not framed explicitly as a sovereignty measure, the state maintains control over its core infrastructure through the **Office of the Government Chief Information Officer (OGCIO) managed public service cloud**, hosted on secure national servers. Further developments in line with the **European Interoperable Cloud Framework** are expected in 2025.

In addition, under the **recovery and resilience plan**, Ireland allocated **EUR 85 million (Component 2)** to support the digital transformation of the public administration. This includes the **development of an online response option for the population census**, which aims to make the data collection more efficient, streamline administrative tasks, and reduce processing time through digital means.

e-Health

Ireland did not provide a national e-Health trajectory point for 2024 but made significant progress, with its e-Health maturity score more than doubling to 24.52. Although still well below the EU average of 82.7, the 13-point improvement signals the growing availability of digital health services across the system. For the first time, Ireland submitted disaggregated data for each of its six health regions, reflecting regional progress and efforts to close gaps in service availability.

In 2024, Ireland further developed its electronic health record infrastructure, prioritising data on eDispensations and patient identification. This roll-out began in pharmacies nationwide, supported by HSE Live – a centralised assistance platform for health service users. A national patient application was soft-launched in 2024 for select user groups. However, as this occurred after the 31 December 2024 cut-off for this report, it is not yet reflected in the current maturity score.

Ireland’s **Digital Health Strategy 2023-2030** provides the strategic framework for integrated services. Key components include the development of a national Shared Care Record starting in 2025, the expansion of ePrescriptions and secure messaging for primary and community care, and pilots for the interoperability between doctor’s systems and central databases. This is further underpinned in Ireland’s latest Programme for Government which states that Government will ‘Continue to work towards the full digitisation of Irish healthcare records and information systems’. Digital for Care describes a stepwise approach to delivering on this ambition and to put in place digital health records for all, requiring a National Patient App, a National Shared Care Record and an enterprise level Electronic Health Record (EHR) system.

To complement this, Ireland is using EUR 75 million from the Recovery and Resilience Facility to invest in e-Health tools, such as hospital ePharmacy systems and an integrated financial management platform¹². Stakeholders highlighted that further progress would depend on onboarding healthcare providers, clarifying consent and governance structures, and overcoming persistent interoperability issues. The **Health Information Bill, when enacted** and Ireland’s implementation of the **European Health Data Space Regulation** are expected to address key regulatory gaps and support future cross-border compatibility.

2024 recommendation on e-Health: (i) Expand the coverage of the online access service to ensure that all citizens can access their electronic health data online. (ii) Make further data types available

¹² European Commission, [Recovery and Resilience Scoreboard, Digital Public Services Thematic Analysis](#), 2024.

to citizens through the online access service. (iii) Increase the supply of health data by onboarding more categories of healthcare providers.

Ireland made some efforts to address the recommendation through new policy actions in 2024.

Ireland advanced its e-Health strategy and invested in new infrastructure through the Recovery and Resilience Facility, piloted a national patient application, and began rolling out eDispensation services via pharmacies. The only major gap remains in e-Health, where progress is visible but ongoing efforts have not yet materialised.

Building a safe and human-centric digital environment and preserving our democracy

In Ireland, online participation in political and civic life is relatively high and trending upwards. In 2024, 27.86% of individuals used the internet to participate in online consultations, express opinions, or sign petitions, well above the EU average of 20.45%. This represents an increase from 20.08% in 2023, confirming Ireland's position among the top-performing countries for digital civic engagement. Specifically, 16.10% of individuals reported participating in online consultations or voting in 2024 (EU: 10.05%), and 20.23% shared civic or political opinions online (EU: 16.48%).

Due to the non-mandatory nature of certain Eurostat questions, Ireland does not report nationally comparable data on the share of individuals encountering or verifying untrue or doubtful information online. However, policy responses have evolved significantly in recent years to address growing concerns around disinformation, particularly during electoral periods.

Ireland has experienced increasing exposure to organised disinformation campaigns, including those targeting trust in public health information during the COVID-19 pandemic and election-related narratives. In response, a national strategy to counter disinformation is under preparation. This process is led by a dedicated working group coordinated by the Media Literacy Ireland network and involves collaboration between government, industry, academia and civil society. Existing efforts, such as the 'Be Media Smart', campaign promote public awareness on disinformation and are already well integrated into Ireland's media literacy landscape.

The Online Safety and Media Regulation Act 2022 (OSMR) represents a major legislative step forward. It established **Coimisiún na Meán**, Ireland's independent media and online safety regulator, which now oversees compliance with the Digital Services Act (DSA). This includes the development of binding Online Safety Codes for video-sharing platforms and systemic obligations to address harmful content online. These frameworks will serve as key enforcement tools to address issues such as hate speech, cyberbullying, and misleading narratives. As the designated Digital Services Coordinator, Coimisiún na Meán is responsible for handling complaints on breaches of the DSA in Ireland.

The Electoral Reform Act 2022 further strengthens democratic resilience. It created **An Coimisiún Toghcháin** (Electoral Commission), a permanent, independent body with a mandate to oversee electoral integrity and regulate online political advertising. Its remit includes monitoring disinformation risks during election campaigns and delivering public information initiatives to promote civic participation.

In education, Ireland continues to expand digital and media literacy across all levels. The Department of Education and Youth, with the support of Webwise and the National Council for Curriculum and Assessment, promotes critical thinking and safe online behaviour through dedicated resources and

classroom materials. These efforts form part of broader strategies outlined in the Literacy, Numeracy and Digital Literacy Strategy 2024-2033 and the Digital for Good programme.

Regarding the protection of minors, Ireland has enacted several important safeguards under the OSMR Act. Online platforms are required to adopt measures to protect children from harmful content and improve content moderation systems. Coimisiún na Meán adopted Ireland's first dedicated Online Safety Code in October 2024, with a focus on those platforms most frequently used by children and young people. In parallel, Ireland is participating in EU-level discussions on interoperable age verification systems, including their future integration into the European Digital Identity Wallet framework. These initiatives complement existing educational and parental control measures developed by schools and public bodies.

ComReg provides digital consumer-focused tools that support informed digital participation. These include the [Compare Tool](#), which helps users to find a mobile, broadband, home phone or bundled plan that best suits their needs. The [Outdoor Mobile Coverage Map](#) web and mobile application, enables users to navigate information related outdoor mobile coverage signal by provider at a location. The [Service Checker](#) allows users to identify the service name or number of a Premium Rate Service.

Recently, ComReg launched new online tool called [Broadband Checker](#), to help the public determine what fixed broadband services are available in their area. It also conducted public information campaigns to raise awareness about [broadband](#) and [mobile technologies](#), highlighting the benefits, promote consumer tools, and position ComReg as a trusted source for independent advice and information.

ComReg has progressed a number of measures to reduce the volume of, and the harm-caused by, scam calls and SMS, specifically with the implementation of an SMS Sender ID Registry in 2025. ComReg has also worked with the mobile industry to ensure support for real time text as required by the European Accessibility Act.

Protecting and empowering people requires that rights are upheld and obligations enforced. In this context, ComReg has taken targeted enforcement actions on issues such as information provision, cooling-off rights, roaming, switching, and complaint handling. It has also revised and enhanced its dispute resolution procedures to ensure that end-users have access to timely and effective redress mechanisms.

Overall, Ireland's framework for a safer digital environment is based on a whole-of-society approach, combining regulation, education, civic participation, and digital rights. While there are gaps in the statistical monitoring of disinformation exposure and fact-checking behaviours, national efforts to build resilience – especially through cross-sector collaboration and youth education – are well aligned with EU priorities and evolving legislative standards.

Leveraging digital transformation for a smart greening

Ireland has made climate action a national priority, committing to reduce greenhouse gas emissions by 51% across all sectors by 2030 and to achieve net-zero emissions by 2050. The government explicitly links climate and digital goals through its **Programme for Government**, the **White Paper on Enterprise**, and the **Circular Economy Act**. The updated roadmap reconfirms the integration of the green and digital transitions as a cornerstone of national policy. According to the latest Eurobarometer¹³ survey, 89% of Irish respondents believe that digital technologies should be used to support environmental sustainability, which is one of the highest levels of public support in the EU.

Despite high levels of awareness, the adoption of energy efficiency measures remains uneven. Only 20% of Irish businesses implemented measures to reduce ICT energy consumption in 2024, with most citing cost or complexity as the key barriers. While 56% considered the environmental impact when selecting ICT solutions, only 30% of firms with high levels of digital intensity incorporated sustainability as a criterion, which highlights the need for more structured incentives.

From a consumer perspective, price and technical specifications remain the dominant factors when purchasing ICT devices, with only 27.12% of Irish users considering energy efficiency important (EU: 19.35%) and just 14.32% considering eco-design important (EU: 12.04%). Recycling rates are modest: 8.97% of old mobile phones and 14.52% of old laptops are recycled (EU: 10.93% and 11.31% respectively). A significant share of laptops (69.32%) is kept at home after use, compared to the EU average of 51.16%, highlighting a potential for targeted recycling initiatives.

Green public procurement (GPP) is a key area of policy leverage. In April 2024, the government adopted the **Green Public Procurement Strategy and Action Plan 2024-2027**, which aims to make green criteria a standard part of all procurement procedures, particularly in ICT, construction, transport, and energy-related services. The strategy mandates GPP implementation and monitoring across sectors, integrates circular economy objectives, and establishes dedicated training and reporting tools. The government has also launched a searchable GPP-criteria database and mandated its use in all public tenders¹⁴.

Ireland's **public digital infrastructure strategy** maintains national control over critical systems through the OGCI-managed public service cloud, which is hosted on secure national servers. This set-up ensures compliance with government ICT policies and includes sustainability objectives, such as reducing the energy consumption of cooling systems and data storage infrastructure¹⁵.

Digital technologies are also being deployed directly in support of Ireland's green goals. **The Build Digital project** applies Building Information Modelling and other digital tools to decarbonise the construction sector. A new data processing centre for the public service will target a power usage effectiveness (PUE) of 1.2, below the 1.3 Climate Neutral Data Centre Pact benchmark. Additional

¹³ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

¹⁴ Green Public Procurement Strategy and Action Plan 2024-2027. Published on 4 April 2024, Available here: <https://assets.gov.ie/288344/3b6eece7-7d30-47c5-895e-0512a0e9b3f8.pdf>.

¹⁵ OECD, *The Digital Transformation of Public Procurement in Ireland: A Report on the Current State*, OECD Public Governance Reviews, 2024.

carbon tracking mechanisms have been brought into capital works procurement to enable embodied carbon monitoring.

The **Digital Transition Fund**, launched under Ireland's RRP and co-funded by the EU, supports SMEs in adopting digital tools that improve SMEs' environmental performance. By the end of 2024, EUR 46.15 million had been paid out to 558 companies. Four European Digital Innovation Hubs also provide services that help SMEs reduce their environmental impact through digital innovation. This includes test-before-invest programmes for energy-efficient solutions in manufacturing and logistics.

In parallel, the **Green for Business** and **GreenStart** schemes offer tailored support to SMEs aiming to become more sustainable. Grants are tied to investments in energy-efficient technologies verified through the **Triple E Register** of Ireland's Sustainable Energy Authority. These instruments were highlighted by Irish authorities as critical for strengthening SMEs' resilience while reducing their environmental impact.

On the skills side, the government published **Green Skills 2030**, a national **Further Education and Training** strategy to build a workforce ready for the green transition. It includes new apprenticeships in sustainability and a national offshore wind academy, reflecting skills gaps identified by industry. These efforts are complemented by the integration of green topics into the **Adult Literacy and Digital Skills Strategy**, supporting objectives for a just transition¹⁶.

2024 recommendation on the green and digital transitions

Develop a coherent approach to twinning the digital and green transitions:

- (i) Promote improvements in the energy and material efficiency of digital infrastructures, in particular data centres.
- (ii) Support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, construction, and agriculture, including the uptake of such solutions by SMEs.
- (iii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the [European Green Digital Coalition](#), in view of future policy development and to attract relevant financing.

Ireland made some efforts to address the recommendation through new policy actions in 2024.

For the energy efficiency of digital infrastructure (point i), initiatives such as the public service data centre and sustainability criteria in government ICT policies are steps forward.

On the deployment of digital solutions across sectors (point ii), schemes like Build Digital, GreenStart, and the Digital Transition Fund support SME uptake and emissions reduction.

However, no system is in place yet to monitor or quantify emission reductions (point iii), and the absence of a unified framework limits policy coherence. Further efforts are needed to implement standardised monitoring tools and align with EU-level methodologies.

¹⁶ European Commission. (2025). European Semester, Annex on Education: Ireland.

Annex I – National roadmap analysis

Ireland's national Digital Decade strategic roadmap

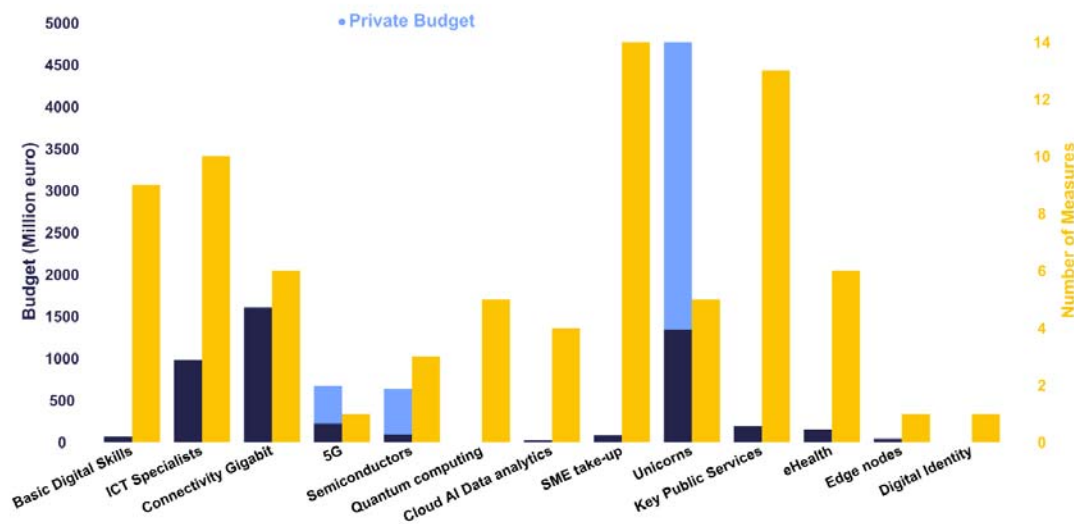
The adjusted roadmap addresses a limited number of roadmap recommendations issued in 2024.

Ireland did not revise its 2030 targets but submitted a detailed update to the narrative outlining the national responses to each of the recommendations and the progress made under the original strategic framework. The revised roadmap was not resubmitted as a new stand-alone document.

The adjustment maintained the original structure and target levels set in 2023. While the 2030 targets for basic digital skills and ICT specialists were confirmed, no new or revised quantitative targets were introduced, including on FTTP, edge node deployment, and unicorns. Nevertheless, the roadmap reaffirms Ireland's commitment to delivering gigabit connectivity to all premises by 2028 and sets out concrete implementation details for the national FTTP roll-out, supported by both commercial operators and the state-led National Broadband Plan.

As part of the adjustment, Ireland significantly expanded the repository of national measures. The roadmap now comprises 81 measures, including 22 new ones introduced since the original submission, with a total investment of EUR 9 240.89 million. Several of the new measures focus on the digitalisation of SMEs, including the introduction of a dedicated national voucher scheme, improved advisory support through a new enterprise hub, and programmes to foster digital discovery, process innovation, and digital marketing capabilities across sectors. Together, these initiatives form the foundation for a more coordinated national approach to the digital transition of SMEs ahead of the forthcoming SME Digitalisation Action Plan.

Measures and budget in national roadmap¹⁷



Other new measures strengthen the roadmap's focus on digital skills, with additional actions targeting all stages of the learning cycle – from early childhood education to adult upskilling and lifelong learning. These are complemented by measures aimed at promoting digital inclusion, particularly for socio-economically disadvantaged groups. Further additional measures support the

¹⁷ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

public sector, particularly in the areas of interoperability, cybersecurity, and the development of digital government services.

The update also revises a small number of existing measures to reflect updated timelines, adjusted scopes, and refined budget data. The roadmap now reports over EUR 3.5 billion in public investment, with total planned funding exceeding EUR 7.8 billion across all pillars. In some areas, such as broadband deployment, implementation is backed by formal monitoring and an evaluation of the impact. However, evaluation frameworks are still not applied consistently across the full set of measures.

While some efforts are noted with regard to the implementation of digital rights and principles, the adjustment does not include a formal mapping of the roadmap measures to the Digital Decade objectives or the Declaration on Digital Rights and Principles. In this respect, Ireland's update remains more operational than strategic.

Overall, the roadmap reflects a determined effort to advance implementation. It remains strong in terms of infrastructure deployment, investment mobilisation, and the breadth of policy action, particularly in the education and SME domains. The inclusion of new initiatives and the improvement of existing ones demonstrate a commitment to accelerating progress towards the 2030 targets. At the same time, there is scope to further consolidate the roadmap in strategic areas – such as AI, data-driven innovation and support for unicorns – to boost the roadmap's coherence and maximise its long-term impact.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Ireland is a member of the Alliance for Language Technologies EDIC and of the Local Digital Twins towards the CitiVERSE EDIC. Ireland is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Ireland is a participating state in the EuroHPC Joint Undertaking (JU) and the Chips JU.

Ireland has contributed to the Best Practice Accelerator by sharing three best practices as part of the Digital Skills cluster (SuCCeS programme, INGENIC and mentoring model for female students in computing).

EU funding for digital policies in Ireland

Ireland allocates 34% of its total recovery and resilience plan to digital (EUR 312 million)¹⁸. In addition, under cohesion policy, EUR 54 million (representing 5% of the country's total cohesion policy funding), is dedicated to advancing Ireland's digital transformation¹⁹. According to JRC estimates, EUR 347 million directly contribute to achieving Digital Decade targets (of which EUR 312 million comes from the RRF and EUR 35 million from cohesion policy funding)²⁰.

The RRF and cohesion policy funding provide balanced support across the different areas of the Digital Decade. In particular, the Irish recovery and resilience plan (RRP) makes significant contributions to the targets for **gigabit and FTTP broadband deployment**, with major investments channelled through the **National Broadband Plan**. The RRP also includes significant reforms and investments aimed at **digitalising public services and strengthening e-Government**, such as the **roll-out of the MyGovID system**, improvements to health sector ICT systems, and the creation of a national data infrastructure to support e-Health and interoperability.

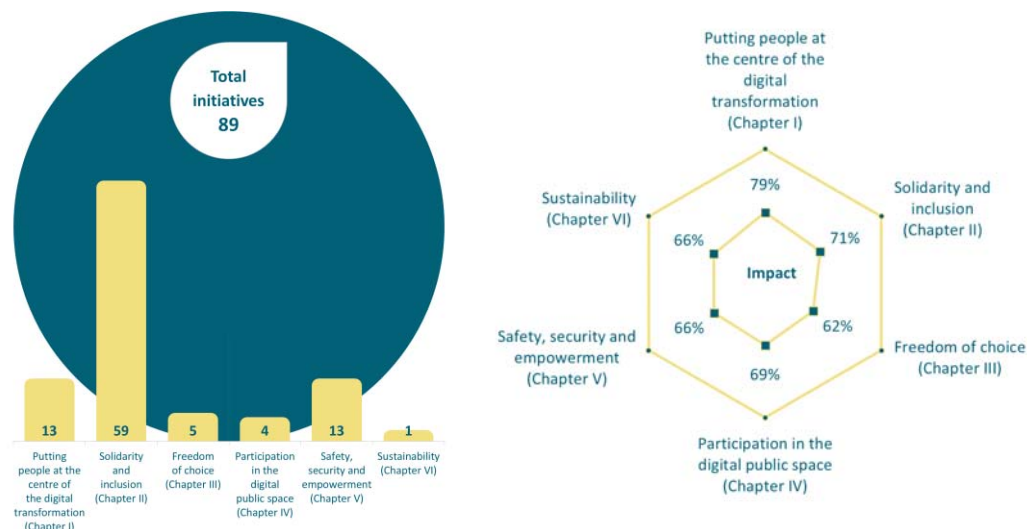
Furthermore, the RRP addresses **digital skills development** through measures focused on **adult learning, basic digital skills acquisition, and enterprise upskilling**, contributing to the overall resilience and inclusiveness of Ireland's digital transition.

¹⁸ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹⁹ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

²⁰ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital rights and principles²¹



Activity on digital rights and principles

Ireland has been relatively active in implementing digital rights and principles, with 89 initiatives overall and 4 new initiatives launched in 2024, showing limited progress towards its commitments. **Ireland is most active in the area of digital education, training and skills.** There is room for improvement, especially with regards to a fair digital environment and sustainability where less activity has been identified.

Impact of digital rights initiatives

Quantitative impact indicators, developed by a support study on Digital Rights and Principles, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Ireland (mainly national government) and how these are perceived by citizens.

The indicators suggest that **Ireland is most successful in implementing commitments related to putting people at the centre of the digital transformation.** Ireland should strengthen efforts in areas where the impact of digital rights initiatives appears to be limited, notably on freedom of choice.

According to the Special Eurobarometer 'Digital Decade 2025', **61% of citizens in Ireland think that the EU protects their digital rights well** (a 1% decrease since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting basic and advanced digital education, training and skills (70%, above EU average of 60%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (41%, below the EU average of 48%).

²¹ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
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European
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DIGITAL DECADE 2025 COUNTRY REPORTS

Italy

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Executive summary

Italy has made remarkable progress in enhancing digital infrastructure and digital public services, but continues to face challenges in AI adoption and startup growth, while maintaining a leading role in strategic technologies like quantum and semiconductors. Italy shows a substantial level of ambition in its contribution to the Digital Decade, having set 14 national targets, 79% of which aligned with the EU 2030 targets. The country is following its trajectories very well with 100% of them being on track (considering the 2024 trajectories defined for 7 key performance indicators (KPIs) out of 8 analysed). Italy addressed 69% of the 13 recommendations issued by the Commission in 2024 by making some changes through new measures.

In 2024, Italy made advances in developing its digital infrastructure, particularly through increased fibre-to-the-premises (FTTP) coverage, and progressively achieved significant results in the digitalisation of public services and in the area of eHealth. However, the country continues to lag behind in the adoption of advanced digital technologies such as artificial intelligence and its ecosystem for innovative start-ups and scale-ups remains relatively underdeveloped. On the other hand, Italy holds a leading position in strategic technologies, having launched a Quantum strategy and actively working on a semiconductors strategy, highlighting a commitment to gain technological leadership.

Digital Decade KPI ⁽¹⁾	Italy				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	IT	EU
Fixed Very High Capacity Network (VHCN) coverage	59.6%	70.7%	18.6%	66.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	59.6%	70.7%	18.6%	66.0%	69.2%	8.4%	100.0%	-
Overall 5G coverage	99.5%	99.5%	0.0%	99.6%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	74	152	105.4%	158	2257	90.5%	946	10000
SMEs with at least a basic level of digital intensity (2)	-	70.2%	0.2%	-	72.9%	2.8%	90.0%	90%
Cloud	55.1%	-	-	-	-	-	74.0%	75%
Artificial Intelligence	5.1%	8.2%	62.4%	8.0%	13.5%	67.2%	60.0%	75%
Data analytics	26.6%	-	-	-	-	-	60.0%	75%
AI or Cloud or Data analytics	63.1%	-	-	-	-	-	-	75%
Unicorns	8	9	12.5%	2	286	4.4%	16	500
At least basic digital skills	45.8%	-	-	-	-	-	80.1%	80%
ICT specialists	4.1%	4.0%	-2.4%	-	5.0%	4.2%	8.4%	~10%
eID scheme notification		Yes						
Digital public services for citizens	68.3	83.6	22.4%	69.0	82.3	3.6%	100.0	100
Digital public services for businesses	76.3	80.9	6.1%	78.0	86.2	0.9%	100.0	100
Access to e-Health records	82.7	84.1	1.7%	74.0	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics.
(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024).

According to the special Eurobarometer on ‘the Digital Decade’ 2025, 73% of Italian citizens consider that the digitalisation of daily public and private services is making their lives easier. 90% consider it important to counter and mitigate the issue of fake news and disinformation online, and regarding

competitiveness, 90% consider it important to ensure that European companies can grow and become 'European Champions' able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

Italy has made notable progress in fiber-to-the-premises (FTTP), increasing coverage by 11 percentage points between 2023 and 2024 and reaching the EU average. The country also holds a strong position in the digitalization of small and medium enterprises (SMEs), with most achieving at least a basic level of digital intensity. However, despite increased adoption of artificial intelligence and being on track with the national trajectory set, Italy still falls behind in this area. The start-up ecosystem remains underdeveloped, with only nine unicorns — an increase of just one compared to last year — which does not reflect the size of the Italian economy. The recent announcement of a quantum strategy is expected to significantly drive further progress in this sector. Alongside this, ongoing efforts to develop a semiconductors strategy reflect Italy's dedication to further strengthening its position in these areas. Several initiatives are also in progress to enhance the country's cybersecurity capabilities, including the strengthening of monitoring, analysis and response capabilities, and skills development.

Protecting and empowering EU people and society

Italy is confronted with issues concerning digital skills, with gaps affecting in particular people with lower education levels but extending also to young people — a primary target of the national Recovery and Resilience Plan (RRP) measures in this area. Italy is also faced with a low share of ICT specialists in total employment, which stood at 4% in 2024, below the EU's 5%. The digitalisation of public services has advanced significantly, with the progressive implementation of key measures and efforts to increase interoperability and usability (e.g. better user experience, adoption of PagoPA and the IO app, deployment of the National Digital Data Platform - PDND). In the framework of the EU Digital Identity Wallet, the country has also initiated the development of its IT-Wallet, with the first pilots made available to the public through the app IO, where users could access and use some initial documents (e.g. driving licence). Furthermore, Italy is working to boost citizens' basic digital skills through initiatives such as the network of digital facilitation services and digital civic service (both supported by the RRP), combat disinformation, enhance media literacy, and ensure online safety, particularly for minors.

Leveraging digital transformation for a smart greening

Green and digital priorities have received increased attention, in part due to the RRP and its RePowerEU chapter. In 2024, impulse was given to the implementation of 'Transition 5.0', aiming to accelerate the industry transition to an energy-efficient, sustainable, and renewable-based production model. However, the available data shows a modest take-up of the measure.

National digital decade strategic roadmap

Italy submitted an adjustment, containing five additional measures and revised trajectories. Stakeholders were consulted. It addresses a substantial number of the roadmap recommendations issued in 2024. All targets align with the EU level goals for 2030, except for the adoption of AI and data analytics, where the country aims for 60% adoption (instead of 75%) by 2030. The roadmap is very comprehensive, and the focus is on improving digital skills, ICT specialists and digital public services. Some areas, such as unicorns and uptake of AI, lack targeted measures. Overall, the Italian roadmap is

composed of 67 measures with a budget of EUR 62.3 billion, equivalent to 2.84% of gross domestic product (GDP).

Funding & projects for digital

Italy allocates 26% of its total recovery and resilience plan to digital (EUR 46.8 billion)¹. In addition, under cohesion policy, EUR 4.9 billion, representing 11% of the country's total cohesion policy funding, is dedicated to advancing Italy's digital transformation². Italy is a member of the three established European Digital Infrastructure Consortia (EDICs): the Alliance for Language Technologies EDIC, the Local Digital Twins towards the CitiVERSE EDIC and of the EUROPEUM EDIC. Italy is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Italy is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Italy has contributed to the Best Practice Accelerator³ by sharing three best practices in the frame of the Digital Skills cluster (network of digital facilitation services, the digital civic service and fund for *Repubblica Digitale*).

Digital Rights and Principles

According to a support study, Italy has been one of the most active Member States in implementing the [European Declaration on Digital Rights and Principles](#), with over 100 initiatives overall and 12 new initiatives launched in 2024. Italy is most active in the area of digital education, training and skills. Less activity has been identified with regards to protection and empowerment of children and young people in the digital environment. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing safety, security and empowerment.

Recommendations

- **Artificial Intelligence:** Step up efforts to acquire a leadership position in the area of AI, also leveraging the existing centres of expertise and capabilities, including in the area of supercomputing.
- **Innovation ecosystems:** Boost innovation in the area of digital technologies by enhancing the national ecosystem, from research/university to technology transfer centres, start-ups and scale-ups, and considering targeted incentives for key strategic sectors.
- **SMEs and Advanced technologies take-up:** Support the efforts to build a strong network of technology transfer services, maintaining a nationwide presence, increasing the emphasis on key technologies like AI.
- **Basic digital skills:** Strengthen training opportunities and support services for all population groups, reinforce education on digital skills in schools and incentivise reskilling and upskilling for workers.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

- **ICT Specialists:** Expand ICT higher education and align it with labour market needs, promote women's participation in ICT education and careers, and introduce measures to attract and retain ICT professionals.
- **Cybersecurity:** Improve cybersecurity priorities in view of evolving threats, building capacity in both enterprises and public administrations.
- **Connectivity:** Continue the efforts to deploy connectivity infrastructure, particularly FTTP, across the whole country and including in sparsely populated areas, and consider using take up as a driver for deployment.
- **Digital Public Services:** Maintain momentum in deploying digital public services, focusing on simplification and take-up by users.

A competitive, sovereign and resilient EU based on technological leadership

Italy has significant strengths in key sectors such as semiconductors and quantum technologies, which present crucial opportunities also in the context of overall EU competitiveness and strategic autonomy.

The country has made substantial progress in enhancing its connectivity infrastructure, including with the expansion of Fibre to the Premises (FTTP) across the country, and outperforms when it comes to 5G coverage. A majority of small and medium-sized enterprises (SMEs) report at least a basic level of digital intensity, and there has been a surge in the adoption of AI technologies although uptake (especially among SMEs) is still limited.

Challenges persist, however, in achieving widespread digital integration across the economy and in fostering a robust environment for innovation and start-ups. This is reflected in Italy's relatively low number of unicorns, indicating a need for improved support and access to capital for innovative companies and scale-ups.

These gaps are coupled with a stagnating ICT sector and sluggish investment in innovation. The Italian ICT sector contributed only 3.21% to the gross value added in 2022, down from 3.34% in 2019 and below the EU average of 5.46%, highlighting its limited impact on the national economy. Additionally, research and development (R&D) expenditure in the ICT sector accounted for 15.38% of total business R&D spending, and ICT R&D personnel comprising 18.23% of the total. Both these figures experienced slight declines between 2021 and 2022⁴.

In 2024, the government launched the green paper '[Made in Italy 2030](#)', which outlines the country's new industrial strategy for the next decade in view of the digital, ecological, and geopolitical transitions. It sets 15 strategic goals focused on boosting competitiveness, closing regional economic gaps, enhancing employment, and promoting innovation in sectors like space, maritime, and low-cost energy. To achieve this, the strategy emphasises the promotion of integrated production chains, encouraging collaboration between enterprises, facilitating technology transfer, and improving access to substantial capital. A key component of this strategy is integrating digital transformation into industrial processes, recognising that addressing Italy's lag in digital adoption is crucial for enhancing the competitiveness of its enterprises.

To strengthen its technological sovereignty, at the beginning of 2025 Italy also published the national strategy on quantum and the national strategy for virtual and augmented realities placing itself among the leading countries at European level in the definition of applied multi-sector policies.

Building technological leadership: digital infrastructure and technologies

According to the 2025 Eurobarometer⁵, 88% of Italian people think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Italy made progress in rolling out connectivity infrastructures and can count on a good position in strategic sectors like semiconductors and quantum technologies.

Connectivity infrastructure

Italy's coverage of Very High Capacity Networks (VHCN) and FTTP reached 70.73% (the 2030 national target is 100%) after increasing by +18.6% in 2024. It surpassed the EU average for FTTP (69.24%), although it is still below the overall EU VHCN coverage (82.49%). The country is on track according to its national trajectory. For households in sparsely populated areas, coverage in 2024 was 36.79%. It should be considered that only a small number of sparsely populated areas are also white areas, while the majority of locations are in areas covered by investment plans. However, actual coverage is still well below the EU averages (61.89% for VHCN and 58.78% for FTTP).

According to national data, the increase in coverage has been evenly distributed across white areas (+32.8%), grey areas (+31.1%) and black areas (+35.2%)⁶. Moreover, additional data collected at the national level shows that, in 2024, 59% of SMEs were covered by fibre networks, marking a significant increase compared to 49% in 2023, and confirming progress in business connectivity as well⁷.

Overall 5G coverage stood at 99.49% in 2024 (2030 national target is 100%). Being close to 100%, this value remained stable compared to last year, and it is still above the EU's 94.35%. The country is on track according to its national trajectory. Coverage in sparsely populated areas showed a slight improvement, reaching 99.1% in 2024, and also in this case was above the EU's 79.57%.

5G coverage in the 3.4-3.8 GHz band, considered strategic for advanced 5G performance, is well above the EU average. Italy's total coverage in these bands rose from 88.29% in 2023 to 93.25% in 2024, standing above the EU's 67.72%. For households in sparsely populated areas, Italy's coverage increased from 68.94% in 2023 to 74.36% in 2024, well above the EU's 26.19%. These results can also be attributed to the timely assignment of 5G pioneer bands in Italy, which enabled operators to start deployment earlier than in other countries, as well as specific coverage obligations attached to the rights of use of the awarded frequencies. Indeed, in 2025, Italy's 5G pioneer bands spectrum assignment was 93.33%, compared to the EU's 74.63%.

Italy performs well also in the broadband take-up indicators. In 2024, Italy's share of fixed broadband subscriptions at 100 Mbps or higher was 75.23%, above the EU's 71.88%. For fixed broadband subscriptions at 1 Gbps or higher, Italy's performance was also good. In 2024, 25.18% of Italian fixed broadband subscriptions were at this speed, outpacing the EU's 22.25%. This was the result of a sustained growth rate of 31.4%. Regarding 5G SIM cards, Italy's share of the population was 30.56% in 2024, still below the EU's 35.56%.

VHCN and FTTP

In its roadmap, Italy set the VHCN/FTTP target at 100% with the completion date moved to 2030 in the roadmap adjustment.

Under the 2023-2026 Broadband Plan (*Piano Banda Ultra-Larga*, BUL), Italy has initiated the implementation of several measures, to enhance connectivity for the 2026 Winter Olympic Games

⁶ Data from the National Regulatory Authority (Autorità per le Garanzie nelle Comunicazioni, AGCOM). The classification into 'white', 'grey', and 'black' areas refers to the scheme defined by the European Commission, based on operators' declarations collected and processed by Infratel during the 2021 public consultation, which allowed each address to be assigned a specific category.

⁷ Broadband Map, [Dashboard Connettività delle PMI](#). The analysis is based on a sample of 165 490 enterprises – representing approximately 75% of the total estimated by ISTAT (around 220 000 units in the same size range) – selected based on georeferenced data made available through precise address matching.

and to test hybrid/satellite solutions among other things. Besides constructing a public backhaul network (see box with the recommendation below), these measures include the deployment of connectivity infrastructure along the Milan-Cortina corridor and enhanced connectivity for hospitals and medical stations in the area of the 2026 Winter Olympic Games, with the overall goal of improving the management of logistics and safety.

Under the umbrella of the BUL 2023-2026, Italy has also launched hybrid/satellite connectivity trials in Lombardy, backed by EUR 5 million from the Innovation Fund. The trial is aimed at testing the use of space-based networks to provide satellite backhaul capacity in synergy with terrestrial networks, and developing integrated connectivity solutions. The trial launched in Lombardy will provide information on feasibility, costs, implementation timelines, sustainability, and performance, with a view to possible large-scale future applications.

Additionally, twelve minor islands will be connected to the mainland through fibre networks, with interventions that will complement other similar measures in the context of the national Recovery and Resilience Plan (RRP).

Specific measures aim to enhance coordination and simplify the issuing of permits. This includes strengthening the National Federated Infrastructure Information System (SINFI) to improve the collection, validation, and accessibility of infrastructure data, ensuring interoperability with public administrations. A total investment of EUR 62 million is dedicated to streamlining the management of network permits, simplifying coordination between entities, and integrating SINFI into the National Digital Data Platform.

The landscape of electronic communication markets is going through significant changes, with some consolidation on the market, such as the merger between Fastweb and Vodafone Italia, and the network separation of the incumbent TIM, with the network now belonging to Fibercop.

While the deployment of fibre is increasing, **the migration process is slow, and the copper switch-off plan for the moment is limited to the primary network.**

2024 recommendation: Continue to deploy FTTP ensuring a high growth rate and strengthen efforts to develop connectivity infrastructures coherently and jointly with cloud and edge computing capabilities, exploiting the potential of the country's 5G network.

Italy made some efforts to address the recommendation through new policy actions in 2024:

In 2024, Italy recorded significant progress in FTTP coverage, with an increase of 11 percentage points between 2023 and 2024.

A good part of this progress can be attributed to the implementation of the RRP measures, which are moving towards completion. However, while the implementation of RRP measures—such as Connected Schools, Connected Healthcare, and Connected Minor Islands—is progressing as planned or ahead of schedule, at the end of January 2025, Italia 1 Giga had reached only 43% of the target (about 1.5 million addresses connected out of a target of 3.4 million to be reached by June 2026). The delays particularly affected the deployment of connectivity networks for scattered households, where progress was 23% (about 105 000 houses reached out of 450 000 targeted).

Moreover, in 2024, Italy concluded the mapping of backhaul of mobile network base stations, the first of its kind in the country. This was a preliminary action to the public initiative of enhancing fixed networks, announced in the 'Italian Strategy for Ultra-Broadband 2023-2026'. The results formed

the basis for defining the project to build a public backhauling network, for which the call for tenders is currently being published. A fixed network mapping was launched in 2025 and requires operators to report on the state of fixed coverage for approximately 35.5 million addresses.

5G

In its roadmap, Italy set the VHCN/FTTP target at 100%, with the completion date moved to 2030 in its roadmap adjustment. This target has almost been achieved and the data observed confirms a solid growth trend and positive developments in both technological capacity and territorial distribution, with progressive expansion of access to high-performance networks even in less densely populated areas.

In 2024, operators continued deployment across different bands. While data collection is ongoing, progress was observed in deploying the 700 MHz frequencies, for which the objective is to cover 99.4% of the population by 2026, including municipalities in the digital divide and all the main transportation routes by 2025. In the 3.6-3.8 GHz bands, coverage targets were achieved, including coverage of municipalities with less than 5 000 residents. The 3.4-3.6 GHz bands (still partly occupied by the defence sector) are currently used for 5G services. The lower part of the 2.6 GHz band (24.25-26.5 GHz) is now used by Wireless Local Loop FDD systems (with some portions still allocated to the defence sector). Regulatory action is ongoing to assign also such frequencies for 5G (a proceeding has been initiated with decision n. 258/24/CONS), integrating the upper part of the 26 GHz already assigned in 2018.

The increase in electromagnetic emission limits adopted in 2024 is facilitating network roll-out and improving transmission speeds. The government is also monitoring actual usage by operators that requested higher limits at specific sites.

2024 recommendation on connectivity infrastructure: Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

Italy made some efforts to address the recommendation through new policy actions in 2024.

Incentives for the development of stand-alone 5G services have been introduced through a public call targeting vertical sectors such as ports, universities, healthcare, and agritech, aiming to strengthen demand for specialised services and support the development of the core network. Funding and experimentation details are yet to be defined.

Moreover, the Houses of Emerging Technologies (CTEs) continued their activities of promoting innovative projects using next generation networks and enabling technologies like 5G. According to latest data, and the CTEs developed 375 use cases, in the sectors of mobility (11% of the use cases), smart cities (21%), Industry 4.0 (13%), smart services (42%), autonomous driving/drones (8%), and secure networks and new generation communications (5%). Funding will end in 2025, although potential extensions are under consideration.

Semiconductors

Semiconductors remain a clear priority in Italy's investment strategy and the key measures are progressing. While no new measures were presented in the roadmap adjustment this year, the

government is working on a semiconductors strategy and progress was made in implementing strategic measures.

In 2024, the government successfully launched the incentive scheme for enterprises to strengthen manufacturing capacity in the semiconductors supply chain. Leveraging the Microprocessor Fund launched in 2023, a funding window – ‘Sportello Semiconduttori’⁸ – kicked off in 2024 for the award of development contracts, i.e. **incentives to enterprises for large industrial development projects**⁹. Aligning with the objectives of the EU Chips Act, the incentives support projects in introducing distinctive capabilities in Italy in manufacturing semiconductors or producing key equipment or components for the European supply chain. By March 2025, **seven investment programmes had been submitted**, amounting to EUR 8 billion in potential investments, with EUR 3.8 billion of requested incentives, exceeding the initial capacity of the fund.

There was progress in supporting important and strategic investments in the semiconductor industry. In particular, approved measures under EU State aid rules will support Silicon Box, a firm specialised in advanced chiplet packaging capabilities (with EUR 1.3 billion in State aid)¹⁰ and STMicroelectronics, for the construction and operation of an integrated chip manufacturing plant for Silicon Carbide (‘SiC’) power devices, focused on high-power electronic devices with applications in electric vehicles, fast-charging stations, and renewable energy sectors (about EUR 2 billion in State aid)¹¹. Under the Chips Act, Italy is also supporting the pilot line for wide band gap semiconductors, dedicated to advancing research on materials for high-power electronics, particularly for the automotive and aerospace industries.

Finally, also in the context of the G7, Italy has actively participated in global discussions on semiconductor policies, facilitating the exchange on topics such as energy efficiency, international talent exchange, trustworthiness and reliability principles¹².

Italy is also directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT), with support from the RPP.

Overall, Italy’s efforts in semiconductor production have played a key role in strengthening the potential of the EU’s sovereignty and ensuring a secure supply. Italy remains a key player in Europe’s semiconductor industry, driven by leading enterprises and specialised SMEs, while policies to support this sector have been strengthened in recent years.

2024 recommendation: Continue the efforts in the semiconductors sector [...]

Italy made some efforts to address the recommendation through new policy actions in 2024: The measures and actions described above underscore Italy’s commitment to strengthening its semiconductor ecosystem.

⁸ [Contratti di sviluppo - Nuovo sportello semiconduttori | Incentivi](#).

⁹ Projects with eligible costs of no less than EUR 20 million, carried out by one or more companies. The support includes non-repayable loans and subsidised loans.

¹⁰ Approved by the European Commission on 18 December 2024. Decision in course of publication.

¹¹ https://ec.europa.eu/commission/presscorner/api/files/document/print/en/ip_24_2994/IP_24_2994_EN.pdf.

¹² More specifically, reference is made to: 1. the creation of a G7 Point of Contact Group (POC) to facilitate information exchange on industrial research, sustainable production, anti-competitive practices, and supply chain coordination. Future discussions will prioritise chip energy efficiency and international talent exchange, aligning with the G7’s Trustworthiness and Reliability Principles; 2. participation in the OECD Semiconductor Informal Exchange Network (SIEN) and the European Semiconductor Board, reinforcing Italy’s role in global semiconductor governance.

Edge nodes

According to the Edge Node Observatory, Italy is estimated to have deployed a total of 152 edge nodes by 2024, a progression of +105.4% since 2023.

In 2024, Italy launched field trials with Edge Cloud Computing (ECC) Platforms¹³, which supports the experimental development and adoption of solutions leveraging ECC technology. The initiative specifically aims to assess the advantages of deploying ECC platforms within telecom operators' access networks. Following the public call, four proposals were submitted by consortia comprising universities, telecom operators, IT infrastructure providers, consulting firms, broadcasting companies, and cybersecurity specialists¹⁴. The evaluation of these proposals is now underway, with total funding of EUR 4 million allocated for the initiative.

2024 recommendation: Continue to deploy FTTP ensuring a high growth rate and strengthen efforts to develop connectivity infrastructures coherently and jointly with cloud and edge computing capabilities exploiting the potential of the country's 5G network.

Italy made some efforts to address the recommendation through new policy actions in 2024: Notably, it published the call for projects for the experimentation of ECC platforms, with the aim of financing up to four field trials (see above).

Quantum technologies

2025 marked a pivotal step for Italy, which published the draft of its first national quantum strategy¹⁵, outlining a set of actions to strengthen the country's position in quantum technology¹⁶, with a strong focus on creating a solid industrial ecosystem and involving the private sector. As the document highlights, while Italy has strong academic expertise, it lags behind global leaders when it comes to funding, industrial adoption, and the possibility for start-ups to scale up and compete internationally. Public funding, driven by the Recovery and Resilience Facility (RRF), has played a key role in launching initiatives and stimulating private sector involvement. However, its scale (EUR 227.4 million between 2021 and 2024, most of which from the RRF) has remained limited and lower than the funding allocated by other countries such as Germany and France. Moreover, private investment remains limited: venture capital investment in Italian quantum start-ups amounted to just EUR 12.5 million between 2023 and 2024, very low compared to the funding received by firms in the US and other EU countries. Against this background, the draft strategy outlines recommendations to reinforce the national quantum ecosystem. Among other things, it proposes measures to improve the coordination of investments, technology transfer, public-private partnerships, industry engagement and commercialisation, and international collaboration – particularly by strengthening ties with European Union initiatives. The national strategy also highlights the important role of some of the

¹³ Part of the Broadband Plan (BUL) 2023-2026.

¹⁴ The call was published in October 2024 and closed on 31 January 2025 ([Edge Cloud Computing: Prorogata la scadenza dell'avviso pubblico](#)).

¹⁵ The draft strategy was drawn up by a working group set up by the Ministry of University and Research and including several public administrations (Ministry of Enterprises and Made in Italy, National Agency for Cybersecurity, Department of Digital Transformation) and research centres. The drafting of the strategy was preceded by a consultation for the mapping of the industrial ecosystem. The draft strategy was published in February 2025 and subject to public consultation. The draft is available at this link: [QIS master for consultation.pdf](#).

¹⁶ The strategy covers: Quantum Computing, Quantum Simulation, Quantum Communication, Quantum Metrology and Sensing, Engineering and Enabling Technologies, Fundamental Science and Quantum Mechanics.

Houses of Emerging Technologies which are working to systematize their skills and laboratories in order to develop innovative solutions and support experimentations in collaboration with local communities.

Italy can count on significant capabilities in the field of quantum technology and is advancing in the implementation of measures to strengthen its quantum computing infrastructure and ecosystem. Some of the measures are delivering results ahead of time. For example, a 24-qubit superconducting quantum computer was installed at the University of Naples in May 2024¹⁷, and two additional quantum computers will be operational by 2025, through the National Centre for HPC, Big Data, and Quantum Computing (ICSC)¹⁸.

Italy is also among the six countries¹⁹ chosen to host quantum systems under the EuroQCS initiative, with CINECA²⁰ leading efforts to deploy a 140-qubit neutral atom quantum simulator by 2026 and a 54-qubit superconducting digital quantum computer. Additionally, CINECA plays a key role in developing high-performance computing (HPC)-quantum software applications, acting as a Centre of Excellence.

Another key player in the Italian landscape is the National Centre for HPC, Big Data, and Quantum Computing or ICSC, mentioned above. This large partnership²¹, supported by the RRF with EUR 320 million for 2022-2025, is strengthening the HPC, cloud and quantum infrastructure, and boosting private sector and international collaborations. The project will be supported and continued also after the end of the RRF implementation period.

These initiatives are building a strong public-private quantum community, contributing to advancing real-world quantum applications²², pooling expertise, and supporting SMEs and start-ups by improving their access to resources. At the same time, these initiatives are laying a robust foundation for **Italy's quantum infrastructure, which will be integrated into a broader European network, and are crucial to strengthening the EU's position.**

2024 recommendation: [...] Increase investments in quantum technologies also within the frame of EU initiatives and in view of contributing to the European Chips Act.

Italy made some efforts to address the recommendation through new policy actions in 2024: Regarding additional funding, the draft quantum strategy published in 2025 includes a strong focus on mobilising investments, including private investments. The scale of the investment will depend on the next steps in finalising and implementing the strategy.

¹⁷ <https://agenda.supercomputing-icsc.it/event/5/overview>.

¹⁸ In November 2024 Eni's new high-performance computing (HPC) system, HPC6 was completed; ranked fifth globally and first in Europe, the system is designed with state-of-the-art energy efficiency standards.

¹⁹ Along with CZ, DE, ES, FR and PL.

²⁰ CINECA is a consortium of publicly held entities which represents one of the largest computing centres in Italy.

²¹ Including universities and research institutes and 14 enterprises.

²² In this connection, another initiative that is worth mentioning is the EuroHPC Industrial-Grade Supercomputer, which will be managed by CINECA and will offer services to businesses, partially funded by the European programme and partially by the companies themselves.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

SMEs with at least basic digital intensity

In Italy, 70.21% of SMEs had at least a basic level of digital intensity in 2024 (2030 national target 90%), after a progression of +0.2%, only slightly below the EU average. In 2024, Italy stood at 70.21%, a slight increase from 69.9% in 2022 ²³. This placed Italy marginally below the EU average of 72.91%. Looking at the data in more detail, only 26.19% of SMEs in Italy achieved high or very high digital intensity, falling short of the EU average of 32.66%. As such, there is still room for improvement in the digital intensity levels of Italian SMEs, particularly as concerns advanced levels of digital intensity.

Key Italian measures for technology adoption, like Transition 4.0 and the network of technology transfer centres, continued to record a high uptake. The demand for Transition 4.0 exceeded the initial EUR 18 billion allocation. Between 2020 and 2021, around 170 000 companies benefited from its incentives, and participation in 2022 is expected to confirm this trend.

In a context of historically low investment in technology transfer and weak collaboration between universities and businesses, the RRF has played a key role in expanding the network of technology transfer services and improving coordination. Eight Competence Centres have been enhanced and Italy can count on 13 European Digital Innovation Hubs (EDIH), 23 hubs with the Seal of Excellence, and two Testing and Experimentation Facilities (TEF). Additionally, six Digital Innovation Poles provide services such as digital first assessment, orientation, support and promotion of enterprises.

Among other milestones in 2024, there is the activation of investment under the Strategic Technologies for Europe Platform (STEP), via the amendment of the National Research, Innovation, and Competitiveness Programme (RIC NP) 2021-2027, which supports initiatives for collaborative research ²⁴.

Looking ahead, it remains important to sustain these initiatives and maximise their impact, although it will be challenging to maintain the same level of investment beyond 2026 as RRF funding phases out.

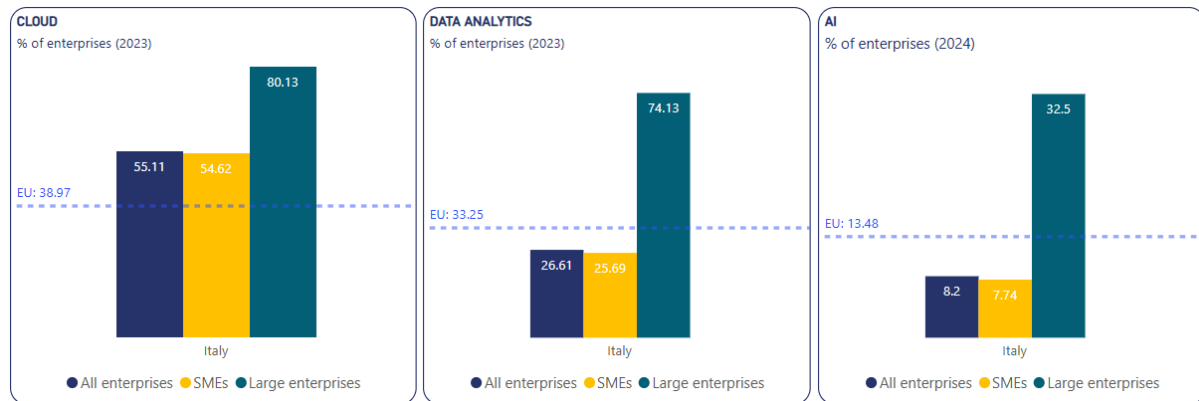
2024 recommendation: Strengthen measures targeted to the adoption of technologies by enterprises, with particular attention to AI and looking at the barriers and drivers specific to the national context.

Italy made some efforts to address the recommendation through new policy actions in 2024: Italy has continued implementing important measures, including the network of technology transfer centres, but maintaining the efforts over the long term remains crucial.

²³ 2022 is the last comparable year that used a similar methodology for measuring the digital intensity of enterprises.

²⁴ Supported by the European Regional Development Fund (ERDF). Please see: [The European Commission has approved the amendment to the RIC NP 21-27 to enable participation in the Strategic Technologies for Europe Platform \('STEP'\) | PN RIC 21-27.](#)

Take up of cloud/AI/data analytics



According to data collected in 2024, 8.2% of Italian firms adopted AI (2030 national target is 60%), after a significant progression of +62.4% in 2024, despite not reaching the EU average of 13.48%. The country is on track according to its national trajectory. AI uptake among SMEs was slightly lower at 7.74%, whereas large enterprises had a higher rate, with 32.5% using AI. This corresponds to a gap of 24.76 percentage points between SMEs and large enterprises, which is significant but lower than the gap of 28.53 percentage points observed at EU level.

Adoption of cloud, data analytics, and the three technologies together were not measured in 2024.

In 2023, 55.11% of Italian firms had adopted cloud technologies (2030 national target is 74%), well above the EU average of 38.97%. SMEs had an uptake of 54.62%, while large enterprises saw a significantly higher adoption rate of 80.13%. This resulted in a gap of 25.51 percentage points between SMEs and large enterprises in Italy, which was lower than the EU-level gap of 31.68.

Data from 2023 showed that 26.61% of Italian firms adopted data analytics technologies (2030 national target is 60%), falling below the EU average of 33.25%. Among these, 25.69% of SMEs used data analytics, whereas 74.13% of large enterprises used them (slightly less than 3 out of 4), illustrating a significant difference. This indicates a notable gap of 48.44 percentage points between SMEs and large enterprises, which exceeds the EU gap of 39.72 percentage points.

When taking the three technologies together in 2023, 63.09% of enterprises in Italy engaged with either AI, cloud or data analytics technologies, well ahead of the EU-level average of 54.7%. Uptake among SMEs was slightly lower at 62.56%, while large enterprises demonstrated a significantly higher adoption rate of 90.52% (over 9 out of 10). This indicates a percentage point difference of 27.96 in uptake between SMEs and large enterprises in Italy, which is lower than the EU-level gap of 32.97 percentage points.

Italy has a number of measures in place contributing to the adoption of advanced technologies by enterprises. In addition to the measures described above and some private initiatives²⁵, which contribute to these results, the Italian roadmap includes various measures to support the adoption and development of advanced digital technologies by enterprises: from the Houses of Emerging Technologies²⁶, to the Fund for the development of artificial intelligence, blockchain and Internet of Things technologies and applications²⁷, and to participation in EU-level cooperation projects,

²⁵ To name one, Fastweb + Vodafone and CINECA have announced a strategic agreement to support businesses in the development and deployment of applications based on Generative Artificial Intelligence (Gen AI).

²⁶ Centres for technology transfer and experimentation (portalecte.mimit.gov.it).

²⁷ With an endowment of EUR 45 million.

particularly through the Chips Joint Undertaking (JU) and EuroHPC²⁸. Italy has also achieved significant recognition within the framework of the European programme for creating the first AI Factories, as IT4LIA has been chosen as one of the AI Factories in Europe²⁹.

- [Cloud](#)

Italy is one of the participants in the Important Project of Common European Interest (IPCEI) Cloud Infrastructure and Services, and implementation is progressing as planned. In 2024, there was progress on allocating the grant to beneficiaries. In Italy, the IPCEI involves both companies and research institutions, reaching a broad ecosystem.

The implementation of the IPCEI-CIS in Italy is progressing as planned.

- [Data Analytics](#)

There is no specific update to report beyond what has already been included in other sections.

- [Artificial Intelligence](#)

Despite the strong progress over the last year, the adoption of AI among Italian enterprises remains limited and difficult especially for SMEs. Recent surveys highlight three main barriers to AI adoption among micro and small enterprises: technological and operational challenges, business know-how limitations, and investment capacity constraints. Many businesses struggle with inadequate internal structures, lack of infrastructure, and difficulty finding reliable technology providers. Additionally, a lack of digital culture within management, and employee adaptation to AI technologies pose significant challenges. High investment costs, limited government support, and financing difficulties also hinder AI integration³⁰.

However, there is an increasing interest in this topic. The 2025 Eurobarometer shows that 87% of Italian people think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values.

During 2024, Italy launched new initiatives dedicated to the adoption of AI, also building on HPC capabilities and resources. A major initiative started in 2024 is the IT4LIA AI Factory³¹, which will represent the evolution of Leonardo (a pre-exascale EuroHPC supercomputer hosted by CINECA and in the top 10 of the most powerful supercomputers in the world) and will develop a top class AI-optimised supercomputer. The Factory will provide sector-specific and horizontal services to increase AI uptake, supporting start-ups, SMEs and key sectors of the Italian economy, such as agribusiness, cybersecurity, earth sciences and manufacturing.

Another important initiative is the AI4Industry Foundation³² in Turin, which kicked off in May 2024 as a national AI centre and which, among other resources, will leverage an on-premise HPC cluster and the Leonardo HPC system. These efforts seek to bridge the gap between AI providers – researchers,

²⁸ The support for the Chips JU and EuroHPC, originally funded by the NRRP, is now funded by the Complementary National Plan, and aims to complete 32 Innovation Agreements.

²⁹ It will provide a world-class AI infrastructure and a cohesive ecosystem to bring together researchers, developers, start-ups and SMEs to bridge the gap between AI providers and potential users, such as public administration, students, academia, SMEs and industry.

³⁰ G7 Report on Driving Factors and challenges of AI adoption and development among companies, especially micro and small enterprises ([FINAL REPORT AI MSMEs Ministerial 10 Oct 2024-1.pdf](#)). The considerations reported above are specific to the Italian context and the result of a survey among Italian enterprises.

³¹ [IT4LIA AI Factory: A New Pillar for Artificial Intelligence in Europe | HPC Cineca](#).

³² [AI4I.it](#).

start-ups, and developers – and potential users across industry and public administration. Italy is also actively participating in EU-wide AI testing and experimentation networks³³.

In July 2024, the government published the new AI strategy, emphasising safe, ethical, and inclusive AI development. This strategy includes concrete actions to support AI adoption among enterprises, such as facilitating AI integration in SMEs, fostering AI start-ups, and establishing industry-focused AI development labs³⁴.

Overall, AI is gaining attention in Italy, particularly following the country's presidency of the G7. Recent initiatives demonstrate Italy's **commitment to progress in this area, also leveraging its strengths in the field of HPC. However, sustained efforts and targeted interventions are still needed** to boost development and deployment of AI solutions, particularly among SMEs.

2024 recommendation: Strengthen measures targeted at the adoption of technologies by enterprises, with particular attention to AI and taking into account the barriers and drivers specific to the national context.

Italy made some efforts to address the recommendation through new policy actions in 2024: There were some new initiatives launched in 2024 (see above). However, it remains important to keep the focus high and put in place initiatives that can reach all enterprises and address the specific needs and barriers. It is also crucial to reflect on initiatives that can allow the country to acquire leadership in the area of AI.

Unicorns, scale-ups and start-ups

At the beginning of 2025, Italy had 9 unicorns (2030 national target of 16), which is 1 more than last year (+12.5%).

In Italy, private sector R&D and Venture Capital (VC) investment remain low, especially in the ICT sector. Using data from the 2024 EU Industrial R&D Investment Scoreboard, Italian firms accounted for only 2.3% of total R&D expenditure by the 322 European companies ranked among the top 2 000 global R&D investors. Of the Italian companies in this group, none operate in digital industries such as software, computer services, or technology hardware³⁵. Moreover, VC investment in the ICT sector remained significantly below the EU average in 2023, with just 15% of VC funding allocated to deep tech (compared to 28% in France and 20% in Germany)³⁶.

Regulatory barriers hinder the expansion and competitiveness of Italy's VC market. For example, Italy's bankruptcy laws impose severe penalties on entrepreneurs if they fail, discouraging risk-taking. There is also room for streamlining and making more attractive the systems of incentives for start-ups and innovative SMEs, the process for establishing VC funds and investing in start-ups, the regulations incentivising new entrants and secondary markets.

³³ [Sectorial AI Testing and Experimentation Facilities under the Digital Europe Programme | Shaping Europe's digital future](#)

³⁴ [IA in Italia, boom di investimenti tech ma PMI al palo: le mosse del Governo - Agenda Digitale](#).

³⁵ European Semester, country report 2025, using data from the 2024 EU Industrial R&D Investment Scoreboard (data refers to 2023), [JRC Publications Repository - The 2024 EU Industrial R&D Investment Scoreboard](#).

³⁶ European Semester, country report 2025. Data based on: Dealroom, The European Deep Tech Report 2023, [The European Deep Tech Report 2023 | Dealroom.co](#). Data refers to the period 2018-2023.

Italy did not add any new measures related to unicorns in its roadmap. It continued implementing the dedicated programmes, such as the **Smart&Start Italia programme**³⁷, with funds managed by Cassa Depositi e Prestiti (CDP), including EUR 400 million for the digital transition, targeting technologies such as Artificial Intelligence, cloud, health, Industry 4.0, cybersecurity, fintech and blockchain.

In 2024, an important development was the action taken under national Competition Law, approved in December 2024, where targeted amendments were introduced to increase financial support for start-ups, including an enhanced role for pension funds in the VC market³⁸.

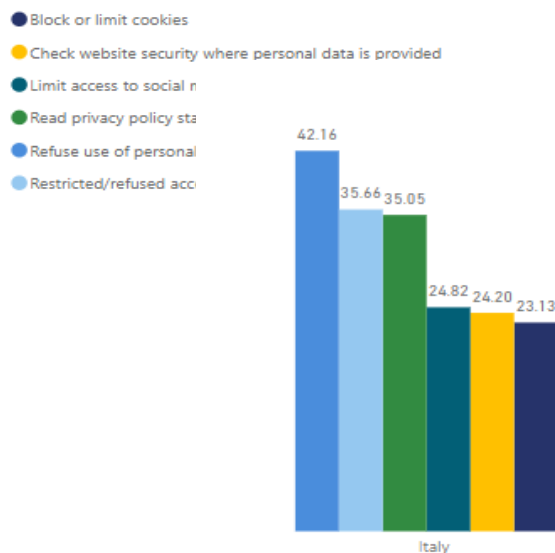
2024 recommendation: Strengthen actions to sustain the ecosystem of start-ups and innovative enterprises, including boosting the availability of effective financial tools, initiatives to support the scale up of enterprises, in particular in strategic sectors, building synergies between research and industrial systems.

In 2024, Italy continued the implementation of existing measures but did not take any new measure: the above-mentioned measure under national Competition Law to support start-ups and VC represented an important development. However, the need remains for an overall reflection on whether additional and tailored actions are necessary.

Strengthening Cybersecurity & Resilience

In Italy, 59% of individuals engaged in at least one action to protect their personal data online in 2023, below the EU average of 69.55%. However, only 34.75% of the population undertook three or more precautionary actions (and therefore could be considered as having above basic digital safety skills). The most frequently undertaken measure was refusing the use of personal data for advertising purposes, with 42.16% of individuals taking this action, while changing browser settings to prevent or limit cookies on any device was the least common, reported by 23.13%. Moreover, according to the Digital Decade Eurobarometer 2025, 82% of Italian citizens think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their

Type of activities to protect personal data online (% of individuals)



³⁷ This initiative supports start-ups (up to 60 months old) through subsidised loans, with partial conversion into non-repayable grants if third-party investors – such as VC firms, accelerators, business angels, or authorised fund managers – provide equity investment.

³⁸ Law No 193 of 16 December 2024.

daily use of digital technologies. It represents a significant increase of 8 percentage points compared to last year, reflecting the growing interest of the citizens in this aspect.

Italian enterprises are keen to take cybersecurity measures. The number of enterprises that experienced ICT security incidents leading to ICT services being unavailable due to an attack from the outside (e.g. ransomware attacks, denial of service attacks) was 3.13% in 2024, stable compared to 2022, and below the EU average (3.43%). Italian enterprises are also less prone than their peers in the EU to incidents related to hardware or software failures (12.86%, 17.97% in the EU). In terms of measures, 92.92% of enterprises deployed some ICT security measures (close to the EU average of 92.76%) and 62.67% of enterprises made their employees aware of their obligations in ICT security-related issues, above the EU average (59.97%).

On the deployment of secure internet standards, in Italy the roll-out of Internet Protocol version 6 (IPv6) for end users is low (14%, EU average: 36%). It is also low on the server side (6%, against 17% for the EU). IPv6 is an important protocol as it ensures the scalability, stability, and security of the internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have been long depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out as it introduces security features to the domain name system (DNS). The DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology) was 27% (Q3 2024), below the EU average of 47%.

The number of incidents remained stable and impact limited. According to data from the national cybersecurity agency (ACN), from January 2025, there was a decrease in the number of cybersecurity events, while the number of incidents remained relatively stable and consistent with the average for the six-month period. Central public administration, telecommunications, and technology were the most affected sectors. Hacktivism activities in Italy continued at a similar rate to previous months, with pro-Russian groups claiming responsibility for several distributed denial of service (DDoS) attacks, allegedly motivated by Italy's military support for Ukraine. However, the impact of these operations remained limited. This is in line with the strategy of these groups, which focus on, often vulnerable, secondary sites, with the primary goal of amplifying the media impact of the attacks.

Many initiatives are underway to strengthen Italy's cybersecurity capabilities and skills. To enhance the cyber resilience of public administrations, the ACN has launched financing initiatives supporting security event monitoring, analysis, and response capabilities. Under the RRP, 216 projects have been funded across 142 public entities, focusing on perimeter security, cyber risk monitoring capabilities, and incident response improvements.

Another focus area is related to developing cybersecurity skills. To address the ICT talent gap, the ACN has partnered with the Ministry of Education and the network of tertiary technical education institutions – International Talent Support (ITS) Foundation Network – to integrate cybersecurity training into technical and higher education. National competitions, scholarships, and incentives aim to foster talent, promote Science Technology Engineering and Mathematics (STEM) careers, and support workforce inclusion, including incentives for professionals returning from abroad. Specifically, the ACN is working alongside schools and universities to reduce the gender gap in ICT skills, to increase cyber awareness among the population, SMEs and other entities. The ACN is conducting these activities through collaboration with public and private entities in implementation of the provisions of the National Cybersecurity Strategy 2022-2026.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Italy continues to face significant digital skills gaps, leaving parts of the population more vulnerable to online risks and less equipped to benefit from digital transformation. However, the country has made strong progress in digital public services and is a frontrunner in developing the EU Digital Identity Wallet, simplifying access for citizens and encouraging take-up of digital solutions.

Italy is also actively tackling disinformation, media literacy, and online safety – particularly for minors – through targeted campaigns, school-based education, and evolving regulation, including initiatives addressing fake news and influencer accountability.

Equipping people with digital skills

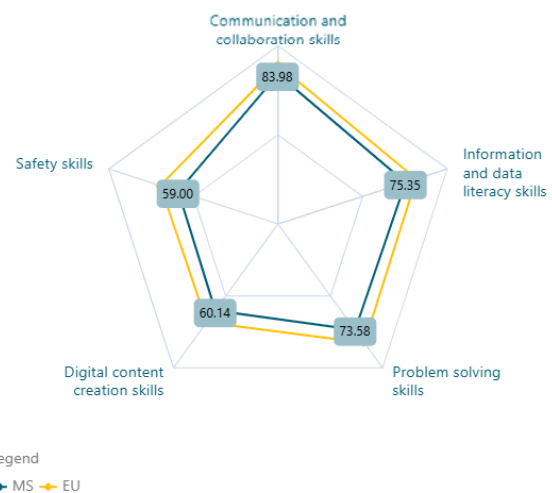
Basic Digital Skills

In 2023, only 45.8% of people in Italy had at least basic digital skills (national target for 2030 is 80.1%), against an EU average of 55.6%. In the last two years, there has been no significant improvement overall (the value increased by only 0.2% annually compared to 2021). Some breakdowns show the national digital skills landscape.

- **Gender Gap:** The difference in digital skills between Italian men and women is noticeable, with 47.36% of men and 44.16% women having at least basic digital skills. The resulting 3.20 percentage point gap is slightly wider than the EU average (2.23 pp.), indicating a more significant disparity between genders in Italy. This gap, however, mainly concerns the older age groups: up to 59 years of age, there are no gender differences, while in the 60-64 years of age group men have an advantage of 4.3 percentage points.
- **Education Level:** A correlation between education and digital skills is widely confirmed. In Italy, 74.09% of those with higher education levels have at least basic digital skills, which is still less than the EU average (79.83%). Those with lower education levels are particularly disadvantaged, with only 22.57% having at least basic digital skills, i.e. a gap of 23.18 percentage points compared with the national average, just above the average gap for the EU (21.95 pp.).
- **Living Areas:** Rural Italians are less likely to have at least basic digital skills, with proficiency at 40.64%, which is below the EU average for rural areas (47.50%). The gap between rural residents and the national average is 5.11 percentage points, which is somewhat smaller than the EU average gap (8.06 pp.).

- **Age Groups:** Italian youth, specifically those aged 16 to 24, are the most digitally skilled group at 59.07%, yet this is still below the EU average (69.98%). 65 to 74-year-olds have the least digital skills at 19.33%, also falling short of the EU average (28.19%).
- **Digital Skills Index components:** Italy falls below the EU average in all five areas of the Digital Skills Index. Its best performance is in communication and collaboration skills at 83.98%, but even this score is below the EU average. The area needing the most improvement is safety skills, with a score of 59.00%, also below the EU norm.

Digital Skills Index components
% of individuals



Overall, Italy faces important challenges, with the gaps in gender and education levels being areas of particular concern, with significant room for growth.

Italy set an ambitious target in its roadmap that, as part of the 2024 adjustment, was revised and increased to 80.1%, to be achieved by 2030.

In its roadmap adjustment, Italy also strengthened key measures for the improvement of basic digital skills, building on the actions started with the RRP and ensuring their continuation after 2026. More specifically, the adjustment extends and reinforces the two main measures aimed at providing citizens with at least basic digital skills and helping them use digital services. These are: (i) the digital civic service (EUR 60 million), which, as of the beginning of 2025, involves more than 9 000 young volunteers, who, in turn, have implemented about 81 000 initiatives; and (ii) the network of digital facilitation services (EUR 135 million), with the opening of 3 000 facilitation services (*Punti Digitale Facile*) across the country in 2025, which supported about 660 000 people in using digital services. Both measures, together with the Fund for 'Repubblica Digitale', were also presented by Italy in the context of the 'best practice accelerator', a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. For more details, see the box below on implementing the 2024 recommendations.

This adjustment is supported by the reinforcement of Repubblica Digitale, another key initiative in the Italian landscape launched in 2019 and part of the European network of Digital Skills and Jobs Coalitions. As of the beginning of 2025, Repubblica Digitale had reached over 350 initiatives promoted by civil society, public administration and the private sector, most of them (241) targeting basic digital skills and digital citizenship. The new operational plan for 2025-2026 put EUR 100 million on the table for the two-year period, following a new Memorandum of Understanding signed between the government and the Association of Foundations and Savings Banks (Acri)³⁹.

Regarding the education sector, the improvement of basic digital skills is implemented through the following RRP measures: School 4.0 (EUR 2.1 billion), Digital education and teacher training (EUR 800

³⁹ [Approvato il Piano Strategico 2025-2026 – Fondo per la Repubblica Digitale.](#)

million), New Skills and Languages-STEM (EUR 1.1 billion). These measures reach a total of 8.5 million citizens, including both students and teachers.

2024 recommendation on basic digital skills: Increase efforts to boost digital skills across all target groups with tailored interventions, including by: (i) strengthening services to accompany citizens in the use of digital tools; (ii) expanding digital educational programmes in schools and increasing interest in STEM (Science Technology Engineering and Mathematics) and ICT disciplines; (iii) and incentivising reskilling and upskilling paths for workers.

Italy made some efforts to address the recommendation through new policy actions in 2024:

Regarding point (i):

The adjustment of the roadmap:

- extends the digital civic Service until 2030 (previous end date was 2026), with a target of 250 000 citizens trained per year.
- strengthens the network of digital facilitation services through two measures: one is based on launching competitive calls with the objective of training around 500 000 citizens and involving at least 1 200 Digital Facilitation Points; the other aims to continue the activities of the digital facilitation services after the end of the related RRP measure, training approximately 450 000 persons per year (with a forecast of 2 500 Digital Facilitation Points involved).
- adds a new horizontal measure which aims to extend and further develop the use of the e-learning platform and to train the facilitators and volunteers involved in the digital civil service and in the network of digital facilitation points. The platform is expected to evolve and expand the category and number of users.

Regarding point (ii):

In 2024, the implementation of existing measures, also supported by the RRP, continued (e.g. the platform for the digital education of teachers and trainers; the investment 'School 4.0', the national plan for digital school). According to 2024 data, 94% of schools are implementing projects for the development of digital skills.

Regarding point (iii):

In 2024, the implementation of existing measures for reskilling and upskilling continued (e.g. actions by the competence centres and the initiatives of Repubblica Digitale, which, at the beginning of 2025, included 76 initiatives to strengthen digital skills for businesses and the labour market, out of a total of more than 350 initiatives).

In connection with the reskilling and upskilling of public administrations, the Syllabus continues to be the key initiative in this area. In 2024/2025, training was extended to AI Literacy, included in the list of basic digital competences for public employees. The training was developed according to the guidelines for the adoption of AI in public administration (under consultation until March 2025).

ICT specialists

The share of ICT specialists compared to total employment in Italy stood at 4% in 2024 (national target for 2030 is 8.4%), against an EU average of 5%. There was no progress compared to 2023. The country did not provide a national trajectory point for 2024. The percentage of female ICT specialists in Italy was 17.1%, still below the EU's 19.5%, but with a significant growth rate of 8.9%. The share of women among ICT specialists should be seen also in the context of a persisting low labour market

participation of women in Italy. The female employment rate was 56.5% in 2023 in Italy, one of the lowest values in the EU (70.2%); at the same time, the gender employment gap is nearly twice the EU average (19.5 percentage points vs 10.2 percentage points).

In its roadmap, Italy set an ambitious target for 2030 of 8.4% (this target was increased in the roadmap adjustment).

The demand for digital professionals remains high and widespread across businesses in all sectors, with a growing emphasis on AI skills.

In terms of demand from the labour market, Eurostat experimental statistics based on web scraping show that in Italy, like in the rest of the EU, the profiles of 'software and applications developers and analysts' are the most sought after, representing 48.8% of online job advertisements for ICT specialists (58.0% at EU level). This is followed by the profile 'Electronics and telecommunications installers and repairers', which in Italy represents 16.4% of online job advertisements (6.6% is the EU average).

According to the findings of the reports of the Observatory on Digital competences, the demand for ICT professionals in Italy increased steadily between 2019 and 2022 (from about 20 000 in early 2019 to about 60 000 in April 2023) ⁴⁰. This growth seemed to halt from 2023 to 2024, pointing to a stabilisation of the demand, except for AI-related skills which, instead, have seen continuous growth since early 2023. The demand concerns all industries, not only the ICT sector, and – despite reaching a stable point – remains high, and above the offer of ICT specialists on the job market ⁴¹.

Skills mismatches and shortages may be also further exacerbated by brain drain and the increasing number of graduates emigrating, which sharply increased from 28.5% in 2012 to 45.7% in 2021 ⁴².

Reinforcing the academic offer remains a priority. Measures are ongoing to reinforce the non-academic tertiary education sector for the development of high-level technical skills. The government has implemented a series of reforms to boost the vocationally oriented tertiary education system, reinforcing the links between secondary education and tertiary non-University Education (ITS academies), strengthening the involvement of the industry and focusing on internships and training on the job. For more details, see the box below on implementing the 2024 recommendations.

2024 recommendation on ICT specialists: (i) Increase ICT programmes in higher education, including the strengthening of ITS Academies, in connection with the job market needs and in collaboration with industry; (ii) take specific measures to increase participation of women in ICT education and in the ICT careers; (iii) consider measures to attract and retain ICT specialists.

Italy made some efforts to address the recommendation through new policy actions in 2024:

Regarding point (i):

- In 2024, the government established a new training pathway (*filiera formativa tecnologico-professionale 4+2*) ⁴³ to equip students with technological skills aligned with the needs of the workforce and to facilitate the transition towards tertiary non-University education (ITS Academies). The programme, starting in the 2024/2025 school year as a national pilot, offers four-year technical and vocational secondary education courses, emphasising on-

⁴⁰ AICA, Anitec-Assinform, Assintel, Osservatorio sulle Competenze Digitali, 'ICT: Talenti Cercasi', December 2023.

⁴¹ AICA, Anitec-Assinform, Assintel, Osservatorio sulle Competenze Digitali, 'Competenze Digitali: un'opportunità per il Paese', last update on January 2025.

⁴² Eurofound, [Role of human capital inequalities in social cohesion and convergence](#), 2024.

⁴³ [Law n. 121 of 8 August 2024](#).

the-job training and STEM subjects, with industry experts involved in both curriculum design and teaching. After passing the final state exam, students can pursue university education, continue at an ITS Academy, or enter the workforce.

- Resources of EUR 35 million were planned for strengthening the ITS Academies between 2025 and 2026.
- The initiatives undertaken under Repubblica Digitale also target ICT specialists (at the beginning of 2025, Repubblica Digitale included 34 initiatives relating to ICT specialised skills, out of a total of more than 350 initiatives).

Regarding point (ii): the initiatives undertaken under Repubblica Digitale also specifically target girls in ICT.

Regarding point (iii): no specific new measures to report.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

Regarding digital public services for citizens, in 2024 Italy scored 83.57 (2030 national target of 100) after significant progress of +22.4%, above the EU average of 82.32. The country is on track according to its national trajectory. The overall progress made by Italy is a remarkable achievement. In the cross-border category for digital public services for citizens, Italy started at 46.97 in 2023, below the EU's 68.37, but climbed to 72.71 in 2024, exceeding the EU's 71.28. Italy's growth rate of 54.8% in this area was substantially higher than the EU's 4.3%.

Regarding digital public services for businesses, the score was 80.93 in 2024 (2030 national target of 100), showing good progress (+6.1%) but falling below the EU average of 86.23. The country is on track according to its national trajectory. In the cross-border category for digital public services for businesses, Italy's score was 63.11 in 2024, below the EU's 73.76. Italy's growth rate of 9.0% was higher than the EU's 0.9%.

In terms of access to e-Health records, in 2024 Italy scored 84.11 (2030 national target of 100), after progress of +1.7% and above the EU average of 82.7. The country is on track according to its national trajectory. This result confirms the good performance of Italy as early as in 2023, when the country had already reached a score of 82.69 compared to the EU's 79.12.

Moreover, according to the 2025 Eurobarometer, 85% of Italian people think that accessing public services online will be important for their daily life in 2030. An equal percentage considers that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) during their daily life by 2030.

eID

Italy has two certified eIDAS digital identity schemes, SPID and CIE, which are widely adopted across the country. The number of SPID and CIE credentials issued continues to grow. As of early 2025, the total number of SPID identities issued surpassed 40 million ⁴⁴, while the number of CIE identities stands at 51 million ⁴⁵. Additionally, an increasing number of public administrations are integrating their services with SPID and CIE, with 18 800 public administrations supporting both systems.

In its adjustment of the roadmap, Italy added the IT Wallet, an area of action where the country is making significant progress with the development of its Digital Identity Wallet (IT Wallet). The Italian government has initiated the development of a national wallet, the IT Wallet, in line with the EU's

⁴⁴ [Stato di avanzamento Trasformazione Digitale | Avanzamento Digitale AgID.](#)

⁴⁵ [Federazione erogatori servizi.](#)

regulatory and technological framework and aimed at streamlining the country's digital identity ecosystem. This initiative seeks to simplify citizens' and businesses' access to services while ensuring secure storage of essential documents and full user control over personal data.

In preparation for the full deployment of the IT Wallet System, Italy launched 'Documenti su IO' in December 2024, a new feature within the IO app (the public services app). This feature enables citizens to store digital versions of key three documents: mobile driving licence, health insurance card and the European Disability Card.

Adoption numbers in the first three months following its general release (December 2024 – March 2025) are very positive, with 4.5 million users activating the service and 7.5 million digital documents in use.

Italy is also actively contributing to developing the European Digital Identity Wallet (EUDI Wallet) by participating in all four large-scale pilots working on various use cases: NOBID, focusing on a large-scale pilot for EU Digital Wallet payments; POTENTIAL, a consortium working on six key use cases (e.g. e-Prescriptions, bank account opening, SIM card registration); the EU Digital Wallet Consortium (EWC), focused on digital travel credentials; and Digital Credentials for Europe (DC4EU), focused on the educational and social security sectors ⁴⁶.

Digitalisation of public services for citizens and businesses

Italy made significant progress in ensuring availability of digital public services to citizens and businesses.

In its roadmap, Italy aims to reach the EU-level target of 100% of key digital public services available to citizens and businesses by 2030. Italy did not add any new measures in its roadmap adjustment, but revised the progress of milestones and provided a higher level of detail for some activities. This approach is explained by the overall progress achieved in implementing the existing measures, and the comprehensive set of initiatives to digitalise the public administration and its services under the RRP. The implementation of key RRP measures (e.g. citizens' experience, digitalisation of central administrations, adoption of PagoPA and the IO app) is progressing as expected and efforts have been made to increase system interoperability and usability.

Simplification and interoperability are at the heart of key measures in the area of e-Government taken by Italy. A particularly important initiative in this regard is the National Digital Data Platform (PDND). The platform plays a crucial role in enhancing interoperability in public administration, specifically by connecting information systems and databases and ensuring compliance with the Once Only principle. The platform supports and is being integrated into a number of ecosystems, such as procurement, social security, population registries and education databases. To exchange data, each entity must complete the PDND enrolment process. Once registered, it can both provide its own e-Services – digital services granting data access – and use those offered by other entities. Since its launch in October 2022, the PDND has expanded significantly, with 7 900 entities onboarded, 11 000 e-Services published and over 480 million data exchange sessions conducted ⁴⁷.

On the sovereignty of the digital administration, a key measure is the National Strategic Hub (Polo Strategico Nazionale or PSN), also part of the RRP and of the Digital Decade roadmap. The PSN is the infrastructure designed to ensure the **security and technological independence** of public administration data and services, by promoting the transition to **secure, reliable, and scalable cloud**

⁴⁶ [What are the Large Scale Pilot Projects - EU Digital Identity Wallet.](#)

⁴⁷ [I numeri della PDND | PDND Interoperabilità.](#)

solutions. As outlined in the **Italian Cloud Strategy**, the PSN builds on four data centres, **distributed** across four locations in Italy. The final target (supported by the RRP) is to migrate **12 464 local public administrations** to qualified cloud environments by Q2 2026. In Q3 2024, **4 083 local public administrations** were migrated (about 32%).

2024 recommendation: Continue efforts to digitalise public services, focusing on user friendliness and interoperability to further increase simplification and re-use of information available to public administrations.

Italy made some efforts to address the recommendation through new policy actions in 2024: Progress is being made on the numerous and significant measures that are already in place and benefit from RRP support (see above/below).

e-Health

In access to electronic health records, Italy maintained its lead in 2024 with a score of 84.11 against the EU's 82.7.

Italy has worked to increase the availability of health data by integrating more categories of healthcare providers into the Electronic Health Record (EHR, or Fascicolo Sanitario Elettronico – FSE). Many documents are made available (laboratory reports, patient summaries, first aid reports, hospital discharge letters, radiology reports, specialists' reports), produced both within and outside the National Health Service (Sistema Sanitario Nazionale – SSN).

The Delegation Management Platform (DMP) will enable guardians, curators, support administrators, and those with parental responsibility to exercise their powers via national digital identity; the general availability of these functionalities will also apply to EHR online services. The Platform is planned to be completed by 30 June 2026.

2024 recommendation: (i) Increase the supply of health data by onboarding more categories of healthcare providers; (ii) build on existing legal provisions and implement access opportunities for legal guardians, authorised persons and disadvantaged groups; (iii) make all types of medical images available to citizens in a timely manner and in all regions through the online access service, including through mobile applications.

Italy made some efforts to address the recommendation through new policy actions in 2024: Compared to last year, more data categories are made available for citizens in several regions, especially in Calabria, Molise, and Puglia. Specifically, data on allergies, current problems, medical devices/implants, procedures/operations, current/relevant past, and medical images increased in maturity.

Of the 13 data categories investigated in this study, 7 are available in a timely manner in all regions. Nonetheless, data on medical images is still not available in most of the regions.

In 2024, Liguria, Basilicata and Sardinia reported, for the first time, that they had a mobile application alongside their existing online portals. Only four regions have only an online portal. More regions are providing technical functionalities to assist disadvantaged groups.

While more categories of healthcare providers are supplying data in some regions, this number is still limited, affecting Italy's e-Health maturity.

Building a safe and human centric digital environment and preserving our democracy

In Italy, online participation in political and civic life is relatively high. In 2024, 25.77% of people used the internet to participate in consultations, to vote or share opinions online. This share is above the EU average, despite Italy's downward trend (while in the EU, this share was 17.59% in 2022 and increased to 20.45% in 2024).

In 2023, only 1 out of 4 of Italian internet users declared that they checked the truthfulness of doubtful online information. In 2023, 37.42% of Italian people declared that they had encountered untrue or doubtful information or content on internet news sites or social media. Of these individuals, 20.95% checked its truthfulness, demonstrating a modest level of critical evaluation among those who perceived such content as misleading. Moreover, this share declined compared to 2021, when it was 24.39%, and is below the EU average of 24.29%. Young people between 16 and 24 years of age emerged as those more likely to report having encountered untrue or doubtful information or content (46.19% vs 39.55% of adults between 25 and 64 years of age) and to check truthfulness (29.63% vs 21.81% of adults).

The latest report of the **Italian Digital Media Observatory (IDMO)** provides some insights on the most frequent topics subject to disinformation. It reports data from a total of 193 fact-checking articles issued in February 2025. Of these, 16 articles (8.2%) addressed misinformation related to the war in Ukraine, 16 (8.2%) focused on the pandemic, 8 (4.1%) on climate change, 16 (8.2%) on the European Union, 10 (5.1%) on immigration, 5 (2.5%) on the war in the Middle East, and 5 (2.5%) on gender or LGBTQ+ issues ⁴⁸.

Looking at policy responses, in May 2024, the Italian government launched a broad campaign entitled 'Liberati dalla disinformazione' ('Free Yourself from Disinformation') to combat the spread of false information. This initiative aims to raise awareness about the dangers of disinformation and promote critical thinking among citizens. Additionally, efforts to increase media literacy in schools are ongoing, such as those under Italy's National Digital School Plan ⁴⁹.

Furthermore, in December 2024, the Ministry of Education and Merit (Ministero dell'Istruzione e del Merito, MIM) and the Italian Communications Authority (AGCOM) signed a memorandum of understanding to **promote and develop digital and media literacy activities in schools**, particularly targeting lower and upper secondary education. This agreement includes integrating digital citizenship training into the civic education curriculum, with programmes such as the 'Patentino Digitale' ('Digital Licence') already active in regions such as Tuscany and Lazio, and set to expand to other regions in 2025 ⁵⁰.

These initiatives play an important role in supporting the implementation of EU campaigns and the enforcement of relevant legislation, such as the Digital Services Act (DSA). Article 53 of the DSA grants service recipients, as well as organisations acting on their behalf, the right to lodge complaints about alleged DSA violations by intermediary service providers. These complaints can be submitted to the Digital Services Coordinator (DSC) of the Member State where the recipients are located. In Italy, AGCOM serves as the DSC, overseeing the implementation and enforcement of the DSA. Since

⁴⁸ [L'effetto Trump sulla disinformazione di febbraio - IDMO.](#)

⁴⁹ [Liberati Dalla Disinformazione – La nuova campagna della Farnesina per contrastare la diffusione delle false notizie. – Ambasciata d'Italia La Valletta.](#)

⁵⁰ [Protocollo di intesa tra il Ministero dell'Istruzione e del Merito e l'Autorità per le Garanzie nelle Comunicazioni | Agcom.](#)

implementation, approximately ten complaints have been received, mainly concerning misleading advertising. Furthermore, in 2024, AGCOM adopted two important regulations concerning, respectively, the procedure for awarding trusted flaggers, according to Article 22 DSA, and the procedure for certifying out-of-court dispute settlement bodies, derived from Article 21 DSA. Since the adoption of these regulations, AGCOM has awarded the status of trusted flaggers to several entities and designated one out-of-court dispute settlement body.

Finally, **regarding the protection of minors**, Italy has implemented obligations for electronic communication service providers and device manufacturers to ensure the availability of parental control applications. Service providers must offer these applications to the public, while device manufacturers are required to enable their pre-installed activation. Cases of attempted violations are increasing, with most linked to the use of anonymisers to by-pass the restrictions.

In October 2024, AGCOM adopted a draft regulation outlining technical and procedural standards for verifying users' age⁵¹. This is currently being consulted to ensure compatibility with EU regulation, particularly concerning the 'mini-wallet'. Moreover, in the context of deploying the IT Wallet (discussed under the eID section above), one of the use cases being considered is age verification. This work is being done in coordination with the structures/work groups established at the EU level.

Acting on these issues is perceived as very important by Italian citizens. According to the Digital Decade Eurobarometer 2025, Italian people strongly think that the action of the public authorities is urgent to protect children online regarding the negative impact of social media on children's mental health (93% of Italian people), cyberbullying and online harassment (93%) and to put in place age assurance mechanisms to restrict age-inappropriate content (95%).

Leveraging digital transformation for a smart greening

The RRP, including its RePowerEU chapter, has driven forward numerous projects leveraging digital technologies to support the green transition. These initiatives also integrate digital technologies to enhance their impact, while reflecting the country's strong industrial base – for example, by focusing on helping enterprises adapt to the transition.

The Italian population recycles only a small part of its ICT equipment. In general, Italian people recycled their electronic devices less than the EU average. 6.55% of Italians recycle their laptops and tablets and 10.11% recycle their desktops, against an EU average of 11.31% and 14.66%, respectively. 10.04% recycled their mobile phones, broadly in line with the EU average of 10.93%.

According to the Digital Decade Eurobarometer 2025, 82% of Italian respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities.

In its adjustment, Italy added to the roadmap the measure 'Transition 5.0', a tax credit scheme supporting investments in digitalisation and the green transition of businesses. In 2024, the government gave impulse to the implementation of the measures, already part of the REPowerEU

⁵¹ Implementing Law No 159 of 13 November 2023 ('Decreto Caivano'). See press release at this link: [Comunicato stampa del 07 Ottobre 2024 | Agcom](#).

chapter of the RRP, aiming to accelerate the productive system's transition to an energy-efficient, sustainable, and renewable-based production model. Investments under 'Transition 5.0' have to achieve at least a 3% reduction in energy consumption at the production unit level or a minimum of 5% if calculated specifically on the affected process. Eligible investments under the scheme include: technologically advanced tangible and intangible assets (including software, platforms, applications); material assets for the self-production and self-consumption of renewable energy, including energy storage systems; and training activities aimed at acquiring or strengthening skills in technologies relevant to the digital and energy transition of production processes.

Available data shows a generally low take-up of the measure. So far, EUR 500 million have been assigned (out of the EUR 6.3 billion planned).

Another noteworthy initiative is the launch of a Technical Working Group involving the Department of Digital Transformation, ARERA (the Regulatory Authority for Energy, Networks, and Environment) and AGCOM. The aim of the Working Group is to identify synergies between the digitalisation and energy transition sectors. Specifically, the objective is to facilitate the deployment of fibre optic infrastructures and increase technology adoption. The Working Group has concluded hearings during which the views of multiple stakeholders were collected, and activities are currently underway to organise and summarise the information gathered.

2024 recommendation:

- Continue and intensify the efforts to join up the twin green and digital transitions, also leveraging advanced technologies and scaling up successful initiatives.
- Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and the material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.
- Monitor and quantify the emission reductions of the digital solutions deployed in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, with a view to future policy development, as well as attracting relevant financing.

No information available on measures taken to address the recommendation.

Annex I – National roadmap analysis

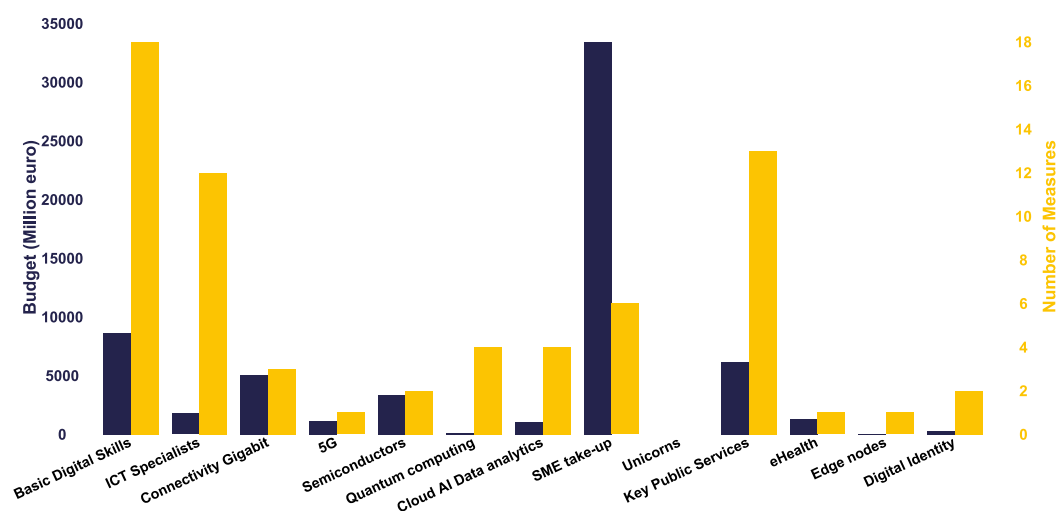
The adjusted roadmap addresses a substantial number of roadmap recommendations issued in 2024.

Italy revised the trajectories and the list of measures that contribute to their achievement, while submitting an explanation of the revisions made and of the reactions to the 2024 recommendations. The Italian roadmap has not been published.

The adjustment **adapted some of the 2030 national targets** to respond to the recommendations issued in 2024. In particular, the 2030 targets on basic digital skills and ICT specialists were increased, respectively, to 80.1% and 8.4%, and some of the measures in place were extended and reinforced. On the other hand, the adjustment did not revise the targets for the uptake of AI and data analytics. However, it should be noted that those targets, although remaining below the EU ones, are set at ambitious levels, i.e. 60% by 2030 (the EU targets are 75%). Overall, the Italian roadmap covers all targets and provides related trajectories to 2030.

As part of the adjustment, **Italy revised several existing measures and introduced five new ones.** Among the new measures, three focus on enhancing basic digital skills, reinforcing efforts to promote digital competence across all population groups and target audiences.

Measures and budget in national roadmap⁵²



The adjustment also incorporates two major national policy initiatives into the roadmap for business digitalisation: transition 4.0 (on the uptake of 4.0 technologies) and transition 5.0 (which supports investments in technologies for the green transition of Italian enterprises).

Finally, it adds the measure for the development of the IT Wallet to the roadmap, supporting the roll-out of the EUDI Wallet.

Additionally, the addendum offers further details on implementation and outlines several new initiatives. However, these are not formally included in the repository of measures (e.g. policies to

⁵² When referring to national roadmaps, data used in this report is that declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

support unicorns). Some of these initiatives are still under development (e.g. the quantum strategy).

As part of the adjustment, Italy also extensively revised the set of measures to ensure the **accuracy of the information reported and the budget** (in line with the 2024 recommendation).

Measures included in the roadmap were also linked to the relevant parts of the declaration on **digital rights and principles** and the digital decade general objectives.

Several stakeholders were **consulted** for the adjustment of the roadmaps, including Italian public administrations in charge of the different areas of action, members of the Italian Digital Skills and Jobs Coalition, and regions.

Overall, the **roadmap reflects a solid effort. It remains highly ambitious, both in terms of targets set, financial resources mobilised and the scope of measures introduced**. The inclusion of new initiatives and the strengthening of existing ones demonstrate commitment to accelerating progress towards the targets. At the same time, there is room to further consolidate the roadmap initiatives in certain areas – such as artificial intelligence and support for unicorns – to enhance coherence and strategic impact.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Italy is a member of the three established European Digital Infrastructure Consortia (EDICs): the Alliance for Language Technologies EDIC, the Local Digital Twins towards the CitiVERSE EDIC and the EUROPEUM EDIC. Italy is also working towards setting up EDICs in the area of agri-food and mobility and logistics. Italy is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Italy is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Italy has contributed to the Best Practice Accelerator⁵³ by sharing three best practices in the framework of the Digital Skills cluster (network of digital facilitation services, the digital civic service and fund for *Repubblica Digitale*).

EU funding for digital policies in Italy

Italy allocates 26% of its total recovery and resilience plan to digital (EUR 46.8 billion)⁵⁴. In addition, under cohesion policy, EUR 4.9 billion (representing 11% of the country's total cohesion policy funding), is dedicated to advancing Italy's digital transformation⁵⁵. According to JRC estimates, EUR 45.04 billion directly contribute to achieving Digital Decade targets (of which EUR 41.88 billion comes from the RRF and EUR 3.16 billion from cohesion policy funding)⁵⁶.

The RRF and Cohesion funding provide balanced support across the different Digital Decade targets. Notably, the Italian RRP makes a significant contribution to the targets related to the digitalisation of businesses, thanks to the large 'Transition 4.0' measure. The plan also includes important reforms and investments aimed at transforming the public administration, such as the deployment and uptake of Electronic Health Records and e-ID. Furthermore, the RRP addresses digital skills development through measures focused on improving basic digital skills, increasing training on advanced digital skills, and upskilling and reskilling the workforce.

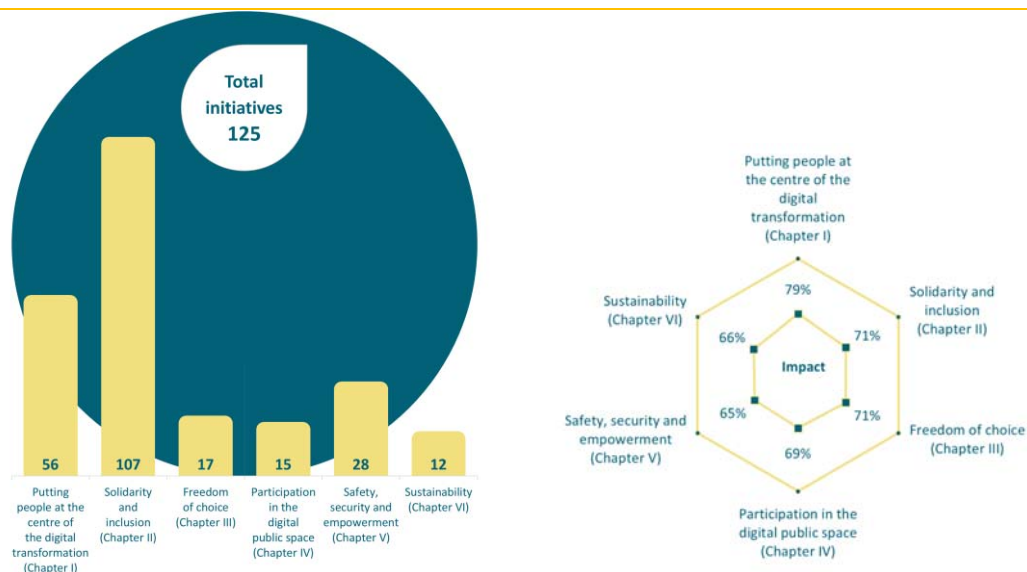
⁵³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are available to all Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

⁵⁴ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

⁵⁵ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

⁵⁶ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles⁵⁷



Activity on Digital Rights and Principles (figure 1)

Italy has been one of the most active Member States in implementing digital rights and principles, with over 100 initiatives overall and 12 new initiatives launched in 2024, showing notable progress towards its commitments. Italy is most active in the area of Digital education, training and skills (II). There is room for improvement, especially with regards to Protection and empowerment of children and young people in the digital environment (V) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Italy (mainly national government) and how these are perceived by citizens.

The indicators suggest that Italy is most successful in implementing commitments related to Putting people at the centre of the digital transformation (I). Italy should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Safety, security and empowerment (V).

According to the Special Eurobarometer 'Digital Decade 2025', 48% of citizens in Italy think that the EU protects their digital rights well (a 1% decrease since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting digital products and services that minimise damage to the environment and society (64%, above the EU average of 50%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (44%, below the EU average of 48%).

⁵⁷ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
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DIGITAL DECADE 2025 COUNTRY REPORTS

Latvia

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Executive summary

Latvia can rely on good digitalisation of public services for businesses, and citizens, but lags behind on 5G, fibre-to-the-premises, and very high-capacity networks, while having a high access to health records.

In its national roadmap and roadmap adjustment, Latvia shows a substantial level of ambition in its contribution to the Digital Decade having set 14 national targets, 86% of which are aligned with the EU 2030 targets. The country is following its trajectories moderately well with 50% of them on track (on the basis of the 2024 trajectories defined for 8 KPIs out of 8 analysed). Latvia addressed 84% of the 13 recommendations issued by the Commission in 2024, either by implementing significant policy changes (15%) or making some changes (69%) through new measures.

In 2024, gigabit connectivity and 5G remain below the EU average. Digitalisation of SMEs and the adoption of advanced digital technologies by businesses are a priority of the Latvian recovery and resilience plan. Latvia's overarching Cybersecurity Strategy 2023-2026 continues to guide its overall approach to cybersecurity.

Digital Decade KPI ⁽¹⁾	Latvia				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	LV	EU
Fixed Very High Capacity Network (VHCN) coverage	68.0%	68.1%	0.2%	74.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	61.9%	61.1%	-1.2%	74.0%	69.2%	8.4%	100.0%	-
Overall 5G coverage	53.1%	71.1%	33.9%	55.5%	94.3%	5.9%	70.0%	100%
Edge Nodes (estimate)	5	10	100.0%	0	2257	90.5%	51	10000
SMEs with at least a basic level of digital intensity (2)	-	59.2%	6.4%	-	72.9%	2.8%	90.0%	90%
Cloud	29.0%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	4.5%	8.8%	94.9%	13.0%	13.5%	67.2%	75.0%	75%
Data analytics	36.9%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	48.2%	-	-	-	-	-	-	75%
Unicorns	0	0	-	-	286	4.4%	2	500
At least basic digital skills	45.3%	-	-	-	-	-	70.0%	80%
ICT specialists	4.4%	4.9%	11.4%	5.4%	5.0%	4.2%	10.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	88.2	93.5	6.0%	88.0	82.3	3.6%	100.0	100
Digital public services for businesses	87.2	96.3	10.4%	87.0	86.2	0.9%	100.0	100
Access to e-Health records	84.8	85.9	1.2%	80.0	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special Eurobarometer on 'the Digital Decade' 2025, 75% of Latvian citizens consider that the digitalisation of daily public and private services is making their lives easier. Concerning the action of the public authorities, 86% consider it important to counter and mitigate the issue of fake

news and disinformation online, and regarding competitiveness, 78% consider it important to ensure that European companies can grow and become 'European Champions' able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

Latvia's digital infrastructure coverage remains below the EU average, mainly in VHCN, FTTP and 5G, even in the context of a strong year-on-year growth in overall 5G coverage. In broadband uptake, 1 Gbps subscriptions are growing faster than the EU, despite slower growth in 100 Mbps subscriptions and 5G SIM penetration. The country is advancing on deployment of edge nodes and quantum technologies, but lags on cloud, and AI. There has been a surge in cyber-attacks, totalling 418 325 registered complaints in 2024. Despite this, Latvia demonstrates overall preparedness as none of the attacks have had a lasting impact.

Protecting and empowering EU people and society

Latvia's digital skills lagged behind the EU, with only 45.34% of its population having basic digital skills compared to the EU's 55.56%. Despite a noticeable gender gap favouring women and strong collaborative skills, Latvia faces challenges, especially among rural areas and older adults, and remains below the EU in educational attainment-related digital skills. To address these gaps, initiatives like the STARS learning account have been launched. In the ICT sector, Latvia has seen a positive increase in the employment of ICT specialists, especially among women. Despite this, the country's ICT training for businesses lags behind the EU average. Latvia excels in digital public services for both citizens and businesses, surpassing EU growth rates, especially in cross-border services. Latvia's performs strongly on digital public services and access to e-health records compared with the EU average. While strengths are evident, Latvia could benefit from further efforts to close gaps in digital skills, aiming for broader proficiency across different demographic groups.

Leveraging digital transformation for a smart greening

Latvia prioritises the promotion of energy and material efficiency in digital infrastructure, aiming to minimise its environmental impact by creating data centres that will run on 100% renewable energy. In addition, it is focusing on introducing smart digital solutions that in turn will reduce the country's carbon footprint.

National digital decade strategic roadmap

Latvia submitted an adjusted Digital Decade roadmap on 11 February 2025. The adjusted roadmap contains new 43 measures, 2 new targets and 4 revised trajectories. It includes reporting on the consultation of stakeholders but lacks information on how their comments were considered. The updates are clearly aligned with the new Commission's priorities on gigabit connectivity and 5G. The adjusted roadmap addresses a substantial number of roadmap recommendations issued in 2024. All targets are aligned with the EU-level goals for 2030, except for the target for at least basic digital skills, where Latvia is aiming for 70% instead of 80% by 2030. The adjusted roadmap continues to prioritise AI, the digitalisation of public services, and tech uptake. It contains 90 measures, with a budget of EUR 2 287.5 million, including EUR 2 004.8 million from the public budget (equivalent to 4.99% of the country's GDP). It still covers all Digital Decade objectives, such as a human-centred digital space, boosting resilience and security, promoting sovereignty and greening digital technology.

Funding & projects for digital

Latvia allocates 23% of its total recovery and resilience plan to digital (EUR 416 million)¹. In addition, under cohesion policy, EUR 441million, representing 10% of the country's total cohesion policy funding, is dedicated to advancing Latvia's digital transformation².

Latvia is a member of the Alliance for Language Technologies EDIC and of the Local Digital Twins towards the CitiVERSE EDIC. Latvian organisations are indirect and/or associated partners in the Important Project of Common European Interest (IPCEI) on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Latvia is also a participating state in the EuroHPC Joint Undertaking (JU) and in the Chips JU.

Latvia has not yet presented any measure in the framework of Digital Decade's Best Practice Accelerator³.

Digital Rights and Principles

According to a support study, Latvia has shown rather limited activity in the [European Declaration on Digital Rights and Principles](#), with 34 initiatives overall and 2 new initiatives launched in 2024. Latvia is most active in the area of interactions with algorithms and artificial intelligence systems. Less activity has been identified with regards to putting people at the centre of the digital transformation, connectivity and sustainability. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing freedom of choice.

Recommendations

- **Digital skills:** Strengthen and continue to implement measures to increase digital skills across all ages with a special emphasis on people living in rural areas and those with lower educational background.
- **Connectivity:** Sustain the ongoing effort and establish new measures to support VHCN, FTTP, and 5G coverage.
- **SMEs:** Sustain and complement activities to improve the digitalisation and uptake of advanced technologies, emphasising the take-up of advanced technologies and give special attention to SMEs.
- **Cybersecurity:** Continue efforts in cybersecurity to address the evolving and increasing threats. Ensure introduction and continuation of implementation of cybersecurity education, especially at undergraduate level.
- **E-health:** Ensure that all data types are made available in a timely manner. Offer a mobile application for citizens to access their electronic health records. Connect more private rehabilitation centres to the online access service.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

A competitive, sovereign and resilient EU based on technological leadership

Latvia is making significant strides in its semiconductor industry by setting up its national chips competence centre as part of the EU Chips Joint Undertaking. The country aims to make the most of its strengths in photonic integrated circuits, microelectronics, polymer photonics, and quantum devices while investing in quantum computing AI, cybersecurity, Baltic-Nordic cooperation, and digital skills.

The Latvian ICT sector accounted for 6.45% of gross value added in 2022, which is an increase from 6.36% in 2021⁴. R&D personnel accounted for 22.73% of employment in Latvia's ICT sector (up from 26.1% in 2021) making them leader in the EU and is an increase from the previous year measured (26.1% in 2021).

Latvia's digital infrastructure lags behind the EU average in most categories, with significant gaps in VHCN, FTTP, and 5G coverage, particularly in sparsely populated areas. However, Latvia shows strong growth in both overall 5G coverage and 5G coverage in the 3.4–3.8 GHz band.

Latvia's indicator of broadband take up reveal already country with a strong penetration of 5G SIM card and high-speed broadband subscriptions, but varying growth rates on these two measures compared with the EU. For example, Latvia's growth rate in 5G subscriptions significantly outpaces the EU, while its growth rate in 100 Mbps subscriptions high-speed broadband and 5G SIM card penetration lags behind the EU average.

Latvia is making progress in the deployment of edge nodes, quantum technologies, and efforts to improve digitalisation among SMEs. However, the country still lags behind the EU average in some areas, such as the adoption of cloud, AI, and data analytics (combined indicator). In 2024, Latvia deployed 10 edge nodes. The country is also making strides in quantum technologies, with the 'Development of experimental quantum communication infrastructure in Latvia' project making significant progress. Meanwhile, Latvia's digitalisation of SMEs is growing, with a 6.4% increase in the number of SMEs using digital technologies in 2024, although it still lags behind the EU average on this measure. The country has also taken steps to support innovative entrepreneurship, with measures such as the 'Support for the development of innovative entrepreneurship in SMEs' programme, which aims to provide financing for businesses and create new jobs.

Despite having zero unicorns, Latvia has seen an increase in the number of start-ups in recent years, with 512 Latvian start-ups by the end of 2024, and 3 968 employees working for Latvian start-ups. However, the country still lags behind the EU average in terms of cybersecurity, with 54.61% of individuals taking at least one action to protect their data online in the past year, compared with 69.55% in the EU. Latvia has also experienced a significant increase in cyber-attacks, with 418 325 registered complaints in 2024, and a high level of cyber threats.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

According to the 2025 Eurobarometer⁵, 82% of Latvians think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

Building technological leadership: digital infrastructure and technologies

To improve its connectivity Latvia is relying on both market actions and other long-running policy measures set put in its roadmap. Based on current rate of progress, Latvia is falling behind the EU average on connectivity.

Connectivity infrastructure

Latvia's VHCN coverage for all households was 67.98% in 2023 and 68.13% in 2024, both below the EU's coverage rates of 78.64% and 82.49% respectively. The country is lagging behind compared to its national trajectory. The growth rate for total VHCN coverage in Latvia was 0.2% in 2024 compared with 2023, which is lower than the EU's 4.9%. For households in sparsely populated areas, Latvia's coverage was 11.71% in 2023 and 10.43% in 2024, significantly lower than the EU's 55.59% and 61.89% respectively. The year-on-year growth rate for this category was -10.9%, compared to the EU's +11.3%.

Latvia's FTTP coverage for all households was 61.88% in 2023 and 61.11% in 2024, both below the EU's coverage rates of 63.87% and 69.24% respectively. The country is lagging behind compared to its national trajectory. The growth rate for total FTTP coverage in Latvia was -1.2%, which is lower than the EU's 8.4%. The slight decline is due to that the NRA restated coverage for 2023. Despite the slight decline in percentage terms, in absolute numbers coverage has increased by 5 316 homes passed. For households in sparsely populated areas, Latvia's coverage was 11.71% in 2023 and 10.43% in 2024, significantly lower than the EU's 52.55% and 58.78% respectively. The growth rate between 2023 and 2024 for FTTP coverage of households in sparsely populated areas was -10.9%, compared with the EU's 11.9%. The decline in coverage in rural areas can be attributed to the change in NUTS3 regions and is based on data from Latvia's NRA.

Latvia's overall 5G coverage for all households was 53.11% in 2023 and 71.1% in 2024, both below the EU's 5G coverage rates of 89.05% and 94.35% respectively. The country is on track for 5G coverage according to its national trajectory. The growth rate for total 5G coverage in Latvia was 33.9% between 2023 and 2024, which is higher than the EU's 6.0%. For households in sparsely populated areas, Latvia's 5G coverage was 0.0% in 2023 and 15.04% in 2024, significantly lower than the EU's 71.1% and 79.57% respectively (the EU therefore saw 11.9% growth on this measure).

Latvia's 5G coverage in the 3.4–3.8 GHz band for all households was 39.0% in 2023 and 52.2% in 2024, both below the EU's coverage rates of 51.06% and 67.72% respectively. The growth rate between 2023 and 2024 for total 5G coverage in this band in Latvia was 33.8%, which is higher than the EU's 32.6%. For households in sparsely populated areas, Latvia's 5G coverage in the 3.4-3.8 GHz band was 0.0% in both 2023 and 2024, significantly lower than the EU's 15.86% and 26.19% respectively.

Latvia's 5G spectrum assignment for pioneer bands was 66.67% in both 2024 and 2025, below the EU's assignment rates of 73.4% and 74.63% respectively. Latvia saw no growth in spectrum assignment between 2024 and 2025, while the EU's growth on this metric was 1.7%. **Latvia's indicators of broadband take-up show a mixed performance compared with the EU average.** In 2023, 70.8% of

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

fixed broadband subscriptions in Latvia were at speeds of 100 Mbps or higher, surpassing the EU's 65.9%. By 2024, this figure rose to 72.86%, still ahead of the EU's 71.88%. However, Latvia's year-on-year growth rate for this type of subscription between 2023 and 2024 of 2.9% lagged behind the EU's 9.1%. For subscriptions at speeds of 1 Gbps or higher, Latvia started at 4.66% in 2023, below the EU's 18.47%. By 2024, Latvia reached 24.22%, outpacing the EU's 22.25%. Latvia's growth rate of 419.7% for 1-Gbps-or-higher subscriptions significantly outpaced the EU's 20.5%. In terms of 5G SIM cards per head of population, Latvia showed strong performance. In 2023, 29.06% of the population had 5G SIM cards, higher than the EU's 21.7%. This figure rose to 43.21% in 2024, also higher than the EU's 35.56%. However, Latvia's growth rate on this metric between 2023 and 2024 of 48.7% was lower than the EU's 63.9%.

VHCN and FTTP

Latvia has increased its target for VHCN coverage and adjusted its target trajectory accordingly. It has also introduced an FTTP target and trajectory, both of which are aligned with the EU target of 100% FTTP coverage by 2030. The country is on track according to its target national trajectory. Given the latest numbers and the pace of roll-out, both targets (for VHCN coverage and FTTP coverage) seem to be out of reach for Latvia without significant efforts. These targets seem all the more unlikely to be met given that Latvia's roadmap adjustment did not present any new measures.

Latvia's NRA reports that there is a competitive and affordable market for consumers for both VHCN and FTTP.

2024 recommendation on connectivity infrastructure: Continue the ongoing efforts to support VHCN, FTTP and significantly increase efforts for 5G rollout, including by fostering private investment and by stimulating take-up.

In 2024, Latvia continued the implementation of existing measures but did not take any new measures. Latvia relies on the long-running measures introduced in its roadmap. However, more efforts are needed to reach the 2030 target.

The Latvian NRA, Sabiedrisko pakalpojumu regulēšanas komisija, has deregulated the country's electronic communications markets. In this context, the Latvian NRA has limited possibilities to shape the **copper switch-off process** in the country. However, Latvia does not have extensive copper networks left in place. The actual share of copper technologies within fixed broadband networks is around 19% at household level, and public services are becoming less and less copper-reliant. The Latvian NRA is not in favour of an EU-level mandatory deadline for copper switch-off. The Latvian NRA underlines the risk that a mandatory deadline could mean that some end users in more remote areas could be left without any viable connectivity alternative.

5G

Following the roadmap adjustment, Latvia's 5G target remains at 70% penetration by 2030, which is below the EU target of 100%. The country is on track to achieve this target according to its national trajectory. At 71%, Latvia's 5G performance is significantly higher than its target trajectory level for 2024 (55.5%). This means the country has already surpassed its 2030 target. Given Latvia's latest performance, and the high pace of 5G roll-out in the country, it seems that this 70% target could be increased.

The Latvian market shows progress in 6G technology. Based on current progress, it is possible that 6G could be operating in the country (in test mode) as early as 2028. One of Latvia's telecoms

operators has become the first Baltic operator to be a full member of the 6G Smart Networks and Services Industry Association (6G-IA), which allows it to be more actively involved in 5G and 6G research programmes and infrastructure implementation projects. The Latvian telecoms operator is currently working on: (i) R&D on future 3GPP features using Open Core platforms; (ii) international academic, industrial and public-sector partnerships; (iii) live networks including testbeds for experimentation; and (iv) the validation of new technologies.

The Latvian Ministry of Defence, the national armed forces, NATO and LMT, a Latvian mobile operator launched the Digital Backbone Experiment (DiBaX), which is exploring the potential applications of 5G in military operations. There are also two 5G networks in the Latvian town of Adazi that allow defence technology developers to test and compare the performance of new innovations across different 5G networks.

Latvia's NRA reports that there is a competitive and affordable market for consumers in 5G.

2024 recommendation on connectivity infrastructure: Continue the ongoing efforts to support VHCN, FTTP and significantly increase efforts for 5G rollout, including by fostering private investment and by stimulating take-up. Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks

Latvia made some effort to address the recommendation through new policy actions in 2024. Latvia continues to profit from the radio spectrum auctions in the 3.6 MHz band, and an additional 50 MHz was awarded to two operators in 2023 (the licenses for these awarded spectrum started in January 2024 and will be valid for 20 years). As a result, Latvia is making progress in expanding 5G coverage, although, is still behind the EU average.

Semiconductors

Latvia continues to show ambition in developing and strengthening its semiconductor industry, by establishing a national chips competence centre as part of the European Union Chips Joint Undertaking in Latvia (under the DIGITAL-Chips-2024-SG-CCC1 project). In 2024, the European Commission approved of Latvia's application for the development and operation of a national chips competence centre that will: (i) provide services to participants in the semiconductor ecosystem (in particular start-ups and SMEs); (ii) join the European network of semiconductor competence centres; and (iii) cooperate with other Member State competence centres and ecosystems.

Latvia has competitive advantages in the international semiconductor industry, specifically in photonic integrated circuits, microelectronics, polymer photonics platforms, and quantum devices. The centre is expected to invest in quantum computing, AI, cybersecurity, cooperation between Baltic and Nordic countries, and the development of digital skills (in particular in the chips sector).

Edge nodes

According to the Edge Node Observatory, Latvia is estimated to have deployed a total of 10 edge nodes in 2024, an increase of 5 edge nodes from 2023.

Latvia has, in its 2024 roadmap adjustment, provided a new target and a trajectory for edge nodes. Their projected trajectory includes no edge nodes until 2027, when they anticipate having 10 (which they have already achieved in 2024). This number is expected to increase to 26 in 2028, 35 in 2029, and 51 by 2030.

2024 recommendation on edge nodes: Consider measures specific to edge nodes deployment, supplementary to the IPCEI-CIS participation.

In 2024, Latvia continued the implementation of existing measures but did not take any new measure. Latvia continues to be an indirect member of the IPCEI Next Generation Cloud Infrastructure and Services. Latvia assesses that there is no demand nor need for edge nodes, and as a result it has not developed any policies to develop edge nodes.

Quantum technologies

Latvia continues to make strides in quantum technologies. The project 'Development of experimental quantum communication infrastructure in Latvia' (LATQN), running from the beginning of 2023 to the end of 2025, progressed significantly during 2024. In 2024, the project: (i) completed a quantum key distribution (QKD) encryption transmissions test within the healthcare sector; (ii) continued wireless tech integration with QKD; (iii) made plans for continued advanced data transmission integration (lines of various lengths have been examined including 16, 20, 40, and 50 kilometres and more); and (iv) started tests with the financial sector. LATQN is involved in the broader EuroQCI community, and takes part in the regular EuroQCI Technical Working Group meetings. It also represents Latvian quantum computing projects in various EU Member State forums and European Commission activities.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Latvia demonstrates uneven progress in technology adoption, with its uptake of data analytics surpassing the EU average, but cloud and artificial intelligence (AI) considerably lagging behind. The disparity between SMEs and large enterprises remains pronounced, with the latter exhibiting significantly higher adoption rates in all three areas. Given the dominant role of SMEs in the Latvian enterprise landscape and their substantial contribution to economic value added, targeted measures to increase digital adoption among SMEs could drive broader economic growth and resilience.

SMEs with at least basic digital intensity

In 2024, 3 out of 5 SMEs (59.18%) in Latvia had at least a basic level of digital intensity, up from 52.27% in 2022, with an annualised growth rate of 6.4% (2022 is the last comparable year that used a similar methodology for measuring the digital intensity of enterprises). Despite this progress, Latvia remained considerably below the EU average on this measure, with 72.91% of EU SMEs having at least a basic level of digital intensity. Focusing on high or very high digital intensity, only 25.94% of SMEs in Latvia reached this level, also falling short of the EU average, where 32.66% of SMEs have attained this level. Thus, although Latvian SMEs showed significant growth on this measure, they still lagged behind EU average levels.

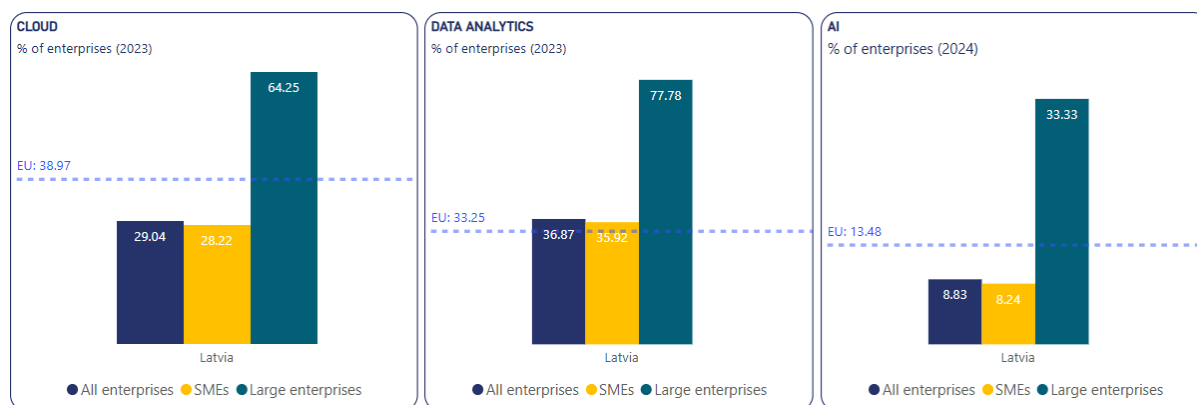
Latvia's roadmap adjustment introduces seven measures to improve the digitalisation of SMEs by educational measures. The 'Improving digital technology and process management skills in Latvian companies' project will train at least 85 employees in 19 training programmes by 2026. The measure 'Development of Digital Skills for Development of New Products and Technologies in Latvian enterprises' aims to provide training for 950 micro, small, and medium-sized enterprises in digital skills. The training will consist of 550 short-cycle training programmes, 350 long-cycle programmes, and 50 online training programmes. A total of 5 000 employees will be trained under the framework. Additionally, the Recovery and Resilience Facility (RRF) measure 'Development of digital skills of enterprises' targets Latvian SMEs at the beginning of their digitalisation process. This RRF measure

started in 2023 and will run until 2026. By mid 2024, it had supported over 1 080 businesses, and is expected to have supported a total of 2 521 by 2026.

2024 recommendation on the digitalisation of SMEs: Establish and sustain ambitious initiatives to further increase the digitalisation of SMEs.

Latvia made some efforts to address the recommendation through new policy actions in 2024. Latvia has continued to set up and sustain ambitious RRF measures (see above) to further increase the digitalisation of SMEs. As a result, Latvia has seen impressive growth on some measures of digitalisation. Despite this, Latvia is still behind the EU average in this area, and it is therefore important for it to continue prioritising the digitalisation of SMEs, especially considering that many of the long-running measures are scheduled to finish in 2025 and 2026.

Take up of cloud/AI/data analytics



According to the latest available data (2023), 48.23% of enterprises in Latvia engaged with AI technologies, sophisticated or intermediate cloud-services, or data analytics in the past year, falling short of the EU average of 54.70%. More specifically, the uptake of these technologies among Latvian SMEs was slightly lower at 47.3%, while large enterprises in Latvia demonstrated a significantly higher rate of 88.41%. This indicates a difference of 41.11 pps in uptake between SMEs and large enterprises in Latvia, which is higher than the EU-level gap of 32.97 pps.

Adoption of cloud, data analytics, and the three technologies together (i.e. AI, cloud and data analytics) were not measured in 2024.

The latest available data reveals that in 2023 cloud uptake in Latvia stood at 29.04%, trailing behind the EU average of 38.97%. However, while 28.22% of Latvian SMEs had adopted cloud services by 2023, uptake among large enterprises was more than double this rate, at 64.25%. This indicates a marked difference of 36.03 percentage points in uptake between SMEs and large enterprises in Latvia, which exceeds the EU-level gap of 31.68 percentage points (on average 69.73% of large EU businesses had adapted cloud services by 2023).

In Latvia, 36.87% of all enterprises performed data analytics in 2023, beating the EU average of 33.25%. However, while uptake of data analytics was 35.92% among Latvian SMEs, a much higher proportion of large Latvian enterprises, 77.78%, used data analytics. This resulted in a gap of 41.86 pps in engagement with data analytics between SMEs and large enterprises, which was consistent with the EU gap.

In 2022, **Latvian SMEs generated 47.6% of the value added in the country's economy, while large enterprises generated 32.1%**. Notably, SMEs made up approximately 97.7% of all Latvian enterprises with more than 10 employees, while large enterprises accounted for only 2.3% of enterprises with more than 10 employees.

Latvia has demonstrated uneven progress in technology adoption, with the uptake of data analytics surpassing the EU average, but the uptake of cloud and AI lagging considerably behind. The disparity between SMEs and large enterprises in Latvia remains pronounced, with the latter exhibiting significantly higher adoption rates in all three areas (data analytics, AI, and cloud). Given the dominant role of SMEs in the Latvian enterprise landscape and their substantial contribution to economic value added, targeted measures to increase digital adoption among SMEs could drive broader economic growth and resilience.

- [Cloud](#)

Latvia's roadmap adjustment presents TetCloud, a data-storage solution produced by the technology company Tet. TetCloud provides data storage outside Latvia and is considered to be the most powerful cloud platform in the Baltics.

2024 recommendation on cloud: Continue, expand, and accelerate public and private investments in the uptake of cloud. Support the broad uptake of the next generation of cloud infrastructure and services under development in the IPCEI-CIS by companies of all sizes, including by liaising with the direct participants to develop a country-specific dissemination strategy reaching beyond the participating organisations

Latvia has made some effort to address the recommendation through new policy actions in 2024. Latvia has fully addressed the recommendation by putting significant policy actions into place in 2024. So far, the IPCEI-CIS has been launched by all three applicants. Latvian experts participate in EU working groups on cloud data, microelectronics and health. These experts are drawn from 15 Latvian enterprises. Other research and knowledge-dissemination organisations have expressed an interest in joining the IPCEI-CIS, two of which have already received State aid and begun implementing projects. Furthermore, Latvia plans to participate in JEF-IPCEI where the future of IPCEIs are planned and solutions for improving the ICPEIs are sought.

- [Data Analytics](#)

Several data analysis courses in Latvia cater to business professionals, offering both foundational and advanced skills. The Baltic Data Academy¹ provides an in-depth Power BI course focused on data modelling, DAX, and interactive dashboards, with the option to adapt the course to English. Riga Business School² offers an advanced Excel course through its LIFT program, covering Power Query, Power Pivot, and DAX for automated reporting, with English-language support available. Riga Coding School³ also offers a beginner-friendly course on data processing and visualization, occasionally available in English. These programs are ideal for entrepreneurs, analysts, and decision-makers seeking to enhance their data-driven business capabilities.

2024 recommendation on data analytics: Continue, expand, and accelerate public and private investments in the uptake of Data analytics.

Latvia made some efforts to address the recommendation through new policy actions in 2024. Latvia is addressing this recommendation by focusing on highlighting measures in its roadmap

adjustment that have an overall focus on the digitalisation of SMEs (see chapter on the SMEs with at least a basic level of digital intensity) including data analytics but not necessarily targeted solely at data analytics.

- [Artificial Intelligence](#)

AI in Latvia grew with a remarkable speed during the last year almost doubling (4.5% in 2023 to 8.83% in 2024). However, the country is lagging behind compared to its national trajectory. Additionally, the [OECD reports](#) that venture capital investment in AI in Latvia almost tripled year on year from EUR 7.83 million in 2023 to EUR 19.36 million in 2024.

In late December 2024, Latvia's Cabinet of Ministers approved of the draft law 'On the development of AI' that will: (i) build an AI technology ecosystem; (ii) lay down the legal framework for cooperation between universities, the public sector and the private sector; and (iii) decide on the purpose and tasks of the Latvian National Centre for Artificial Intelligence. Additionally in 2024, a memorandum of cooperation on AI was signed by the Latvian government, agencies of the Latvian government, and Microsoft. This memorandum will promote the use of AI and digital solutions to modernise public administration processes in the country.

2024 recommendation on AI: Continue, expand, and accelerate public and private investments in the uptake of AI.

Latvia made some efforts to address the recommendation through new policy actions in 2024. Through the draft law and the memorandum, Latvia is now setting up a framework that will guide the future development of AI. However, there remains a lack of additional public and private investment in the uptake of AI.

Unicorns, scale-ups and start-ups

In 2024, Latvia had zero unicorns. Latvia aims to achieve two unicorns by 2030.

The number of start-ups in Latvia is growing every year. The Latvian start-up association, Startin.LV, estimates that Latvia was home to [512 start ups at the end of 2024](#), and 3 968 people were employed by Latvian start-ups in 2023. Most Latvian start-ups are B2B and their main activity is the creation of software. In 2024, EUR 34.3 million of equity funding was awarded to Latvian start-ups. The percentage of start-ups with at least one female shareholder increased from 25% in 2023 to 26.4% in 2024.

In its roadmap adjustment, Latvia presented its plan 'Support for the development of innovative entrepreneurship in SMEs', which aims to ensure the availability of financing to implement a business's ideas and develop commercial activity in Latvia. This initiative supports the goals of Latvia's smart specialisation strategy by increasing the proportion of innovative businesses in the economy and fostering commercial activities that generate high added value in the high-tech and medium-high-tech sectors. As part of the programme 22 representative offices of IDAL were set up, and the programme plans to have supported 488 enterprises by 2029 and create 1 000 new jobs. By the end of 2024, 161 enterprises had already been supported in incubation and 13 enterprises had received a grant.

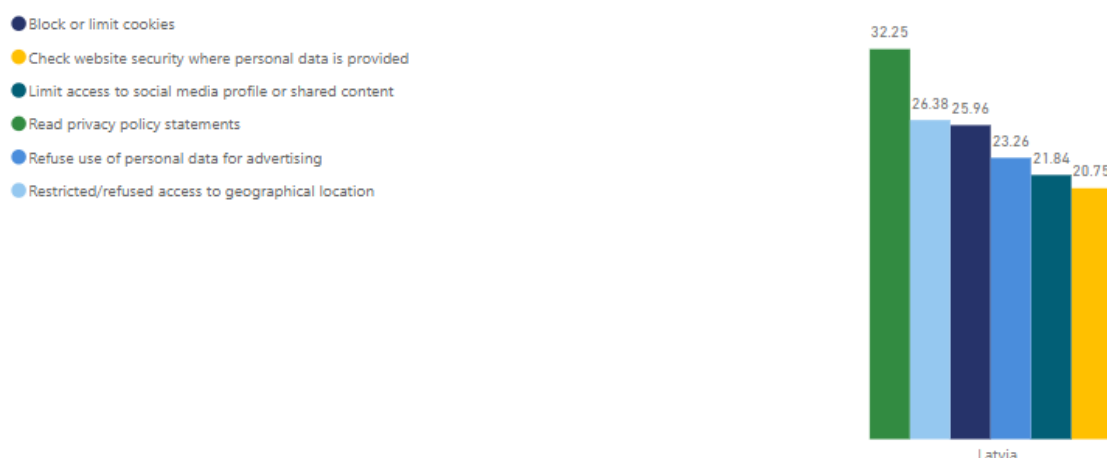
Additionally, the 'Venture capital investments of the EU cohesion policy programme for 2021-2027': (i) measure, acceleration funds had, by the end of 2024, invested a total amount of EUR 1.6 million in 24 companies; (ii) start-up and growth funds had invested EUR 9 million; and (iii) an additional EUR 9

million had been invested in private co-financing. By the end of 2027, the measure is expected to have supported 68 more mature companies, including 45 start-ups.

Strengthening Cybersecurity & Resilience

In Latvia, 54.61% of individuals took at least one action to protect their data online in 2024, below the EU average of 69.55%. However, only 26.7% of Latvians engaged in three or more actions to promote cybersecurity in the year (and therefore could be considered as having above-basic digital safety skills). The most common action taken by Latvians during the year to protect their cybersecurity was reading privacy policy statements (32.25% did this), while checking if websites where personal data were provided were secure was the measure least commonly taken (only 20.75% of people did this).

Type of activities to protect personal data online (% of individuals)



Latvian enterprises tend to experience fewer cyber-attacks than the EU average, but Latvian employees are also less aware of their ICT-security-related obligations than their EU peers. The number of Latvian enterprises that experienced ICT security incidents leading to unavailability of ICT services due to attack from outside (e.g. ransomware attacks or denial of service attacks) increased significantly in Latvia, growing from 3.79% in 2022 to 8.02% in 2024. This is the highest percentage for 2024 of all the EU Member States and is significantly higher than the EU average for 2024 of 3.43%. However, Latvian enterprises are less prone to incidents related to hardware or software failures (10.05% of enterprises had such problems) than their EU peers (17.97% had such problems). In terms of preventive measures, 88.88% of Latvian enterprises deployed some ICT security measures in 2024 (around the EU average of 92.76%), but only 47.47% of enterprises in the country made their employees aware of their obligations in ICT-security-related issues, significantly below the EU average (59.97%).

Latvia is falling behind the EU in the roll-out of the secure Internet Protocol version 6 (IPv6) for end users. On the deployment of [secure internet standards](#), Latvia is falling behind the EU in the roll-out of IPv6 for the end users (only 15% of end users in Latvia use this protocol against an EU average of 36%) and is significantly behind the EU average on the server side (2% of Latvian servers use this protocol, against 17% of servers in the EU on average). IPv6 is an important protocol as it ensures the scalability, stability, and security of the internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have been long depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out, as it introduces security features to DNS.

In Latvia, the DNSSEC validation rate (i.e. verification rate of the authenticity of responses sent by name servers to clients, using a digital signature technology) is 70% (Q3 2024), significantly above the EU average of 47%.

According to the Digital Decade Eurobarometer 2025, 80% of Latvian citizens think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies.

Latvia's overarching cybersecurity strategy for 2023-2026 continues to guide Latvia's overall cybersecurity approach. In the quarter of 2024 Latvia had its highest historical level of cyber threats ever. [CERT.LV](#), the Cyber Incident Response Institution of the Republic of Latvia, registered 418,325 cyber incidents (affected unique IP addresses), and increase of 25% compared with the same period in 2023. Financial and geopolitical cyber-attacks continue to be prevalent, and most of the cyber-attacks are 'tied' cyber-attacks supporting Russia. Distributed denial of service attacks continue to be the most common form of attack on Latvia, and although the number of these attacks has fallen they have become more complex, concentrated, powerful, and harmful.

Despite the high amount of cyber-attacks, Latvia maintains a high level of cyber resilience, as [CERT.LV reports that the recorded cyber-attacks have not had a significant impact on public security and/or essential and important services](#).

In its roadmap adjustment, Latvia reports of several measures it is implementing to boost its cybersecurity. One of these is in the field of education: Riga Technical University launched a two-year course of studies on cybersecurity in 2024 that will educate 200 students from different fields in five key areas of cybersecurity: management, hygiene, incident management, digital forensics, and architecture. After the completion of this programme, the students (with the help of mentors) will go to the regions of Latvia to help local governments and enterprises to implement cybersecurity management frameworks and technical solutions. Riga Technical University also launched masters degree programme in cybersecurity engineering in 2023 which now has 38 graduates.

2024 recommendation on cybersecurity: Implement cyber security classes in the formal education in relevant study programs.

Latvia addressed fully the recommendation by putting significant policy actions into place in 2024. Latvia has implemented cyber security classes in formal education.

Despite Latvia's introduction of cybersecurity classes in formal education, there is still a significant shortage of cybersecurity professionals and skills. Even though, Latvia's general education in secondary school includes some cybersecurity topics, and non-formal education is available, overall levels of cybersecurity education are fragmented, and there is no overall coordinating body for cybersecurity education. The teaching of deeper cybersecurity knowledge is limited to selected schools, and even though there are classes/courses offered at a university masters level there are not enough courses offered at bachelor level, nor is there a dedicated bachelor level programme.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Latvia is making an effort to increase digital skills by both upskilling its labour force, and economically inactive population (including young and seniors), aiding SMEs in the digital transformation, and introducing individual learning accounts to promote digital skills. There is a rural-urban divide, with people living in rural areas having lower levels of digital skills than those living in cities. Older adults and people with lower levels of education also have significantly lower levels of digital skills. Latvia's overall level of proficiency in digital skills is below the EU average. Latvia's lower performance of at least basic digital skills present as a challenge in many other areas such as the digitalisation of SMEs, and the development of public services for citizens and businesses.

According to the 2025 Eurobarometer, 82% of Latvians think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 71% consider it would improve their daily use of digital technologies, and 85% think public authorities should consider it important to ensure that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services.

Equipping people with digital skills

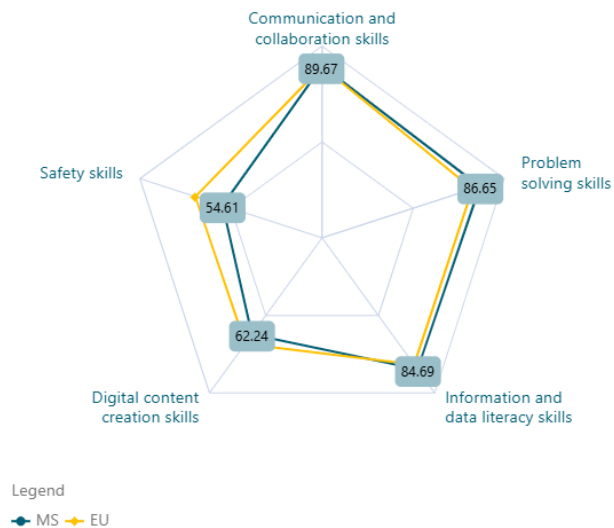
Basic Digital Skills

Latvia's digital skills profile is weak. In 2023, the percentage of the Latvian population with at least basic digital skills was 45.34%, falling short of the EU average of 55.56%. Despite the absence of data for 2024, analysing the available data by various demographics reveals several key points.

- **Gender Gap:** Interestingly, the gender gap in digital skills in Latvia is in favour of women, with 44.12% of men and 46.43% of women having at least basic digital skills. This is the opposite of the EU average gap (which has a 2.23 pps in favour of men), indicating a relatively balanced digital skillset between genders.
- **Education Level:** Educational attainment is significantly linked to digital skills. In Latvia, 65.59% of those with higher education have at least basic digital skills, which is below the EU average (79.83%). Only 32.75% of Latvians with no or low levels of formal education have proficiency in digital skills, with the gap between this group and the national average being 12.59 percentage points. This is almost half of what is observed at the EU level (where the gap is 21.95 pps).
- **Living Areas:** Residents of rural areas in Latvia have the lowest levels of at-least-basic digital skills, at just 32.31%, significantly lagging behind the EU average for rural areas (47.50%). The gap between rural areas and the national average when measuring the percentage of people with at-least-basic levels of digital skills is 13.03 percentage points, which is larger than the EU average (8.06 pps), indicating a significant regional digital divide.

- **Age Groups:** The most digitally skilled age group in Latvia is the group aged 25-to-34, with 67.08% of people in this age cohort having the highest level of digital skills, just below the EU average (70.18%). Conversely, the group aged 65-to-74 has much lower digital skills, with only 14.53% of this cohort having the highest level of digital skills, well below the EU average for that age group (28.19%).
- **Digital Skills Index components:** Latvia performs better than the EU average in three out of the five areas on the Digital Skills Index. The highest score for Latvia is in communication and collaboration skills, 89.67% of the population have these skills. However, the country scores poorly in safety skills where only 54.61% of the population has these skills, which is significantly below the EU average (69.55%).

Digital Skills Index components
% of individuals



In summary, Latvia's digital skills situation presents a challenge, with overall proficiency below the EU average. While the gender gap is not problematic and the country is at or above EU levels in certain skills areas, there is a need for improvement, especially in bridging the rural-urban divide and improving the digital capabilities of older adults and people with lower levels of education. Addressing these issues will be crucial for advancing Latvia's digital proficiency.

Latvia's target is for 70% of its population to have at-least-basic digital skills by 2030 below the EU target of 80%. Despite new measures added in the roadmap adjustment, Latvia is far from reaching its target. Due to the spillover effect of basic digital skills in helping the country to reach several other Digital Decade targets, it is especially important for Latvia to intensify its efforts in this area.

Latvia has focused on individual learning accounts to boost people's digital skills. In 2024 Latvia launched the individual learning account programme STARS (stars.gov.lv). The program is aimed to make learnings more accessible and appealing for particularly for those groups whose learning opportunities are limited or lack the motivation to participate in education. STARS provides over 60 different educational programmes targeted at developing medium and high levels of digital skills. The study models, vocational education programme modules, and module clusters last between 50 and 212 hours. The participants are awarded 500 euros to cover the cost of the education programme, depending on the price of the course, it can be free, or the individual may choose to co-finance the remaining amount. And in 2024, the Latvian NGO, Riga TechGirls, concluded its five-year programme 'Get to know your technologies'. This programme aimed to develop an understanding of the diverse fields within technology field, the opportunities technologies create, and how the knowledge can be beneficial across various industries. During its five-year run, the programme has had over 30 000 participants (6 590 in 2024).

2024 recommendation on digitalisation of skills: Accelerate measures to further boost digital skills of the population and increase investments. Focus on implementing measures and digital literacy education for everyone.

Latvia made some efforts to address the recommendation through new policy actions in 2024. The Latvian roadmap adjustment has introduced two new measures. Many of the measures introduced in the original roadmap were long-term measures launched in 2024 that will finish around 2027, so it is still too early to be able to determine the effects of those. However, based on current initiatives it seems that they will not be enough to bridge the big gap.

ICT specialists

ICT specialists account for 4.9% of total employment in Latvia (2030 national target 10%) after an increase of 11.36% in 2024 compared with 2023. This puts Latvia just below the EU average of 5.0%. The country is lagging behind compared to its national trajectory. ICT specialists accounted for only 4.4% of total employment in Latvia in 2023 so growth of 11.36% on this measure between 2023 and 2024 is more than double the growth observed at EU level (where the number of ICT specialists as a percentage of total employment only grew by 4.2% between 2023 and 2024).

Latvia's performance in the provision of ICT training and ICT specialist employment shows a mixed picture when compared to the EU average. In terms of ICT specialist employment, ICT specialists as a percentage of Latvia's total employment stood at 4.4% in 2023, below the EU's 4.8%. By 2024, this figure rose to 4.9%, still trailing behind the EU's 5.0%. However, Latvia's growth rate of 11.4% in this area outperformed the EU's growth rate of 4.2%. On female ICT specialists, Latvia has a higher percentage than the EU. In 2023, 23.9% of ICT specialists in Latvia were female, exceeding the EU's 19.4%. This figure increased to 26.8% in 2024, while the EU's figure only slightly increased to 19.5%. Latvia's year-on-year growth rate of 12.1% in this area significantly outperformed the EU's 0.5% indicating a promising trend in gender diversity within the ICT sector.

The provision of ICT training for enterprises with 10 or more employees has declined in Latvia, with a lower percentage of enterprises offering such training compared to the EU average. In 2022, 15.1% of enterprises with 10 or more employees in Latvia provided ICT training, which was lower than the EU's 22.37%. By 2024, this figure had decreased to 14.54%, while the EU's figure also slightly decreased to 22.29%.

Latvia's ICT training provision for enterprises with 10 or more employees has declined, with a lower percentage of enterprises offering such training compared to the EU average. However, the country shows a positive trajectory in the employment of ICT specialists, particularly in the growth of female ICT specialists. The growth rate of female ICT specialists in Latvia is notably higher than the EU average, indicating a promising trend in gender diversity within the ICT sector.

While Latvia faces challenges in ICT training provision, the country's strong growth in ICT specialist employment, particularly among females, is a positive indicator.

In term of demand from the labour market, Eurostat experimental statistics based on web scraping show that the profiles of 'software and applications developers and analysts' are the most sought after profile in Latvia, representing 43.2% of online job advertisements for ICT specialists (58.0% at EU level). Two types of profile are more wanted in Latvia than in the EU in average: 'information and communications technology service managers' (4.6% of online job advertisements for ICT specialists), and 'information and communications technology operations and user support technicians' (16.1%).

Latvia still aims to reach its target of having ICT specialists make up 10% of people in employment by 2030. Based on the measures introduced in the roadmap adjustment and Latvia's current rate of progress, the country appears to be on track to reach the 2030 target. In its roadmap adjustment, Latvia presented two especially impressive measures to train ICT specialists. The first of these measures is the human capital development action plan for 2024-2025, which focuses on cross-cutting and general components of education, data, evidence-based decisions, analytics, and cooperation with business. The plan identifies five lines of action; STEM education and skills; labour market expansion; attracting qualified workers to take up ICT training; supply and quality of adult learning; and support for entrepreneurial spirit. The measure is intended to increase the number of ICT specialists by 10 000 by 2027. Furthermore, in their five-year 'Get to know technologies' programme, which ran from 2021 to 2025, the Riga TechGirls group educated more than 30 000 participants to promote IT skills, programming, cybersecurity, use of AI, and management of information technology projects.

2024 recommendation on ICT specialists: Continue existing and implement additional measures targeting various groups to ensure an increase of ICT specialists, and improve gender balance.

Latvia addressed fully the recommendation by putting significant policy actions into place in 2024. Latvia has addressed this recommendation in full through both: (i) the growth of ICT specialists as a percentage of the workforce (including the growth in the percentage of women ICT specialists); and (ii) the introduction of measures in the roadmap (mentioned above).

Key digital public services and solutions – trusted, user-friendly, and accessible to all

Latvia's performs strongly on digital public services and access to e-health records compared with the EU average, with noteworthy recent progress in services for both the general public and businesses. In 2023, Latvia's total score for digital public services for citizens was 88.22, surpassing the EU's 79.44. This figure rose to 93.48 in 2024, still ahead of the EU's 82.32. Latvia's growth rate of 6.0% on this measure between 2023 and 2024 outpaced the EU's 3.6%. In the category of cross-border digital services for citizens, Latvia's scores were 85.88 in 2023 and 89.74 in 2024, higher in both years than the EU's 68.37 and 71.28, respectively. Latvia's growth rate of 4.5% on this measure between 2023 and 2024 was slightly above the EU's 4.3%.

For digital public services for businesses, Latvia's total score was 87.22 in 2023 and 96.25 in 2024, compared with the EU's 85.42 and 86.23, respectively. The country's growth rate of 10.4% between 2023 and 2024 on this measure significantly exceeded the EU's 0.9%. In the category of cross-border digital services for businesses, Latvia's scores were 74.44 in 2023 and 92.5 in 2024, compared with the EU's 73.13 and 73.76, respectively. Latvia's growth rate of 24.3% between 2023 and 2024 on this measure was substantially higher than the EU's 0.9%.

On access to e-health records, Latvia's total score was 84.82 in 2023 and 85.86 in 2024, compared with the EU's 79.12 and 82.7, respectively. However, Latvia's growth rate of 1.2% on this measure between 2023 and 2024 lagged behind the EU's 4.5%.

Latvia's digital public services for both citizens and businesses are advancing at a rapid pace, with both absolute scores and growth rates in these areas consistently outpacing the EU average. This trend is particularly evident in cross-border services for businesses, where Latvia's growth rate is substantially higher than the EU's.

e-ID

In 2023, 70.22% of Latvians said they had used their eID to access online services for private purposes in the previous 12 months, which is above the EU average (41.11%).

Latvia participates in the Large-scale EU Digital Identity Wallet Pilot for Trusted Identity Technologies and a Single Digital Ecosystem (APTITUDE) together with Czechia, Germany, Greece, France, Hungary, Italy, the Netherlands, Poland, Portugal, and Ukraine. The project intends to create a digital wallet and digital ID, so that payments can be made more securely. The project is a follow-up on the large-scale project EU Digital Identity Wallet – the NOBID Consortium.

Latvia's own solution, Wallet B, is in its final development phase, with testing to begin in March 2025.

LV stakeholders, both public and private, are present in one of the LSPs consortia proceeding to the grant agreement preparation stage. This includes government ministries and agencies, a bank and academia. LV's overall costs for involvement in proposals is approximately 2.6 million euros with the grant requested by LV entities amounting to over 1.3 million euros. Use-cases LV will be involved in include: NOBID: Payments.

Latvian stakeholders, both public and private, are present in one of the large-scale-pilot consortia for the development of payments/eID, and these stakeholders are now proceeding to the grant agreement preparation stage. These stakeholders include government ministries and agencies, a bank and academics. Latvia's overall costs for involvement in the eID large-scale-pilot proposals are approximately EUR 2.6 million, with the grant requested by Latvian stakeholders amounting to over EUR 1.3 million. Use-cases for the project include: NOBID: Payments.

Digitalisation of public services for citizens and businesses

Latvia still aims to reach a score of 100 for the digitalisation of public services for citizens and businesses by 2030. Based on its presented measures their current performance it seems likely that Latvia will reach this target.

In 2024, Latvia made progress in further digitalising several important governmental sectors. The roadmap adjustment presents 11 different governmental sectors in which Latvia said it would increase the availability of key public services. The different initiatives include:

- a register of documents attesting to primary and secondary education, which allows the individual to view their own data;
- ensure the creation and improvement of e-services in the culture sector;
- develop the social platform 'DigiSoc', which will gather the necessary data for the provision of social services from both registers of national importance and external systems;
- the 'Development of the public prosecutors Information System' project, which will enable parties involved in a legal case to consult the case file electronically without visiting the public prosecutor's office;
- the 'E-Case programme', which will improve a standardised approach to data exchange between government information systems, and expand the range of electronic services available to the public;
- plans to allow for data check in Latvia's register of businesses;
- plans to improve digital services to facilitate cross-border cooperation in the field of taxation;
- plans to improve geospatial solutions for smart land management, policy forecasting, and planning for the transition to a green economy.

The above-mentioned measures are also intended to reduce the administrative burden and promote simplification.

2024 recommendation on public services: Ensure coordinated implementation of public services and work towards integration of public records with the view of implementing 'once-only' principle in public administration.

Latvia made some efforts to address the recommendation through new policy actions in 2024. Latvia has made progress in implementing the 'once-only' principle in public administration. Latvia's Data Dissemination and Management Platform (DAGR) is the default data source for public administrations to ensure the efficient functioning of institutional services in the digital environment. In 2024, seven contracts were concluded for the improvement of DAGR, and four cooperation agreements are now in the process of harmonisation. In addition, two cooperation agreements were adjusted in 2024 to include a specific data set from the portal. The DAGR now contains datasets from 11 institutions and validated consumer applications for 22 institutions. Under the Single Digital Gateway Regulation at national level, it is intended that all the necessary data for services to residents and businesses will be retrieved from DAGR.

e-Health

Latvia still aims at a score of 100 for the access to medical records, in line with the 2030 EU target. The country is on track according to its national trajectory. Based on their presented measures and their current performance it seems likely that the member state will reach this target.

Latvia's e-Health maturity score improved slightly on last year. Of the 13 e-Health data categories investigated in this study, 9 are available in a timely manner, and the remaining 4 categories are available but not in a timely manner. Data on laboratory test results are made available to citizens in a timely manner. As in 2023, 8 of the 9 applicable categories of healthcare providers in Latvia are connected to country's online health portal and supply data to it. (geriatric nursing homes are not applicable because they are classified as social institutions and not medical institutions and, therefore do not process health data). The only applicable provider not supplying data is private rehabilitation centres. Citizens can access data through an online portal, although a mobile application is not available. Moreover, the online access service does not follow EU guidelines on web accessibility, which is the main gap in the maturity of Latvia's e-Health system.

Latvia is making strides in ensuring accessible healthcare for all. In 2024, cross-border e-health services became available in Latvia by providing cross-border data exchange via the European core service platform (together with Czechia, Estonia, Spain, France, Lithuania, Portugal and other countries are expected to join). This system allows for the exchange of basic health data (diagnosis, surgical intervention), the transfer and use of e-prescriptions (for foreigners or Latvians abroad in the countries that are members of the platform). Additionally, Latvian patient data are available to foreign doctors, and Latvian doctors can access the data of residents of other countries. Furthermore, since 2024 Latvian medical treatment institutions submit vaccinations and laboratory results to the national e-health system. Latvia has also launched a digital competence centre which gathers ICT staff working on the system in one place to allow for the more effective introduction of new digital solutions and improvement of existing solutions.

According to the 2025 Eurobarometer, 76% Latvians think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) during their daily life by 2030.

2024 recommendation on e-Health: Ensure that all data types are made available in a timely manner. Offer a mobile application for citizens to access their electronic health records. Connect more private rehabilitation centres to the online access service. Ensure that the online access service complies to web accessibility guidelines.

Latvia made some efforts to address the recommendation through new policy actions in 2024. As mentioned above, Latvia is taking measures to ensure that healthcare is becoming more accessible. However, efforts are needed to ensure that: (i) there is a mobile application; (ii) private rehabilitation centers are connected to online access services; and (iii) online systems for access to health data comply with web-accessibility guidelines.

Building a safe and human centric digital environment and preserving our democracy

In Latvia, online participation in political and civic life is increasing. In 2024, 26.42% of people in Latvia used the internet to participate in consultations, for voting or sharing opinions online. This share is above the EU average and trending upward (this percentage in Latvia was only 11.44% in 2022), which is a stronger growth than observed at the EU level (where this percentage only increased from 17.59% in 2022 and 20.45% in 2024).

In 2023, 31.51% of individuals in Latvia encountered messages online that were considered hostile or degrading towards groups based on factors such as racial origin or disability, slightly below the EU average of 33.5%. Young people (aged 16-24) (of whom 36.79% were exposed to such message) and adults (aged 25-64) (of whom 34.13% were exposed to such messages) reported very similar levels of exposure, indicating little variation by age. Males (30.28%) and females (32.62%) also reported comparable rates, with a minor gender difference.

In 2023, 46.52% of individuals in Latvia stated that they had come across untrue or doubtful information or content on internet news sites or social media, slightly below the EU average of 49.25%. Of those exposed to such content, only 15.87% verified its truthfulness, suggesting that a relatively small share of individuals engaged in critical evaluation of the material. Young people (aged 16-24) reported higher exposure (55.82% were exposed) than adults (aged 25-64) (49.53% of whom were exposed), with verification rates being markedly higher for young people (25.36%) than for adults (16.16%). Males (46.56%) and females (46.48%) reported nearly identical levels of exposure, with similar verification rates of 17.3% for males and 14.59% for females.

The 2023 data on online interactions in Latvia reveal rates of perceived hostile and degrading online messages and exposure to potentially misleading information online that are only slightly below the EU average. However, the data also suggest that Latvians have not been actively engaging in verifying the accuracy of online content, with only a relatively small proportion of individuals in Latvia checking the truthfulness of information. The findings therefore highlight the need for efforts to: (i) promote digital literacy and critical thinking in Latvia, particularly among adults (those aged 25-64); (ii) support the development of effective online information evaluation skills; and (iii) foster a more informed online community.

According to the Digital Decade Eurobarometer 2025, 88% Latvians think it should be urgent the action of the public authorities to protect children online regarding the negative impact of social media on

children's mental health, cyberbullying and online harassment. 86% believe it is urgent to put in place age assurance mechanisms to restrict age-inappropriate content.

The organisation [Latvian Safer Internet Centre \(LSIC\)](#) prioritises children's safety online. The LSIC website and helpline allow minors to report breaches and illegal content online. The organisation assists children experiencing cybercrime and cyber bullying. The organisation works in an agreement together with the Latvian Police to report cybercrime and also provide professional consultation by psychologists.

Fighting disinformation is high on the Latvian agenda. Their 'Black on White' communication project intends to increase the resilience against disinformation, and other manipulation methods in the information space. 'Black on White' is an internet platform (www.melnsuzbalta.lv) that gathers up-to-date information on disinformation cases, and allows members of the public to report disinformation and other instances of manipulation online by filling out a questionnaire. The project also has a podcast that educates its listeners how to recognise the most common manipulation methods, and how to report suspicious behaviour online.

Leveraging digital transformation for a smart greening

Latvians recycle only a small share of their old ICT equipment. Latvians recycled their laptop, desktop devices and mobile phones (6.86% for laptops and tablets, 7.69% for desktops, 8.45% mobile phones) less than the EU average (11.31%, 14.66%, and 10.93% respectively). Moreover, only 16.03% of Latvians said that they considered energy efficiency as important when purchasing ICT devices (EU: 19.35%). Nevertheless, 14.87% of Latvians said in the survey that the eco-design of the device they purchased was important, which is above the EU average (12.04%). However, Latvian consumers said that those two eco-friendly criteria were of less importance than the price, performance, and design of the ICT device.

Latvia emphasises promoting energy-efficient and material-efficient digital infrastructure. In its roadmap adjustment, Latvia presents three measures aimed at improving the energy and material efficiency of digital infrastructure. The first of these measures is that in 2025 the Delska Data Centre in Riga will be commissioned, and it will run on 100% green energy from wind farms and innovative cooling systems. The second of these measures is the construction of the Tet data centre in Salaspils, which started in late 2024, and is expected to be completed in 2028. The data centre includes modern energy-efficiency technologies, and heat recovery systems, which will transfer heat from the centre to the local district heating system. Additionally, the data centres of the State Radio and Television Centre (LVRTC) provides tier III services (a classification of data services that are very reliable, secure and available) thanks to its own reserved power supply and cooling system. These data centres also have backup communication channels with connections to global telecom operators. Finally, Latvia has produced a draft regulation on state data processing cloud regulations (24-TA-1050) that sets out the functions and task of cloud in the country's national administrative IT systems, which includes a requirement that data centres managing state data must comply with the current version of standard ISO/IEC 30134-2.

Latvia's roadmap adjustment presents several energy-efficient digital solutions. Latvia has a project for a smart street-lighting system where the sensory system and LED lighting adapt light intensity depending on weather and traffic conditions, thus reducing energy consumption. Additionally, the

country has put in place a smart waste container management system for the automatic digitalisation of the waste collecting process.

Latvia's Information and Communication Technology Association, LIKTA, is also in the process of developing a sustainability reporting tool that aims to advise enterprises on how to effectively align their activities with the necessary sustainability requirements. The total budget for this project is EUR 3.46 million, and the consortium consists of industry ministries from countries in the region and leading ICT associations from Estonia, Finland, Latvia, and Lithuania.

According to the Digital Decade Eurobarometer 2025, 55% Latvians consider digital technologies important to help fight climate change (standing slightly above the EU average of 74% and showing an increment of four percentage points since last year), while 68% of Latvian respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities (below the EU average of 80%).

2024 recommendation on green ICT: Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.

Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing

Latvia made some efforts to address the recommendation through new policy actions in 2024.

Latvia has tackled this recommendation through its emphasis on presenting digital solutions that strive to promote energy efficiency.

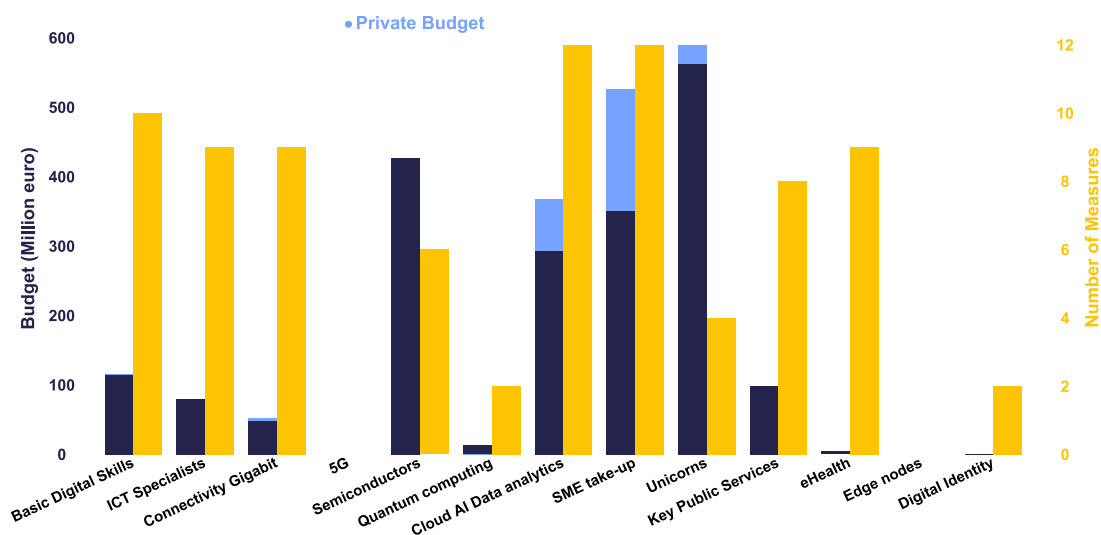
Annex I – National roadmap analysis

Latvia submitted a Digital Decade roadmap adjustment on 11 February 2025, containing 43 measures, 2 new targets and 4 revised trajectories. The update clearly aligns with the new Commission's priorities on the uptake of AI, cybersecurity and technology in general. Latvia's roadmap adjustment includes reporting on consultations with stakeholders. However, the roadmap adjustment lacks additional targeted support to help the country reach 100% connectivity.

The roadmap adjustment addresses a substantial number of relevant recommendations issued in 2024:

- *Propose a target and trajectory for FTTP and edge nodes. (ii) Align the level of ambition of targets for at least basic digital skills, VHCN, and 5G with the EU targets:* In response, Latvia proposed a target for FTTP and edge nodes and aligned it with the EU targets. Latvia also modified its target for VHCN in line with EU targets, while its target for 5G continues to be for coverage of 70% (EU target: 100%) and least basic digital skills remains lower than the EU value of 80% at 70% by 2030.
- *MEASURES: (i) Strengthen measures and increase funding for at least basic digital skills, VHCN, and 5G to be able to align its national targets with the Digital Decade target. (ii) Increase funding for digitalisation of businesses and digital skills to be able to reach targets for digital intensity of SMEs, uptake of cloud, AI, data analytics, and for ICT specialists. (iii) Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it:* Latvia has addressed the recommendation in full.

Measures and budget in national roadmap⁶



⁶ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Overall, Latvia has presented a non-exhaustive set of the policies and measures contributing to the achievement of each of the Digital Decade targets. The measures presented also cover several types of objectives: technological leadership, sovereignty, competitiveness, cybersecurity, fundamental rights and the green transition. In total the measures presented amount to EUR 2 287.4 million, not including confidential budgets.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Latvia is a member of the Alliance for Language Technologies EDIC and of the Local Digital Twins towards the CitiVERSE EDIC, and is working towards setting up an EDIC in the area of cancer imaging. Latvian entities are indirect and/or associated partners in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Latvia is a participating state in the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Latvia has not yet presented any measure in the framework of Digital Decade's Best Practice Accelerator.

EU funding for digital policies in Latvia

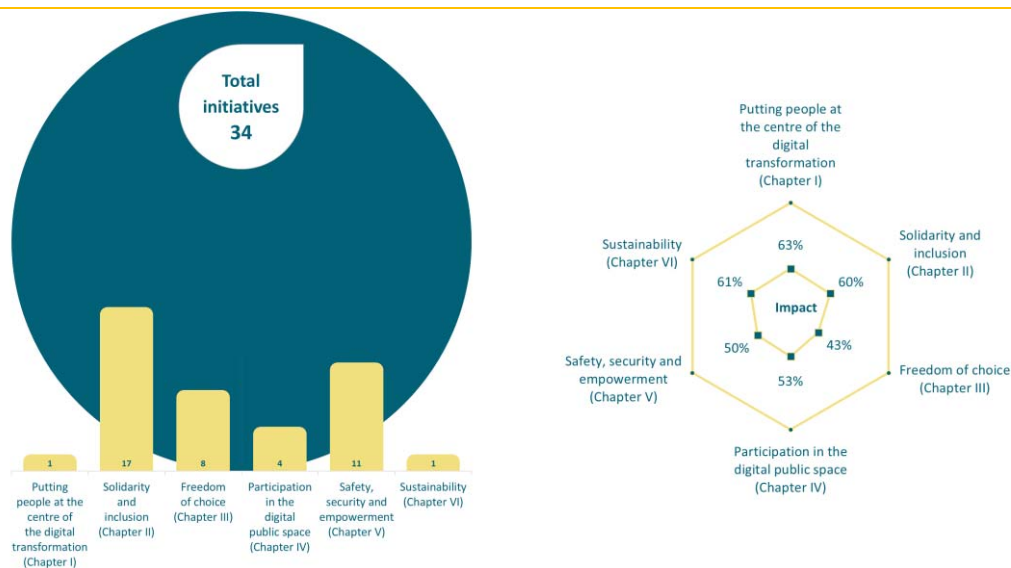
Latvia allocates 23% of its total recovery and resilience plan to digital (EUR 416 million)⁷. In addition, under cohesion policy, EUR 441million (representing 10% of the country's total cohesion policy funding), is dedicated to advancing Latvia's digital transformation⁸. According to JRC estimates, EUR 738 million directly contribute to achieving Digital Decade targets (of which EUR 384 million comes from the RRF and EUR 354 million from cohesion policy funding)⁹.

⁷ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

⁸ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

⁹ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹⁰



Activity on Digital Rights and Principles (figure 1)

Latvia has shown rather limited activity in implementing digital rights and principles, with the overall number of initiatives of around a half or less of the EU average (77). Latvia launched 2 new initiatives in 2024, showing limited progress towards its commitments. **Latvia is most active in the area of Interactions with algorithms and artificial intelligence systems (III).** There is room for improvement, especially with regards to Putting people at the centre of the digital transformation (I), Connectivity (II) and Sustainability (VI) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on the available data, they estimate the impact of measures implemented by key stakeholders in Latvia (mainly national government) and how these are perceived by citizens.

The indicators suggest that **Latvia is most successful in implementing commitments related to Putting people at the centre of the digital transformation (I).** Latvia should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Freedom of choice (III).

According to the Special Eurobarometer 'Digital Decade 2025', **46% of citizens in Latvia think that the EU protects their digital rights well** (a 4% increase since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting easy online access to all key public services in the EU (58%, corresponding to the EU average). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (39%, below the EU average of 48%).

¹⁰ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
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DIGITAL DECADE 2025 COUNTRY REPORTS

Lithuania

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Executive summary

Lithuania benefits from excellent 5G coverage and a dynamic start-up ecosystem but continues to face challenges in expanding fixed Very High-Capacity Networks (VHCN) coverage, particularly in rural areas. The country is positioning itself as a niche player in semiconductor and quantum-related technologies, leveraging its strong laser industry.

Lithuania shows a high level of ambition in its contribution to the Digital Decade having set 12 national targets, 92% of which are aligned with the EU 2030 targets. The country is following its trajectories moderately well with 71% of them being on track (on the basis of the 2024 trajectories defined for 7 KPIs out of 8 analysed). Lithuania addressed 25% of the 8 recommendations issued by the Commission in 2024 by making some changes through new measures.

Lithuania demonstrates strong performance in mobile connectivity, with near universal 5G coverage and continued infrastructure investment. However, fixed broadband deployment remains uneven, particularly in rural areas. SME adoption of advanced digital technologies such as cloud, AI, and data analytics continues to lag despite targeted support schemes. The start-up ecosystem is growing, though scale-up activity and access to private capital remain modest. In 2024, Lithuania maintained high digital public service availability, supported by centralised platforms and a mature eHealth system. Digital skills development is supported through national programmes focused on vulnerable and underrepresented groups. On sustainability, the country is piloting digital tools for climate action through startup funding and cleantech initiatives, though a comprehensive green-digital strategy has yet to emerge. In Lithuania cybersecurity is a strategic priority, reinforced by the national programme and the implementation of 5G Toolbox.

Digital Decade KPI ⁽¹⁾	Lithuania				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	LT	EU
Fixed Very High Capacity Network (VHCN) coverage	78.1%	78.3%	0.3%	84.0%	82.5%	4.9%	98.0%	100%
Fibre to the Premises (FTTP) coverage	78.1%	78.3%	0.3%	-	69.2%	8.4%	-	-
Overall 5G coverage	98.9%	99.7%	0.9%	92.0%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	5	10	100.0%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	66.3%	2.0%	-	72.9%	2.8%	90.0%	90%
Cloud	33.6%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	4.9%	8.8%	80.2%	12.0%	13.5%	67.2%	75.0%	75%
Data analytics	40.5%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	53.5%	-	-	-	-	-	-	75%
Unicorns	3	3	0.0%	3	286	4.4%	6	500
At least basic digital skills	52.9%	-	-	-	-	-	80.0%	80%
ICT specialists	4.9%	5.3%	8.2%	5.3%	5.0%	4.2%	6.9%	~10%
eID scheme notification		Yes						
Digital public services for citizens	86.7	87.9	1.3%	86.0	82.3	3.6%	100.0	100
Digital public services for businesses	95.9	92.5	-3.6%	95.0	86.2	0.9%	100.0	100
Access to e-Health records	95.4	95.4	0.0%	100.0	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the 2025 special Eurobarometer on ‘the Digital Decade’, 77% of Lithuanian citizens consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 90% consider it important to counter and mitigate the issue of fake news and disinformation online. And on competitiveness, 79% consider it important to ensure that European companies can grow and become ‘European Champions’ capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

In 2024, Lithuania reinforced its position as a regional frontrunner in mobile connectivity, reaching near-universal 5G coverage across households. However, fixed Very High-Capacity Network (VHCN) deployment, particularly fibre in rural areas, continues to require targeted public investment. Two major state-funded projects, supported by the RRF and ERDF, are underway to expand VHCN infrastructure, with over 2 000 km of fibre and 60 new towers planned. To accelerate enterprise digitalisation, Lithuania scaled up support through Measure VST-1. (‘To encourage the digitalisation of businesses’) notably relying on digital vouchers for SMEs, accelerators, and the national network of EDIHs. However, adoption of AI, cloud, and data analytics remains uneven, with surveys highlighting procedural complexity and lack of digital awareness. The country deepened its role in emerging technologies through the GreenTech Hub and laser-based contributions to semiconductors and quantum, as well as its commitment to the ALT-EDIC. Cybersecurity was significantly strengthened with the full transposition of NIS2, a national programme focused on 5G network trustworthiness, and growing investment in public sector cyber resilience.

Protecting and empowering EU people and society

Lithuania continues to perform strongly in digital public services, with high levels of availability for both citizens and businesses. Access to eHealth records remains among the highest in the EU, and ongoing reforms to the Electronic Health Services system aim to expand coverage and improve data interoperability. While ICT specialist employment rose in 2024, demographic pressures and reliance on foreign talent remain key structural challenges. Measures supporting talent development include vocational retraining, the Talent-Reach initiative, and Diaspora Youth Traineeships. On digital inclusion, Lithuania has significantly invested in programmes targeting older adults and vulnerable groups, including the national “No One Left Behind” campaign and education efforts led by NGOs and Universities of the Third Age. These are complemented by training initiatives under the roadmap, such as EdTech for teachers and skills development schemes for low-skilled adults, yet further acceleration is needed to reach the digital skills target by 2030.

Leveraging digital transformation for a smart greening

Lithuania is at an early stage in aligning its digital and environmental transitions. While it lacks a fully integrated green-digital strategy, targeted efforts are emerging, particularly through support for startups developing climate-relevant digital solutions. Measure VST-3 ‘To encourage businesses to move towards a climate-neutral economy’ has enabled 170 startups to work on tools like AI-based smart housing systems and automated workflow platforms.

The GreenTech Hub is actively strengthening the cleantech ecosystem by guiding companies working on technologies such as smart grids, e-mobility, and IoT toward EDIH services. Further coordination is expected under the upcoming National Digital Agenda.

National Digital Decade strategic roadmap

Lithuania submitted its initial national Digital Decade roadmap on 13 March 2024. At the time, digital policy lacked centralised coordination, with each ministry responsible for its own domain. In response to challenges identified while preparing the roadmap and the 2024 country report, the government adopted a resolution in July 2024 to establish a National Digital Agenda for 2026–2040. This new cross-cutting strategy aims to centralise governance, align funding, and address gaps in areas such as semiconductors and edge nodes. An in-depth analysis is being carried out in Q1-Q3 2025 to guide the Agenda's development. National authorities intend to adjust the roadmap at a later stage.

A total of 26 measures are part of Lithuania's national strategic roadmap with a budget of EUR 1.5 billion (1.9 % of Lithuania's GDP in 2024).

Funding & projects for digital

Lithuania allocates 23% of its total recovery and resilience plan to digital (EUR 724 million)¹. In addition, under cohesion policy, EUR 280 million, representing 4% of the country's total Cohesion policy funding, is dedicated to advancing Lithuania's digital transformation². Lithuania is a member of the Alliance for Language Technologies EDIC. Lithuania is also a participating state in the EuroHPC Joint Undertaking (JU) and in the Chips JU.

The country has engaged with the Best Practice Accelerator³ by its presence in the workshops.

Digital Rights and Principles

According to a support study, Lithuania has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 45 initiatives overall but no new initiatives launched in 2024. Lithuania is most active in the area of protection and empowerment of children and young people in the digital environment. Less activity has been identified with regards to a fair digital environment and a protected, safe and secure digital environment. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing safety, security and empowerment.

Recommendations

- **SMEs:** Simplify access to SME digitalisation funding by reducing bureaucratic complexity, improving guidance, and targeting support to low-digital-intensity sectors.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies

- **AI:** Step up targeted support for the adoption of artificial intelligence, especially among SMEs, by raising awareness of business-relevant use cases, improving access to advisory services, and simplifying funding procedures.
- **ICT Specialists:** Scale efforts in relation to retraining programmes, and female participation in ICT.
- **Cybersecurity:** Continue work on cybersecurity to address evolving threats, particularly regarding citizens awareness.
- **VHCN:** Expand public support for VHCN deployment, notably in rural areas.
- **Green:** Adopt an integrated green-digital strategy with measurable targets, establish mechanisms to monitor environmental impacts, and scale up digital solutions that support climate goals.

A competitive, sovereign and resilient EU based on technological leadership

Lithuania's digital competitiveness is gaining momentum, anchored in strong 5G coverage, an increasingly ambitious start-up ecosystem, and new investments in advanced technologies. However, challenges persist in high-speed broadband rollout, adoption of AI and cloud technologies and the availability of ICT specialists.

The country is recognised for its niche excellence in laser technologies, which are used in semiconductor and quantum systems. The Lithuanian ICT sector represented 4.59% of the gross value added in 2022⁴. It rose continuously from 2013 (2.42%) but remains below the EU average of 5.46%. R&D in the ICT sector represented 24.57% of total R&D expenditure by businesses and 24.84% of total R&D personnel. Lithuania is also taking steps to contribute to Europe's digital sovereignty, as seen in its involvement in ALT-EDIC and its preparatory work for IPCEI-CIS.

On 4 April 2025, [the Seimas adopted key legislative amendments to accelerate AI development](#). These include the launch of one of the EU's first AI regulatory sandboxes, enabling companies to test AI solutions safely before market entry. The Innovation Agency and Communications Regulatory Authority were designated to support implementation of the EU AI Act – ensuring both conformity assessment and market surveillance. In parallel, EUR 22.5 million was committed through national calls in 2024 to support AI deployment and development.

In deep tech, [a government-backed reform approved in April 2025](#) seeks to extend the age cap for public support to start-ups from five to ten years. This aligns with European Commission recommendations and aims to reflect the longer maturity cycles required by research-intensive companies – especially in strategic sectors like life sciences and advanced manufacturing.

Lithuania's start-up ecosystem is among the fastest growing in the region, with three unicorns and over 1 000 start-ups. The government allocated EUR 132.8 million to support innovation, including the Early Stage and Development Fund III (EUR 42.8 million) and Accelerator3 (EUR 20 million). These instruments build on the success of Accelerator2, which financed 74 companies.

Digital infrastructure remains a mixed picture. Lithuania is among the EU leaders in 5G rollout, with near-universal coverage and over 20 active pilot projects supported by a national sandbox. Very High-Capacity Networks (VHCN) coverage, however, remains below the EU average. Two major public projects funded by RRF and ERDF aim to extend fibre to rural and underserved areas, yet additional investment will be necessary to reach full coverage. According to the 2025 Eurobarometer⁵, 84% of Lithuanians think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

Efforts to support SME digitalisation include digital vouchers, targeted consulting through regional 'hives' and accelerators. Nonetheless, persistent obstacles remain, including limited digital literacy and low awareness of available tools.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Lithuania's strategic direction is being consolidated under a forthcoming National Digital Agenda (2026-2040), which will integrate inter-ministerial efforts and coordinate long-term planning for digital transformation. However, Lithuania has not submitted a revised Digital Decade roadmap in 2024, pending the outcome of this broader strategic review. These latest reforms signal a turning point in Lithuania's approach—one that ties digital ambition to concrete legislative action and targeted support for future-facing innovation.

Building technological leadership: digital infrastructure and technologies

Lithuania's digital infrastructure presents a mixed picture: while the country leads in overall 5G and FTTP coverage compared to the EU average, it continues to lag behind in fixed VHCN rollout and 5G spectrum assignment, particularly in sparsely populated areas, highlighting persistent territorial and investment challenges.

Connectivity infrastructure

Lithuania reached 78.29% fixed VHCN coverage in 2024 (2030 national target: 100%), remaining slightly below the EU average of 82.49%. The country is lagging behind compared to its national trajectory. The annual growth rate was 0.3%, well below the EU's 4.9%, indicating a slower rollout pace. For households in sparsely populated areas, coverage stood at 39.78% in 2024, significantly below the EU average of 61.89%. The rural growth rate was sluggish, with a small increase of +0.5%, contrasting sharply with the EU's +11.3%. Lithuania's fixed VHCN deployment continues to lag behind the EU trajectory, particularly in rural areas, where coverage remains a key challenge.

Lithuania reached 78.29% FTTP coverage in 2024 (2030 national target: 100%), significantly above the EU average of 69.24%. The country did not provide a national trajectory point for 2024. The annual growth rate was just +0.3%, well below the EU's 8.4%. For households in sparsely populated areas, Lithuania's FTTP coverage was 39.78% in 2024, below the EU's 58.78%. The growth rate for rural areas was +0.5% compared to the EU's +11.9%. Despite high overall FTTP availability, Lithuania faces a rural deployment gap and slow rollout momentum.

Lithuania reached 99.71% overall 5G coverage in 2024 (2030 national target: 100%), above the EU average of 94.35%. The country is on track according to its national trajectory. The annual growth rate was +0.9%, lagging behind the EU's 6.0%. For sparsely populated areas, Lithuania achieved 99.06% in 2024, outperforming the EU average of 79.57%. However, the rural growth rate of +2.8% was far below the EU's 11.9%. Lithuania reached 75.13% 5G coverage in the 3.4-3.8 GHz band in 2024, above the EU average of 67.72%. The annual growth rate of +22.3% was nonetheless lower than the EU's 32.6%. In rural areas, Lithuania's coverage stood at 20.25%, still below the EU's 25.98%, but with a strong growth rate of +145.5%, outperforming the EU's 65.1%. Lithuania's assignment of harmonised spectrum in the 5G pioneer bands stood at 47.22% in both 2024 and 2025, significantly below the EU averages of 73.4% and 74.63%, respectively. The country recorded no progress between 2024 and 2025, compared to a +1.7% increase at EU level.

In Lithuania, fixed broadband take-up indicators are mixed, while mobile performance remains well below the EU average. In 2023, 67.10% of fixed broadband subscriptions were at speeds of 100 Mbps or higher, above the EU's 65.9%. This increased to 73.87% in 2024, again surpassing the EU average of 71.88%. Lithuania's annual growth rate of 10.1% outperformed the EU's 9.1%. However, for subscriptions at speeds above 1 Gbps, Lithuania remains significantly behind: only 2.82% in 2024, compared to the EU's 22.25%, with a growth rate of just 10.2% (vs. the EU's 20.5%). The share of the

population using 5G SIM cards was 8.49% in 2024, far below the EU average of 35.56%. Lithuania's growth rate in this area was 46.1%, trailing the EU's 63.9%.

VHCN and FTTP

In its roadmap Lithuania sets its VHCN target at 98% by 2030, which is not fully aligned with the EU one of 100%. The current value for VHCN is slightly below the trajectories expected in 2024. Lithuania does not plan a separate FTTP target, arguing that full fibre (FTTP) rollout would be economically disproportionate given the country's population density. Nonetheless, according to the DDPP KPI Lithuania faces persistent challenges in extending VHCN coverage, particularly in sparsely populated rural areas where deployment costs are high and private investment remains limited.

To address this gap, two publicly funded projects are underway: an RRF-financed initiative aiming to connect 5 000 socio-economic sites via 2 000 km of new fibre lines by mid-2026, and an ERDF-supported programme to build 60 telecom towers in underserved regions by 2027. However, authorities acknowledge that these measures may not be sufficient to meet the target without additional public investment and faster implementation.

In addition, Lithuania continues to rely primarily on the Ultra-fast Broadband Development Plan 2021-2027, the main strategic framework adopted in 2021, and measure R-1 to extend VHCN coverage. This plan, partially supported by the Recovery and Resilience Facility and national funding, aims to introduce ultra-fast broadband, notably in underserved areas.

Lithuania has made some progress regarding its copper switch-off process. However, there is currently no publicly announced national plan or deadline for a complete copper switch-off and this could hinder the long-term sustainability and uptake of full fibre solutions.

Lithuania's broadband market remains moderately concentrated, with three main operators providing nationwide coverage. While competition has helped drive the rapid rollout of 5G, FTTP growth is low, reflecting a need for market-driven investment or stronger state support, so the last-mile fibre challenge is unlikely to be resolved.

2024 recommendation on connectivity infrastructure: Intensify efforts in the deployment of gigabit network, promoting public and private investments, especially in rural areas.

In 2024, Lithuania continued the implementation of existing measures but did not take any new measures. Lithuania pursued the rollout of two major publicly funded projects supporting rural VHCN deployment, but these had already been planned previously. No new initiatives were launched to intensify efforts as recommended. Instead, Lithuania plans to reassess its connectivity strategy as part of the forthcoming National Digital Agenda, with results expected only in 2026.

5G

Lithuania sets its 5G target at 100% by 2030 in its roadmap, which is fully aligned with the EU one. The main strategic framework for 5G deployment remains the national Digital Decade roadmap 2024, complemented by actions outlined in the [national 5G roadmap](#) 2020-2025. The 5G policy is supported by regulatory reforms adopted in 2023 and earlier, including measures to facilitate access to public infrastructure and deployment of base stations along national roads. Given the good overall performance, the absence of new measures in the adjusted roadmap is justified at this stage.

The main mobile network operators (Telia, Bite, Tele2) have continued expanding networks, and two of them (Telia and Bite) are in the process of shutting down their 3G networks. This is expected to be fully complete by end-2025.

Lithuania successfully assigned the 700 MHz and 3.5 GHz bands for 5G use. However, cross-border coordination issues with the Russian Federation remain unresolved, limiting deployment flexibility near border areas. Lithuania plans to prepare guidelines and national technical conditions for private 5G networks in the 3.8-4.2 GHz band, once the EU implementing decision on the shared use of that band is adopted.

2024 recommendation on connectivity infrastructure: Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

In 2024, the Member State continued the implementation of existing measures but did not take any new measures. The country held [public consultations](#) on local access to 3.8-4.2 GHz spectrum, and continued applying the 5G cybersecurity toolbox measures, such as vetting of 5G suppliers according to national security laws. However, no concrete steps were taken to facilitate access to spectrum for new players, nor were specific incentives introduced to accelerate the deployment of 5G stand-alone (SA) core networks. As such, the recommendation remains only partially addressed.

Lithuania launched the 5G sandbox regime to stimulate early adoption of 5G use cases across sectors. By April 2025, 23 pilot projects were underway, including initiatives for 5G-based smart transport systems, remote healthcare, and urban drone management. The first pilot project was completed in early 2025, with several others nearing completion.

Semiconductors

Lithuania contributes modestly to the EU semiconductor value chain, primarily through component manufacturing and advanced laser technologies used in chip production. While companies like Teltonika are planning local facilities, no large-scale manufacturing exists. The country has not yet implemented dedicated measures but is preparing a study in 2025 under the upcoming National Digital Agenda to assess its potential and define a targeted strategy for semiconductors.

Edge nodes

According to the Edge Node Observatory, Lithuania is estimated to have deployed a total of ten edge nodes by 2024, a progression of +100% since 2023. This doubles the amount estimated for 2023 (five, number revised since SDDR 2024).

Lithuania has not launched specific initiatives for deploying edge nodes, arguing that the average mobile internet latency in the country already meets the Digital Decade goal of being under 20 milliseconds. However, Lithuania is preparing a study in 2025 as part of its National Digital Agenda to assess whether additional measures or deployments of edge nodes are needed to support future digital infrastructure demands.

Quantum technologies

Lithuania does not plan to develop quantum computers domestically but contributes to the EU's quantum objectives through research activities, particularly in quantum communication and laser technologies. Lithuania joined the [EuroQCI](#) initiative and established the [Lithuanian Quantum Technologies Association](#) in 2023. In June 2024, Lithuania [signed the European Declaration on](#)

[Quantum Technologies](#), committing to closer R&D and ecosystem collaboration across Europe. A study is ongoing under the 2025 National Digital Agenda to assess national potential in quantum development.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Lithuania's growing innovation ecosystem contrasts with persistent gaps in SME digitalisation. Despite strong activity in data analytics and a vibrant start-up scene, adoption of advanced technologies like cloud and AI remains limited. Accelerating digital uptake among SMEs will be essential to strengthen productivity and ensure the country's competitiveness in an increasingly technology-driven EU economy.

[SMEs with at least basic digital intensity](#)

In 2024, two out of three (66.27%) SMEs in Lithuania had at least a basic level of digital intensity, an increase from 63.7% in 2022⁶, reflecting an annual growth rate of 2%, positioning Lithuania below the EU average of 72.91%. At the same time, among all SMEs, only 27.58% of SMEs in Lithuania achieved high or very high digital intensity, also trailing behind the EU average of 32.66%. Overall, the data reveals that despite some growth, there is still significant room for improvement in the digital intensity of Lithuanian SMEs.

Lithuania still aims at 90% of SMEs with basic digital intensity, in line with the EU target for 2030. However, growth has plateaued, and deeper adoption remains limited and uneven. Feedback surveys and mid-term review of implementation measures highlights that many SMEs still struggle to identify suitable technologies or clarify digitalisation goals, with some cancelling or declining project contracts after initial approval. This reflects underlying capacity gaps and limited digital maturity in smaller enterprises.

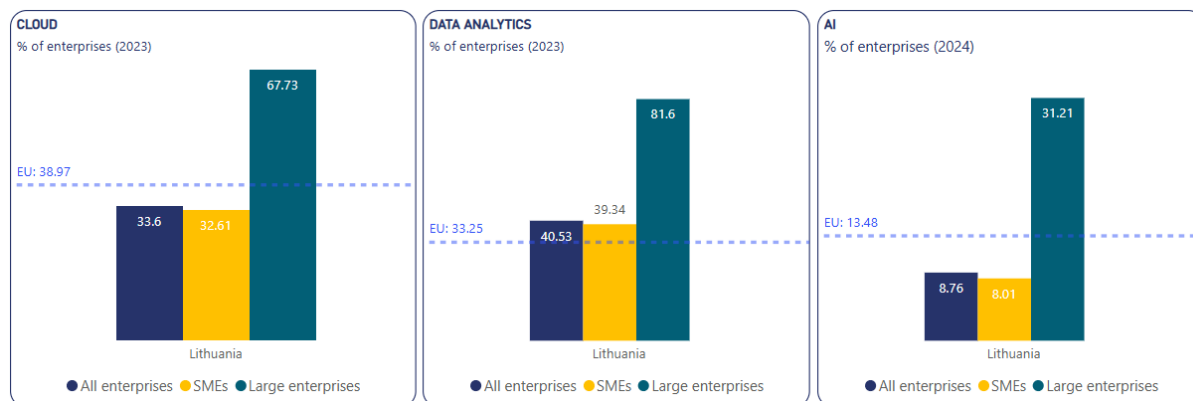
Lithuania has continued implementing pre-2024 support schemes to support the adoption of tools such as e-commerce solutions, CRM systems, cloud services, and AI consultancy. The main programmes are notably the 'Digitalisation of SMEs' measure (EUR 17.3 million, 510 projects) and the '[Digital SME Vouchers](#)' scheme with a EUR 1 million call launched in Q3 2024 to strengthen SMEs' digital competences in AI, cybersecurity, and high-performance computing (HPC) – [co-funded by EU and national budgets](#). However, their impact has been constrained by low awareness and administrative complexity.

Complementary efforts led by regional offices ('hives'), such as [e.comGO](#) and SME accelerator programmes, have offered individualised consulting and business grants to support targeted digital skills development and process optimisation. For example, e.comGO reached 152 SMEs with 265 individual consultations, and a grant programme provided support of up to EUR 15000 per SME, with 76 applications received for a total of EUR 1.02 million, of which EUR 565 000 was available for funding.

Lithuania hosts three European Digital Innovation Hubs (EDIHs): EDIH LT, EDIH Vilnius, and EDIH4LT. In 2024, they provided over 1 000 digital maturity assessments and consulted more than 1 000 companies and public sector organisations. Their services include 'test before invest' training, and investment support. Mid-term reviews confirm strong engagement, especially by EDIH LT, which alone delivered 953 DMAs and 646 services, positioning EDIHs as key enablers of SME digital transformation.

⁶ 2022 is the last comparable year that used a similar methodology for measuring the digital intensity of enterprises

Take up of cloud/AI/data analytics



In Lithuania 8.76% of enterprises reported using AI technology in 2024, falling significantly below the EU level use of 13.48%. The country is lagging behind compared to its national trajectory (12%) However, while the uptake rate among SMEs was 8.01%, large enterprises demonstrated a higher rate of 31.21%. This corresponds to a gap of 23.2 percentage points between SMEs and large enterprises, which is lower than the EU gap of 28.53 percentage points. Compared to 2023, Lithuania experienced a significant increase in AI uptake of 80.25%, from 4.86%.

Adoption of cloud, data analytics, and the three technologies together were not measured in 2024.

Cloud uptake in Lithuania reached 33.6% (slightly over one out of three) in 2023, lagging behind the EU average of 38.97%. However, SMEs had an adoption rate of 32.61%, while more than two in three (67.73%) large enterprises adopted cloud services. This indicates a gap of 35.12 percentage points in uptake between SMEs and large enterprises in Lithuania, which is higher than the EU level gap of 31.68.

In 2023, more than two in five out of 5 enterprises (40.53%) in Lithuania used data analytics, ahead of the EU level uptake of 33.25%. More specifically, among SMEs, 39.34% adopted data analytics, while this was the case for more than four in five large enterprises (81.6%). This reflects a gap of 42.26 percentage points between SMEs and large enterprises, which is in line with the EU gap.

When taking the three technologies together in 2023, 53.54% of enterprises in Lithuania adopted AI technologies, sophisticated or intermediate cloud computing services, or performed data analytics, just below the EU average of 54.7%. More specifically, the uptake among SMEs was slightly lower at 52.48%, while large enterprises showed a notably higher engagement rate of 90.13%. This indicates a percentage point difference of 37.65 in uptake between SMEs and large enterprises in Lithuania, which is higher than the EU level gap of 32.97.

In conclusion, Lithuania showed a mixed performance, with data analytics adoption exceeding the EU average but lagging behind in cloud computing and artificial intelligence. Large enterprises consistently outpaced SMEs across all technologies, reflecting a notable disparity in adoption rates. SMEs, which constitute the majority of enterprises and contribute significantly to the value added to the economy, remain less equipped to capitalise on digital opportunities. Bridging this gap is critical to fostering inclusive digital development and ensuring the competitiveness of enterprises across all sectors.

- [Cloud](#)

In its roadmap, Lithuania sets a target of 75% for cloud take-up by enterprises, in line with the EU target by 2030. The country continues to rely on existing SME support tools such as the 'Digitalisation

of SMEs' and 'Digital SME Vouchers' schemes, which include eligible expenditures for cloud services. While these instruments contribute indirectly, they were not specifically designed to accelerate cloud adoption. The lack of a dedicated national strategy or targeted incentives limits the effectiveness of current efforts.

It worth mentioning that, in 2024, Lithuania implemented a national measure titled 'Facility to promote the readiness of undertakings to participate in the IPCEIs', which included support for participation in IPCEI-CIS. Out of six applications, three were funded, including one from an ICT association specifically aiming to explore entry into IPCEI-CIS. This association, backed by public funding, conducted a dedicated study on how Lithuanian ICT companies could join the cloud IPCEI, and held several meetings with IPCEI-CIS coordinators from Germany. Concrete planning steps were outlined, although the key issue of funding proportions between business and government remains under discussion.

- [Data Analytics](#)

In its roadmap, Lithuania sets a target of 75% for data analytics take-up by enterprises, in line with the EU target by 2030. Given that adoption already exceeded 40% in 2023 and is above the EU average, the target appears realistic – provided that support measures are scaled and better coordinated.

While no specific measure is dedicated to data analytics in the roadmap, some activities indirectly support it. Under Measure VST-1, Lithuania funds digitalisation vouchers and technology services for SMEs, which may include data-related tools. In parallel, [Accelerators](#), a programme targeted for start-up, offers foundational support in data management and analysis, with 85 participants receiving over 175 hours of consultation in 2024. Moreover, several 5G sandbox pilot projects launched in 2024 focus on advanced data processing and analytics in sectors like energy, transport, and health, including initiatives using 5G for large-scale data collection and optimisation.

The absence of a national framework or incentive scheme focused specifically on big data or advanced analytics tools limits scalability and long-term impact

- [Artificial Intelligence](#)

In its roadmap, Lithuania sets a target at 75% for AI take-up by enterprises, in line with the EU target by 2030. While no updated roadmap was submitted in 2024, Lithuania has taken notable steps to support AI adoption. The government approved two new funding calls totalling EUR 22.5 million to support AI deployment (EUR 7.5 million) and AI creation (EUR 15 million); however, these measures are still awaiting European Commission approval and have not yet been implemented.

In parallel, Lithuania has stepped up national efforts through several initiatives co-funded by the EU's Recovery and Resilience Facility. In early 2025, [EUR 2.45 million was granted for AI projects](#) focused on Lithuanian language resources, aiming to enhance AI-based services in healthcare, education, defence, and e-government. Additional [funding was allocated to 12 start-up projects developing AI, blockchain, and robotics solutions](#), from virtual assistants to autonomous recognition systems. Legislative changes adopted in January 2025 also introduced the [legal framework for Lithuania's AI sandbox](#), positioning the country among the first in the EU to implement a pilot regulatory environment. The Innovation Agency and Communications Regulatory Authority have been designated to support companies in complying with the EU AI Act, including market surveillance and conformity assessment for high-risk systems. In May 2025, Lithuania also announced plans to establish the first [artificial intelligence competence and technology centre](#) in the Baltic region, with an estimated project value of EUR 110 million. The project will dedicate EUR 72 million to computing infrastructure, EUR 16 million to

engineering, and EUR 25 million to talent development. Half of the funding is expected from EU support, and the rest from national and private investments. The 2025 Eurobarometer shows that 77% of Lithuanians think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values.

2024 recommendation on advanced technologies: Review the mix of measures to support the adoption of advanced digital technologies to guarantee the achievement of the ambitious targets.

Lithuania made some efforts to address the recommendation through new policy actions in 2024, launching a preparatory analysis for the upcoming Digital Agenda and proposing new support measures, though none have been implemented or adopted yet.

Unicorns, scale-ups and start-ups

At the end of 2024, Lithuania had three unicorns - Nord Security having joined Vinted and Baltic Classifieds Group - which is one more than last year according to the Digital Decade KPIs. In its roadmap Lithuania sets a target of six unicorns by 2030, contributing to the EU-level objective of 500. Reaching this target will require sustained progress in scaling and investment readiness across the start-up ecosystem.

To support this ambition, Lithuania has continued expanding its scale-up financing toolbox. In 2024, preparatory work advanced on the Early Stage and Development Fund III (EUR 40 million) and Accelerator3 (EUR 20 million), with fund manager selection underway. Although investments from these new funds are not expected to begin until 2025, Accelerator2 has already supported 74 SMEs, mobilising EUR 7.4 million, including EUR 2.8 million from private capital. The Co-Investment Fund, which was topped up with EU funds, resumed activity in autumn 2024 and made its first investment of EUR 380 000 – nearly half from private sources. Since 2018, the fund has supported 49 SMEs, investing EUR 24.6 million, including EUR 10 million in private funding. These instruments reflect growing use of blended finance to address early-stage needs, but their long-term impact on unicorn creation remains to be seen.

Lithuania's start-up ecosystem is dynamic, hosting over 1 000 start-ups, primarily in B2B ICT, FinTech, cybersecurity, health, and gaming. Public support includes RRF-funded accelerators, state-backed VC funds, and innovation-friendly schemes such as the GovTech and Bank of Lithuania sandboxes. Despite this, late-stage venture capital remains limited, and some promising start-ups – such as Ondato and TransferGo – have relocated abroad to benefit from more favourable investment and regulatory environments.

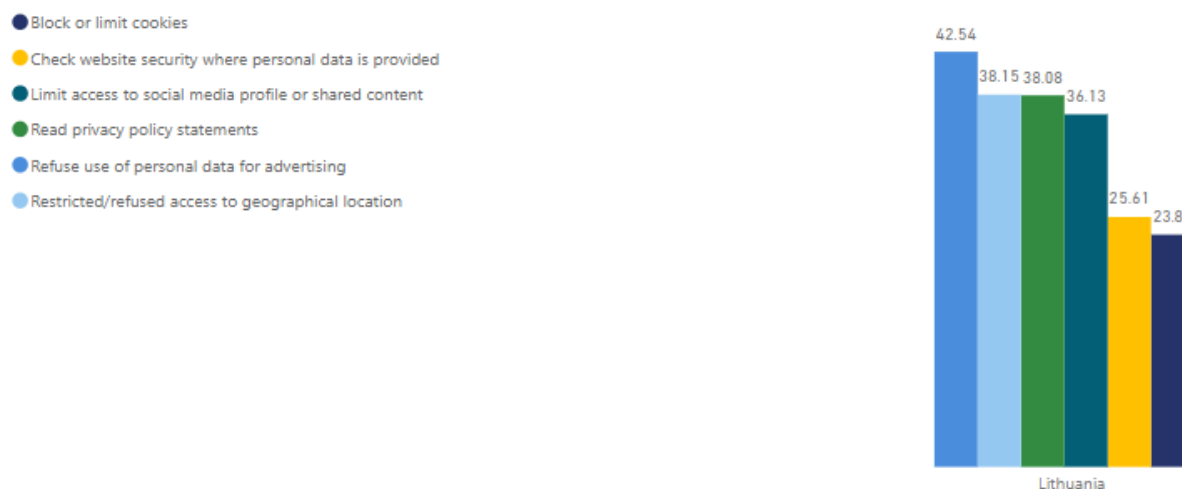
Lithuania's accelerator landscape continues to evolve. Privately and publicly backed [accelerators](#) typically offer EUR 50 000-100 000 in early equity investment in exchange for 3-8% equity, over a short acceleration period (90-120 days). These programmes focus on start-ups with validated MVPs, aiming to help them raise larger follow-on capital and build investor-ready business models. While this contributes to early-stage growth, it is not a substitute for the deeper structural reforms and funding scale needed to retain and scale high-potential ventures domestically.

Strengthening Cybersecurity & Resilience

In Lithuania, 62.68% of individuals reported taking steps to safeguard their data online, below the EU average of 69.55%. Notably, at national level, 40.1% engaged in three or more actions (and therefore could be considered as having above basic digital safety skills). Refusing the use of personal

data for advertising purposes was the most frequent measure (42.54%), while changing browser settings to limit cookies was the least common (23.8%).

Type of activities to protect personal data online (% of individuals)



Lithuanian enterprises face fewer ICT incidents than the EU average, and more often raise employee awareness, despite a recent rise in external cyberattacks. The number of enterprises that experienced ICT security incidents leading to unavailability of ICT services due to attack from outside (e.g. ransomware attacks, denial-of-service attacks) increased in Lithuania, from 0.82% in 2022 to 2.55% in 2024. It remains below the EU average (3.43%). Lithuanian's enterprises are less prone to incidents related to hardware or software failures (11.87%) than their EU peers (17.97%).

In terms of measures, 90.92% of enterprises deployed some ICT security measures (slightly below the EU average of 92.76%) but 62.41% of enterprises made their employees aware of their obligations in ICT security related issues, above the EU average (59.97%).

Lithuania shows limited progress in IPv6 deployment, despite its importance for a secure, scalable internet. Concerning the deployment of secure internet standards, Lithuania is performing well below the EU average in the rollout of IPv6 for the end users (13%, against 36% for the EU) but is above the EU average on the server side (27%, against 17% for the EU). IPv6 is an important protocol as it ensures the scalability, stability, and security of the Internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have long been depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out as it introduces security features to DNS. In Lithuania the DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology) is 35% (Q3 2024), below the EU average of 47%.

According to the Digital Decade Eurobarometer 2025, 75% of Lithuanians think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies.

Lithuania's cybersecurity policy is guided by the National Cybersecurity Development Programme 2023-2030, which aims to strengthen cyber resilience across public institutions, critical infrastructure, and enterprises. In 2024, Lithuania fully transposed the NIS2 Directive into national law. The new

cybersecurity framework, which applies across sectors including healthcare, requires entities to implement standards in 12 operational fields, ensuring a common baseline for risk management.

The National Cyber Security Centre (NCSC) plays a central role, delivering training and awareness campaigns such as ‘Cyber Breakfast’ events, reaching over 52 000 participants in 2024, including SMEs, seniors, and critical infrastructure staff.

Lithuania also made progress under Measure SJ-4 (‘Strengthen cyber resilience’), offering free online training for vulnerable groups and SME staff. In total, 46 376 individuals completed NCSC online courses in 2024.

In addition, Lithuania remains an active participant in EU cybersecurity cooperation, including PESCO’s Cyber Rapid Response Teams and the International Counter Ransomware Initiative (CRI).

In the healthcare sector, while no separate cybersecurity regulations exist, the general NIS2-based legal framework applies, and Lithuania is currently discussing how to implement the EU action plan for the cybersecurity of hospitals.

In addition, Lithuania continues to implement the 5G Cybersecurity Toolbox, as recommended in 2024, to enhance network security. While no major domestic cybersecurity breach was reported, politically motivated cyberattacks – particularly DDoS – intensified in 2024, in connection with the regional fallout from the war in Ukraine. These developments underline the need for continued investment in cybersecurity infrastructure and resilience. Overall, the policy mix has expanded meaningfully, but additional targeted measures – especially to support SMEs and healthcare-specific protocols – would improve adequacy amid an increasingly hostile cyber landscape.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Lithuania's digital transition strategy recognises key inclusion challenges related to age, socio-economic status, education level, and geography. Seniors, people with disabilities, and residents of rural areas are priority groups in initiatives such as the 'No One is Left Behind' campaign and other public service accessibility projects. Gender gaps in ICT persist; the roadmap notes significantly lower participation of women in the field due to social stereotypes and educational patterns. Access to digital public services continues to improve through the modernisation of the e-Government portal and the development of inclusive service design. While digital civic participation remains limited, Lithuania supports safer digital environments, particularly for older adults and vulnerable users. According to the 2025 Eurobarometer, 81% of Lithuanians think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 76% consider it would improve their daily use of digital technologies, and 88% think public authorities should consider it important to ensure that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services.

Equipping people with digital skills

Basic Digital Skills

In 2023, Lithuania reported that 52.91% of its population had basic digital skills, trailing slightly behind the EU average of 55.56%. While there is no new data for 2024, a breakdown by demographic factors provides some insights:

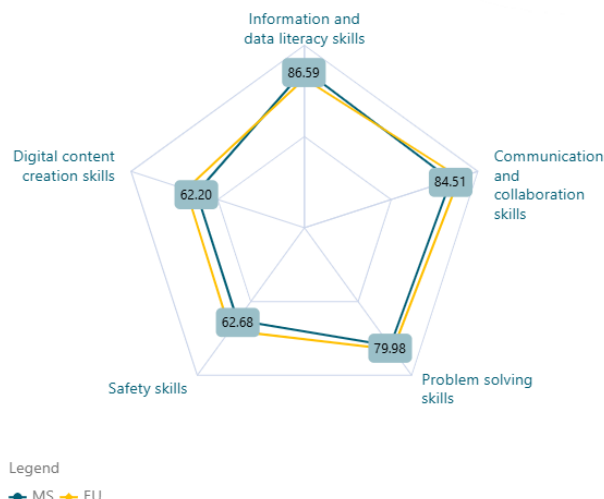
- **Gender Gap:** Contrary to what is observed in most EU countries, Lithuania shows a sizeable gender gap in digital skills in favour of women (4.86 pp), with 50.38% of men and 55.24% of women proficient in basic skills. In comparison, the EU average gap in favour of men is 2.23 pp.
- **Education Level:** The level of formal education correlates with digital skill levels. In Lithuania, 72.33% of individuals with high formal education have basic skills, falling short of the EU average (79.83%). Interestingly, those with medium levels of formal education are the least skilled, at 36.09%, and the gap between this group and the national average is 16.82 percentage points.
- **Living Areas:** Residents of towns and suburbs in Lithuania have the lowest levels of digital skills at 45.98%, which is below the EU average for similar areas (53.25%). The gap within Lithuania between rural areas and the national average is 5.5 percentage points, smaller than the EU average (8.06 pp).
- **Age Groups:** The youngest age bracket, 16 to 24-year-olds, are the most digitally skilled in Lithuania, with an 81.28% proficiency rate that significantly surpasses the EU average

(69.98%). In stark contrast, only 15.15% of 65 to 74-year-olds possess basic digital skills, which is well below the EU norm for that age group (28.19%).

- Digital Skills Index components:** Within the five areas of the Digital Skills Index, Lithuania only exceeds the EU average in information and data literacy skills, with a score of 86.59%. However, the country's weakest area is digital content creation, with a score of 62.20%, which is below the EU average (68.28%).

In summary, Lithuania's digital skills profile shows exceptional performances among the young, but there are areas that need attention, particularly in elevating the skill levels of those with medium formal education and the older population. The digital skills of men are noticeably lower than of those of women. Improving these areas could significantly enhance Lithuania's overall digital proficiency, moving it closer to, or beyond, EU averages.

Digital Skills Index components
% of individuals



In its roadmap, Lithuania sets a target at 80% of its population having at least basic digital skills. Given the sharp generational divide, Measure SJ-1 plays a critical role in addressing gaps among socially vulnerable groups. While direct impact on skills is still being assessed, the Index of Information Accessibility rose significantly – from 8.50 in 2020 to 37.51 in 2024 – indicating broader progress in reaching excluded populations.

Complementary efforts are underway through Erasmus+ projects which will deliver inclusive digital skills curricula by 2026. Lithuania has also intensified its focus on older adults. The Ministry of Social Security and Labour funds NGO-led intergenerational projects where young people train seniors in ICT skills. These include tailored learning activities, needs assessments, and training material development, supported through initiatives like the Universities of the Third Age, which provide digital literacy training across municipalities.

Additionally, the Communications Regulatory Authority (RRT) advanced its flagship initiative, ‘No One is Left Behind’, a senior-focused digital literacy campaign under the patronage of the President. In 2024 alone, 46 training sessions were held for 6 100 participants, including 4 600 seniors, with participation from over 150 public and private partners. These initiatives demonstrate strong outreach and inclusion efforts. However, in the absence of new measures or a comprehensive framework, challenges remain in scaling efforts, especially in tracking long-term impact and integrating digital skills development more closely with labour market strategies.

2024 recommendation on digital skills: Continue implementing initiatives to improve digital skills to ensure that no one is left behind.

In 2024, Lithuania continued the implementation of existing measures but did not take any new measure. Lithuania maintained its national digital skills programme, launched in late 2022, which targets vulnerable groups such as older adults, people with disabilities, and low-income populations. Key initiatives like Measure SJ-1, the ‘No One is Left Behind’ campaign, and NGO-led

training efforts continued to support digital inclusion. In parallel, Lithuania launched a preparatory analysis for the National Digital Agenda (expected in 2026), which may lead to future policy enhancements.

ICT specialists

Lithuania is at 5.3% of ICT specialists in total employment (2030 national target: 10%) after a progression of +8.2% in 2024, standing above the EU average of 5.0%. The country was already at 4.9% in 2023, also higher than the EU's 4.8%. Lithuania's annual growth rate clearly outpaced the EU average (+8.2% vs +4.2%), indicating strong momentum in the expansion of its ICT workforce.

However, Lithuania's share of female ICT specialists and the provision of ICT training show more mixed results. In 2023, 20.0% of ICT specialists in Lithuania were women, slightly above the EU's 19.4%. But this share declined to 18.2% in 2024, falling below the EU average of 19.5%. The annual growth rate of -9.0% was significantly lower than the EU's +0.5%, suggesting challenges in retaining or attracting women in ICT careers.

In terms of ICT training, only 13.07% of enterprises with ten or more employees in Lithuania provided such training in 2022, well below the EU average of 22.37%. By 2024, this figure had only marginally increased to 13.24%, still trailing the EU average of 22.29%. Nevertheless, Lithuania's growth rate of +0.6% outpaced the EU's slight decline of -0.2%, indicating some effort to improve in this area.

Overall, while Lithuania performs well in growing its overall ICT workforce, the gender imbalance and limited business investment in ICT training remain key issues to address for inclusive and sustainable digital development.

In term of demand from the labour market, Eurostat experimental statistics based on web scraping show that in Lithuania, the profiles 'software and applications developers and analysts' are the most sought-after, representing 58.3% of online job advertisements for ICT specialists (58.0% at EU level). In addition to this dominant group, 'electronics and telecommunications installers and repairers' are slightly in higher demand in the country than in the EU on average (7.0% vs 6.6%).

Lithuania still aims at reaching the target of 10% of ICT specialists in employment by 2030. To address the growing gap between labour market demand and the supply of qualified ICT workers, the roadmap outlines a mix of long- and medium-term measures. These include investments in vocational education (Measure ST-1), the modernisation of educational infrastructure and technical classroom equipment (ST-2), and support for international student retention and foreign talent attraction. In 2024, Lithuania continued the 'Acquisition of Qualifications and Competences' programme under Measure ST-5, which supports unemployed and employed persons in acquiring high-value-added skills, including in digital fields. By January 2025, over 12 800 people had participated, of whom 11 000 in digital training, and more than 8 400 had successfully completed a qualification.

A major new development was the launch of the Talent Reach 1 programme, implemented by Invest Lithuania, which aims to establish innovative models for recruiting ICT professionals from abroad. The project includes a tested entry algorithm for targeting foreign labour markets, a teleworking marketing campaign, and the design of public-private talent partnerships to be piloted under Talent Reach 2 in 2025. In parallel, Lithuania introduced practical facilitation tools such as a one-off relocation allowance for employers and foreign ICT recruits, and a legal framework that allows professional experience to be recognised in place of formal qualifications, aligning with and going beyond the Blue Card Directive.

Complementary actions target the diaspora, including the [Diaspora-Friendly Employer Badge](#), grants for diaspora-led professional initiatives, and the Diaspora Youth Traineeships. Those traineeships brought 49 high-achieving participants from global universities to Lithuanian companies in 2024. As of late 2024, [36 companies and organisations across Lithuania had joined the Diaspora-Friendly Employer initiative](#), offering remote interviews, relocation assistance, and integration support to attract Lithuanian professionals from abroad. The planned study-work path pilot will also support international student integration into the Lithuanian labour market through employer matchmaking and mentoring schemes.

2024 recommendation on ICT specialists: Continue implementing its efforts to increase the number of ICT specialists.

Lithuania made some efforts to address the recommendation through new policy actions in 2024. Lithuania advanced its existing policy mix to grow the ICT workforce, while also launching the Talent Reach 1 project – a new initiative aimed at attracting highly qualified professionals from foreign markets through innovative recruitment models, teleworking campaigns, and pilot tools for labour market integration. The follow-up programme, Talent Reach 2, is planned for 2025.

No national measure with specific targets, funding, or programming for women in ICT was identified in 2024. Only an NGO-driven initiative that supports gender inclusion: the [‘Women Go Tech’](#) mentoring programme from 2016 to 2021 is mentioned in the roadmap. Further policy action may be needed to bridge this gap.

[Key digital public services and solutions – trusted, user-friendly, and accessible to all](#)

For digital public services for citizens, Lithuania scored 87.86 in 2024 (2030 national target: 100), after a modest increase of +1.3%, above the EU average of 82.32. The country is on track according to its national trajectory. The country also outperformed the EU in 2023, with a score of 86.7 compared to the EU’s 79.44. However, Lithuania’s growth rate in 2024 (+1.3%) was significantly lower than the EU’s (3.6%). A similar trend is seen in cross-border digital public services for citizens, where Lithuania scored 80.13 in 2024, higher than the EU average of 71.28. Yet the country experienced a negative growth rate of -3.5%, while the EU improved by +4.3%.

For digital public services for businesses, Lithuania reached a score of 92.5 in 2024 (2030 national target: 100), after a decline of -3.6%, still well above the EU average of 86.23. The country is on track according to its national trajectory. In 2023, Lithuania’s score was 95.94, again outperforming the EU (85.42). However, the decline in 2024 contrasts with the EU’s positive growth of 0.9%. The same pattern can be observed in cross-border digital public services for businesses, where Lithuania scored 85.0 in 2024 (vs 73.76 in the EU), but with a steep drop of -7.5% compared to the EU’s +0.9%.

Regarding access to e-health records, Lithuania maintained a high score of 95.42 in both 2023 and 2024, significantly above the EU’s 79.12 and 82.43, respectively. The country is on track according to its national trajectory. Nevertheless, Lithuania showed no growth in this area, whereas the EU improved by +4.2%.

[e-ID](#)

In 2023, 66.80% of Lithuanian people have used their eID to access online services for private purpose in the last 12 months, which is above the EU average (41.11%).

Lithuania offers multiple eID solutions, including a state-issued ID card (EU-notified under the eIDAS Regulation), and private methods like Mobile ID, Smart-ID, and bank logins. However, only the ID card

currently supports cross-border recognition, limiting seamless access to EU e-services. To improve performance, the eID module is being technically separated from the national e-Government portal, enhancing efficiency and security. Lithuania is preparing for the rollout of the European Digital Identity Wallet (EUDI Wallet) and is actively participating in the ATPITUDE large-scale pilot, which will support its implementation. Challenges persist, especially for socially vulnerable groups and users with non-Latin characters in their names, who face issues when authenticating via eIDAS. Improving accessibility and cross-border usability remain key priorities.

Digitalisation of public services for citizens and businesses

In its roadmap, Lithuania aims at reaching a score of 100 for the digitalisation of public services for citizen and businesses. Lithuania's national digital services portal continues to see high levels of adoption, with over 70 million visits annually, more than 35 million services requested, and over 200,000 services provided through the platform. These figures reflect strong uptake and usage by both citizens and businesses. Efforts to improve accessibility include the introduction of a mobile application and a new digital services catalogue. While overall engagement is high, challenges remain in reaching specific groups – particularly socially vulnerable populations – who may require targeted awareness and digital skills support to fully benefit from online public services. A new project launched in October 2024 aims to improve citizens' ability to use digital solutions and increase take-up of e-services, with a focus on remote, older, unemployed, and disabled populations. It is implemented by the State Digital Solutions Agency (VSSA) in partnership with 'Langas į ateitį' and the Lithuanian National Library and will run until April 2026.

Reducing administrative burden is also a policy priority. Lithuania is investing EUR 17.6 million into a unified public sector data management model to enable interoperable systems and 'only-once' principles. This reform is expected to save 17 000 person-hours per year and EUR 110 million by allowing better data sharing between institutions. The e-Government Portal (epaslaugos.lt) now groups services by life cases, supports electronic signatures, and is being modernised to improve navigation and accessibility.

On sovereignty and infrastructure, Lithuania has adopted a hybrid cloud model. Critical state information must be stored in national public data centres, with backups in foreign facilities. Non-critical data can be held in private clouds but must also be mirrored in public infrastructure. This model ensures resilience while supporting flexibility and compliance with EU standards.

e-Health

In its roadmap, Lithuania aims at reaching a score of 100 for the access to medical records, in line with the 2030 EU target. With a current high score, this objective appears realistic, with a total budget of 115.59 million dedicated to improving the quality and accessibility of healthcare services and to implement the Digital Health System Development Action Plan for 2023-2027. However, no notable progress was recorded in 2024, suggesting the need for further action. Strengthening the integration of medical imaging, expanding access to mental health and maternal health records, and increasing public awareness of the e-health portal could help accelerate progress.

According to the 2025 Eurobarometer, 81% of Lithuanians think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) during their daily life by 2030.

Building a safe and human centric digital environment and preserving our democracy

In Lithuania, online participation in political and civic life is rising faster than the EU average. In 2024, 20.17% of people used the internet to participate in consultation, or for voting or sharing opinions online. This share is around the EU average and trending upward (16.44% in 2022), as of the trend observed at the EU level (17.59% in 2022 and 20.45% in 2024).

Building on this momentum, Lithuania has expanded its use of digital tools to strengthen civic engagement. In 2024, during presidential, EU Parliament, and constitutional referendum elections, the 'Voter's Page' remained a key platform for voters and candidates. A new virtual electoral assistant was launched to provide targeted information throughout the electoral process, with plans to integrate generative AI capabilities. Additionally, electoral commission members were trained using a dedicated digital platform tailored to their roles. These tools enhanced transparency, improved communication with voters, and demonstrated Lithuania's efforts to digitise electoral processes while safeguarding democratic participation.

In 2024, 43.12% of Lithuanians reported encountering untrue or doubtful content online, below the EU average of 49.25%. Despite this relatively low exposure, only 12.92% of those exposed checked the truthfulness of the content. Youth aged 16-24 experienced significantly more exposure (60.54%) than adults (45.10%), but both groups showed low verification rates – 21.67% and 13.47%, respectively. Women (45.73%) reported more exposure than men (40.29%), with similarly low fact-checking engagement. In the same year, 30.04% of individuals came across hostile or degrading messages online (EU average: 33.5%), with young people (46.71%) and women (32.81%) more affected than other groups.

In response, Lithuania has taken initial steps to strengthen resilience. In May 2024, the Government Office and Debunk.org led a national awareness campaign, reaching nearly 2 000 students from 61 schools through lectures and an interactive exam. The public can also access Debunk.org's 'InfoSkydas' course to improve media literacy. The Communications Regulatory Authority (RRT) plans to grant Debunk trusted flagger status and advises schools and libraries on filtering tools to protect minors. However, Lithuania does not plan to develop a national age verification mechanism, instead awaiting the EU-wide solution under the Digital Identity Wallet. While these initiatives show momentum, further scaling and long-term strategy will be needed to reinforce critical thinking and online safety across all segments of the population.

According to the Digital Decade Eurobarometer 2025, Lithuanians strongly think that the action of the public authorities is urgent to protect children online regarding the negative impact of social media on children's mental health (97% of Lithuanians), cyberbullying and online harassment (97%) and to put in place age assurance mechanisms to restrict age-inappropriate content (95%).

Leveraging digital transformation for a smart greening

The green transition is a recognised but still emerging priority in Lithuania's policy agenda. While several national actions address climate and environmental goals, the integration of digital tools to accelerate this transition remains at an early stage.

The Lithuanian population recycles a substantial part of its ICT equipment compared to the EU average. Lithuanian people tend to recycle their laptop and desktop devices (10.03% for laptops and tablets, 13.92% for desktops and 12.78 for mobile phones) more than the EU average (11.31%, 14.66% and 10.93, respectively) but recycle their mobile phones less (7.83%, 10.93% for the EU).

In 2024, 29.86% of people considered energy efficiency important when purchasing ICT devices (EU: 19.35%) and the eco-design of the device was considered important for 18.45%, which is above the EU average (12.04%). However, those two eco-friendly criteria are of less importance to the buyer than the price, the performance, and the design of the ICT device.

Lithuania's roadmap does not yet outline clear digital-green synergies, but several ongoing and upcoming initiatives signal growing momentum toward a smart and sustainable transition. The GreenTech Hub, under the Innovation Agency, is expanding its role in supporting cleantech companies working on digital solutions for decarbonisation – such as smart grids, AI-driven infrastructure, IoT-based waste management, and e-mobility tools – by guiding them to test and adopt EDIH services. Under measure VST-3, by mid-2024, 170 contracts were signed with start-ups developing AI, blockchain, and RPA solutions; some of these projects contribute to sustainability goals, for instance through smart housing management or automation in environmental monitoring.

In parallel, a EUR 54.89 million call launched in 2024 supports industrial enterprises in adopting energy-efficient technologies and green production processes, reinforcing the technological backbone of Lithuania's green transition.

While methodologies to quantify the environmental benefits of digital solutions are still under consideration, these developments highlight a gradual shift toward leveraging digital innovation for climate action.

According to the Digital Decade Eurobarometer 2025, only 59% of Lithuanians consider digital technologies important to help fight climate change, while 78% of Lithuanians think that ensuring that digital technologies serve the green transition should be an important action for public authorities.

2024 recommendation on green and digital: Lithuania should be more ambitious in synergising the digital and green transitions, focusing on the contribution that digital can bring to sustainability, and also leveraging advanced technologies and scaling up successful initiatives, as well as proposing decarbonisation measures and encouraging initiatives in responsible green technologies. - Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs. - Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the

Lithuania

European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

No information available on measures taken to address the recommendation.

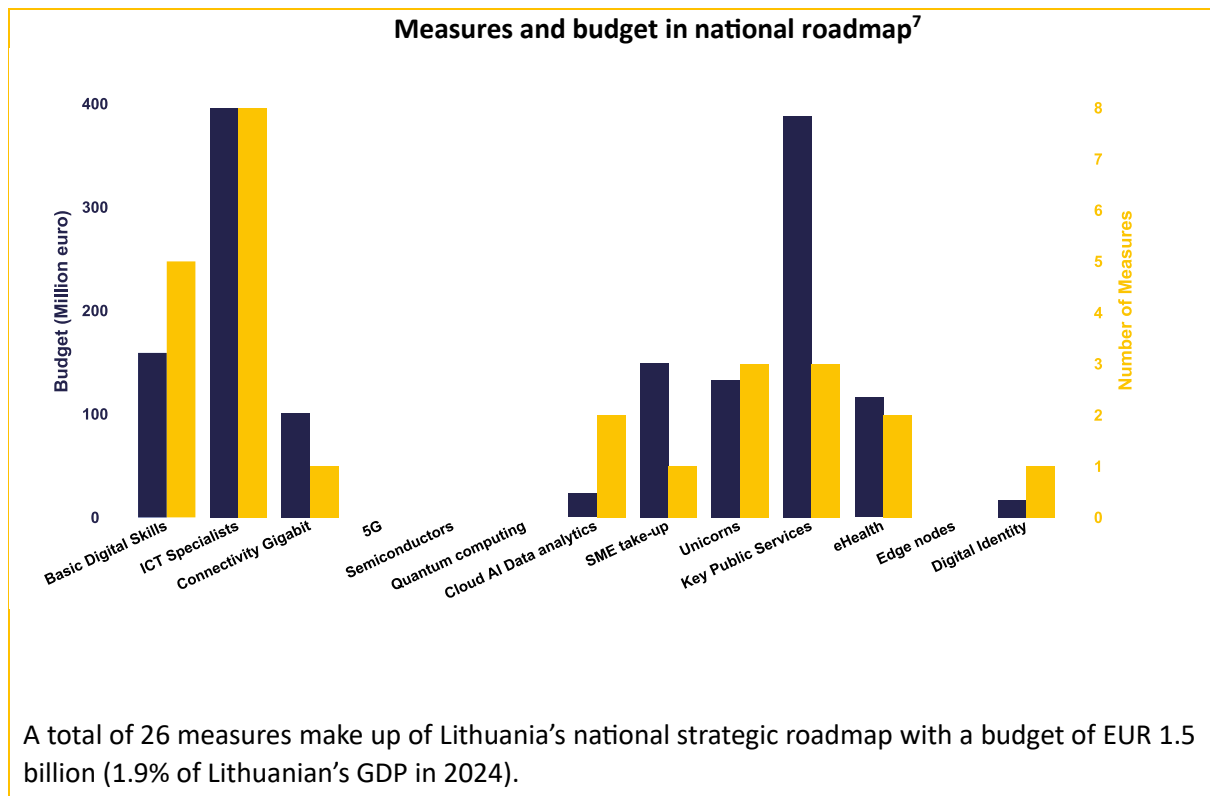
Annex I – National roadmap analysis

Lithuania's national Digital Decade strategic roadmap

Lithuania submitted its initial national Digital Decade roadmap on 13 March 2024. At the time, digital policy lacked centralised coordination, with each ministry responsible for its own domain. In response to challenges identified during roadmap preparation and the 2024 country report, the government adopted a resolution in July 2024 to establish a National Digital Agenda for 2026-2040. This new horizontal strategy aims to centralise governance, align funding, and address gaps in areas such as semiconductors and edge nodes. An in-depth analysis is underway in Q1-Q3 2025 to guide the Agenda's development. **National authorities intend to adjust the roadmap at a later stage.**

There is hence **no information available on measures taken to address the following recommendation issued in 2024:**

- TARGETS: (i) Propose a target and develop a trajectory for edge nodes. (ii) Clarify whether the target and trajectory of the 'Ultra-fast broadband coverage' corresponds to FTTP networks only or if it includes other types of VHCN. If so, please formalise and develop a trajectory for the missing technologies. (iii) Align the level of ambition of target for the number of ICT specialists with the EU target.
- MEASURES: (i) Strengthen or better tailor the measures contributing to targets that are the most difficult to achieve especially as regards skills, ICT specialists, take up of AI and big data analytics; (ii) Propose measures in semiconductors, edge nodes and quantum computing; (iii) Review the budget description of all presented measures, ensuring completeness and accuracy; (iv) Review description of measures to provide information on expected impacts; (v) Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it.
- CONSULTATION: Provide more details on the consultation of stakeholders.



⁷ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Lithuania is a member of the Alliance for Language Technologies EDIC. Lithuania is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

The country has engaged with the Best Practice Accelerator⁸ by its presence to the workshops.

EU funding for digital policies in Lithuania

Lithuania allocates 23% of its total recovery and resilience plan to digital (EUR 724 million)⁹. In addition, under cohesion policy, EUR 280 million (representing 4% of the country's total cohesion policy funding), is dedicated to advancing Lithuania's digital transformation¹⁰. According to JRC estimates, EUR 896 million directly contribute to achieving Digital Decade targets (of which EUR 684 million comes from the RRF and EUR 212 million cohesion policy funding)¹¹.

Lithuania's RRF and Cohesion Fund allocations prioritise digital public services, with major investments in electronic health records and the development of a national e-health architecture. Funding also supports cloud computing, AI, and data analytics for public administration, alongside basic and advanced digital skills training. Connectivity investments focus on extending VHCN and supporting 5G rollout in underserved areas. While key areas like semiconductors and e-ID remain unfunded, the overall strategy reflects a strong emphasis on digital inclusion and public sector transformation, aligned with the national Digital Decade roadmap.

⁸ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

⁹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹⁰ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹¹ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹²



Activity on Digital Rights and Principles (figure 1)

Lithuania has been relatively active in implementing digital rights and principles, with 45 initiatives overall. No information is available on new initiatives launched in 2024. Lithuania is most active in the area of Protection and empowerment of children and young people in the digital environment (V). There is room for improvement, especially with regards to A fair digital environment (III) and A protected, safe and secure digital environment (V) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Lithuania (mainly national government) and how these are perceived by citizens.

The indicators suggest that Lithuania is most successful in implementing commitments related to Putting people at the centre of the digital transformation (I). Lithuania should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Safety, security and empowerment (V).

According to the Special Eurobarometer 'Digital Decade 2025', 52% of citizens in Lithuania think that the EU protects their digital rights well (a 5% decrease since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting basic and advanced digital education, training and skills and getting easy online access to all key public services in the EU (64%, above the EU average of 60% and 58% respectively). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (45%, below the EU average of 48%).

¹² Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
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DIGITAL DECADE 2025 COUNTRY REPORTS

Luxembourg

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Executive summary

Luxembourg continues to position itself as a strategic digital hub, backed by strong infrastructure but facing persistent challenges in SME digital uptake. The country asserts its role as a European frontrunner in digitalisation, notably through targeted investments in frontier technologies such as AI, quantum computing, and sovereign cloud.

Luxembourg shows a high level of ambition in its contribution to the Digital Decade having set 12 national targets, 100% of which are aligned with the EU 2030 targets. The country is following its trajectories well with 75% of them being on track (on the basis of the 2024 trajectories defined for all 8 KPIs analysed). Luxembourg addressed 71% of the 7 recommendations issued by the Commission in 2024, either by implementing significant policy changes (57%) or making some changes (14%) through new measures.

With nearly universal 5G and very high-capacity network (VHCN) coverage, the country sustains a high-performing digital environment. However significant disparities remain in cloud and data analytics adoption, particularly among SMEs. While Luxembourg's startup ecosystem is expanding, it remains constrained by limited access to private venture capital and a modest pipeline of scale-ups progressing toward unicorn status. In 2024, Luxembourg maintained strong performance in digital public services and digital skills, yet persistent gaps remain across age groups, gender, and levels of education. On sustainability, Luxembourg has launched targeted measures, but an integrated green-digital strategy is not yet fully articulated in the revised roadmap. Sovereignty and cybersecurity have emerged as central pillars of Luxembourg's digital strategy, with an increasing focus on sovereign cloud infrastructure, open-source security tools, and cross-border data resilience.

Digital Decade KPI ⁽¹⁾	Luxembourg				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	LU	EU
Fixed Very High Capacity Network (VHCN) coverage	94.7%	95.2%	0.5%	97.5%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	78.9%	81.8%	3.7%	89.0%	69.2%	8.4%	100.0%	-
Overall 5G coverage	99.6%	99.6%	0.0%	97.4%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	10	20	100.0%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	70.3%	3.0%	-	72.9%	2.8%	90.0%	90%
Cloud	32.6%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	14.5%	23.7%	64.2%	40.6%	13.5%	67.2%	75.0%	75%
Data analytics	32.4%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	52.0%	-	-	-	-	-	-	75%
Unicorns	2	2	0.0%	-	286	4.4%	-	500
At least basic digital skills	60.1%	-	-	-	-	-	80.0%	80%
ICT specialists	8.0%	8.0%	0.0%	8.3%	5.0%	4.2%	10.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	94.8	97.7	3.0%	96.7	82.3	3.6%	100.0	100
Digital public services for businesses	96.7	100.0	3.4%	97.9	86.2	0.9%	100.0	100
Access to e-Health records	76.1	76.1	0.0%	75.0	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the 2025 special Eurobarometer on ‘the Digital Decade’ 2025, 80% of Luxembourgish citizens consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 88% consider it important to counter and mitigate the issue of fake news and disinformation online. And on competitiveness, 86% consider it important to ensure that European companies can grow and become ‘European Champions’ able of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Luxembourg’s infrastructure performance remains well above the EU average, with near-universal coverage of VHCN, and 5G thanks to early and well-coordinated public strategies. However, the digitalisation of enterprises –particularly SMEs –lags behind, hindered by high integration costs and limited technical capacity. Despite this, Luxembourg shows leadership in AI and quantum computing, notably through the deployment of MeluXina-AI and its selection for the EU’s AI Factories initiative. The adjusted roadmap includes measures to foster SME adoption of advanced technologies, including generative AI. While the startup ecosystem continues to grow, scale-up financing can rely on a number of public funding schemes but often struggle to access later-stage funding due to the small size of the market and a limited private risk capital culture. Sovereignty and cybersecurity remain central to Luxembourg’s digital strategy, with ongoing efforts to reinforce sovereign cloud capabilities, promote open-source cybersecurity tools through the establishment of an Open Source Program Office (OSPO), and develop a national cybersecurity tools with dedicated sectoral safeguards, including for healthcare.

Protecting and empowering EU people and society

Luxembourg maintains high digital skills levels and has the second highest shares of ICT specialist employment in the EU. However, among people with at least a basic level of digital skills disparities persists between demographic groups, particularly by age and education. The country is a front-runner in digital public services, supported by mature platforms like MyGuichet.lu and centralised government IT architecture. Ongoing efforts focus on reducing administrative complexity and promoting sovereign digital solutions within the public sector, including GovCloud and open-source adoption. Although Luxembourg intends to step up its efforts to improve health data interoperability and availability, it continues to score below the EU average in access to eHealth records.

Leveraging digital transformation for a smart greening

Luxembourg is taking initial steps toward aligning digital and environmental transitions. While not yet underpinned by a fully integrated green-digital strategy, the country promotes a renewables-based and intelligent energy system, supports GovCloud sustainability, and is exploring the role of digital solutions in reducing emissions in mobility and industry. Participation in EU-level initiatives such as the Green Digital Coalition and IPCEI projects positions Luxembourg to further develop tools and metrics to measure and reduce the ICT sector’s carbon footprint.

National Digital Decade strategic roadmap

Luxembourg submitted a fully revised national Digital Decade roadmap on 2 December 2024, containing more than 30 new or edited measures and revised trajectories. The roadmap notably strengthens the focus on SMEs and AI, with new support tools set to be launched in 2025. It addresses a substantial number of roadmap recommendations issued in 2024. A total of 98 measures are now

part of Luxembourg's national strategic roadmap with a budget of EUR 515 million, comprising EUR 488 million from public sector budgets, equivalent to 0.57% of Luxembourg's GDP in 2024.

Funding & projects for digital

Luxembourg allocates 38% of its total recovery and resilience plan to digital (EUR 24 million)¹. In addition, under cohesion policy, EUR 6 million, representing 15% of the country's total Cohesion policy funding, is dedicated to advancing Luxembourg's digital transformation². Luxembourg is a member of the three established EDICs; the Alliance for Language Technologies EDIC, the Local Digital Twins towards the CitiVERSE EDIC and of the EUROPEUM EDIC. Luxembourgish entities are indirect partners in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Luxembourg is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

The country has contributed to the Best Practice Accelerator³ by sharing three best practices. Two of them are part of the Digital Skills cluster: the Girls in ICT Day national awareness action and Girls Deploy your Digital Talent. One has been shared in the Green IT Cluster: the Creation and promotion of Product Circularity Data Sheet (PCDS).

Digital Rights and Principles

According to a support study, Luxembourg has been one of the most active Member States in implementing the [European Declaration on Digital Rights and Principles](#), with over 100 initiatives overall and 20 new initiatives launched in 2024. Luxembourg is most active in the area of digital education, training and skills. Less activity has been identified with regards to a fair digital environment. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing sustainability.

Recommendations

- **Digital Skills:** Scale up targeted programs to reach older citizens, women, and populations with lower education background.
- **SMEs:** Further support the uptake of advanced digital technologies (cloud, AI, data) by SMEs, who currently lag significantly behind larger enterprises.
- **Cybersecurity:** Continue efforts in cybersecurity to address evolving threats, particularly regarding employees' awareness.
- **Green:** Adopt an integrated green-digital strategy with measurable targets, leveraging EU tools to scale up low-carbon digital solutions, especially for SMEs, and implement a national framework to monitor ICT-enabled emission reductions across key sectors like energy, transport, and industry.
- **FTTP:** Explore targeted measures to increase take-up and extend coverage of FTTP in remaining underserved areas, ensuring that high-speed connectivity is accessible to all households.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

- **Unicorns:** Strengthen the growth pipeline for scale-ups by facilitating greater access to private venture capital.

A competitive, sovereign and resilient EU based on technological leadership

Luxembourg is asserting itself as a strategic contributor to the Digital Decade by capitalising on its strong infrastructure, and targeted investments in emerging technologies such as AI, quantum technologies, and sovereign cloud. While its small size limits its capacity for achieving industrial scale, Luxembourg leverages its strengths as a highly connected and trusted environment to conduct a certain number of best practices and contribute to EU-wide digital resilience and innovation. The country's near-universal 5G and very high-capacity network (VHCN) coverage contributes to a robust environment for digital innovation. This ecosystem supports advanced initiatives such as the deployment of [MeluXina-AI](#), a EUR 126 million supercomputer optimised for artificial intelligence, as well as the new associated Luxembourg AI Factory. According to the 2025 Eurobarometer⁴, 87% of Luxembourgish people think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

While labour productivity is among the highest in the EU, Luxembourg continues to face structural challenges in productivity growth. This is largely due to limited private investment in R&D and intangible assets, which constrains innovation-driven efficiency gains. Start-ups can rely on a number of public funding schemes but often struggle to access later-stage funding due to the small size of the market and a limited private risk capital culture.

To address these issues, the start-up ecosystem can rely on existing instruments such as the Digital Tech Fund (DTF) and [Luxembourg Future Fund II](#). Such instruments have been complemented by new initiatives such as the [10-point action plan](#) of March 2025, to further bolster start-ups, with EUR 300 million over the next five years. It introduces targeted tax credits for investments in young innovative firms, co-financing of up to EUR 200 000 for spin-offs, and enhanced employee stock option schemes to support scale-up growth. In addition to improving access to financing, the action plan aims to attract international talent, aligned with the 'From Seed to Scale' roadmap, and related initiatives. These include the launch of the Automobility Incubator in Bissen (December 2024), and a national scale-up programme. The Luxembourg Venture Days 2024 also attracted over 1 800 participants and more than 200 investors, reflecting growing ecosystem visibility.

While the startup ecosystem expands, SMEs still encounter significant barriers to digital adoption and AI integration. High entry costs, lack of technical capacity, and limited data interoperability are cited as major obstacles. To address this, Luxembourg launched [Fit 4 Digital – AI](#) in early 2025, with seven consultants already accredited and assisting SMEs with creating tailored digital transformation plans. The Ministry of the Economy also launched dedicated '[SME Packages](#)' for cybersecurity and AI in March 2025, to help SMEs implement practical AI solutions and strengthen their resilience against cyber threats through easy-to-access support covering up to 70% of eligible costs.

⁴ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Building technological leadership: digital infrastructure and technologies

Luxembourg is a frontrunner in digital infrastructure deployment, with fibre and 5G networks already nearing full national coverage and significantly outperforming EU averages, though recent growth rates indicate a need to accelerate efforts to reach the target by 2030.

Connectivity infrastructure

Luxembourg's VHCN coverage for all households is significantly higher than the EU average. In 2024, it reached 95.2%, while the EU's coverage was 82.49%. The country is on track according to its national trajectory. However, Luxembourg's growth rate of 0.5% lagged behind the EU's 4.9%. For households in sparsely populated areas, Luxembourg's coverage was 80.3% in 2023 and 82.8% in 2024, both higher than the respective EU average of 55.59% and 61.89%. Luxembourg's growth rate of 3.1% was lower than the EU's 11.3%.

Luxembourg is at 81.80% of FTTP coverage after a progression of 3.7% in 2024 and stands above the EU average of 69.24%. However, the growth rate was lower than the EU's 8.4% and the country is lagging behind compared to its national trajectory. For households in sparsely populated areas, Luxembourg's coverage was 61.9% in 2023 and 68.0% in 2024, both higher than the respective EU averages of 52.55% and 58.78%. At 9.9%, Luxembourg's growth rate was lower than the EU average of 11.9%.

Luxembourg's overall 5G coverage is exceptionally high. In 2024, total 5G coverage in Luxembourg was 99.6%, as in 2023, compared to the EU's 94.35%. The country is on track according to its national trajectory. For households in sparsely populated areas, Luxembourg's coverage was 96.8% in 2024, higher than the EU's 79.57%. Luxembourg's 5G coverage in the 3.4–3.8 GHz band is also above the EU average with 70.6% covered in 2024, while the EU's coverage was 67.72%. Luxembourg's growth rate of 11.9% was significantly lower than the EU's 32.6%. For households in sparsely populated areas, Luxembourg's coverage was 14.1% in 2024, lower than the EU's 26.19%. Regarding 5G spectrum, Luxembourg's assignment of harmonized spectrum in 5G pioneer bands was 60.83% in 2025 (same value as last year), below the EU's 74.63%.

Luxembourg's broadband take-up indicators show a mixed performance compared to the EU average. In 2023, Luxembourg had 78.81% of fixed broadband subscriptions at speeds of 100 Mbps or more, surpassing the EU average of 65.9%. By 2024, this figure rose to 83.11%, still ahead of the EU's 71.88%. However, the growth rate for this indicator in Luxembourg was 5.5%, which is lower than the EU average of 9.1%. Luxembourg's share of fixed broadband subscriptions at speeds of 1 Gbps or more was 9.86% in 2023, below the EU average of 18.47%. In 2024, it increased to 15.14%, still behind the EU's 22.25%. Nevertheless, Luxembourg's growth rate of 53.5% outpaced the EU's 20.5%. The share of the population with 5G SIM cards was 114.71%⁵ in Luxembourg in 2023, significantly higher than the EU average of 21.7%. This figure rose to 135.17% in 2024, also above the EU's 35.56%. However, the growth rate of 17.8% was significantly lower than the EU's 63.9%.

VHCN and FTTP

Luxembourg's VHCN and FTTP targets remain at 100%, as per the initial roadmap submitted in 2023. Given the latest good figures and the continued pace of roll-out, both VHCN target appear realistic.

⁵ Note that the percentage of the population with 5G SIM cards can exceed 100% because people can have more than one SIM card.

However, for FTTP the latest performance, suggests that maintaining momentum will be crucial. As the current Ultra-high-speed broadband strategy is set to conclude in 2025, additional targeted measures may be needed to ensure full completion of the roll-out.

Luxembourg's national strategy for ultra-high-speed broadband (2021–2025) prioritises closing remaining coverage gaps, particularly in white spots. Authorities are closely monitoring deployment progress and evaluating potential market failures to determine whether additional public interventions will be necessary to achieve full FTTP coverage by 2030. For VHCN deployment, the main challenges are geographical — such as difficult topography and remote locations — and economic, particularly in relation to operator investment incentives. Monitoring efforts are coordinated by the Institut Luxembourgeois de Régulation (I.L.R), notably through detailed geographical mapping of VHCN coverage.

The copper network is being progressively phased out, with full migration to fibre expected by 2030. The I.L.R. has coordinated a [public information campaign](#) with telecom operators to ensure a smooth transition. Customers receive advance notice through a two-step letter process, and an online tool allows them to check switch-off impacts based on postal code.

Highlighting Luxembourg's broader shift towards automation and next-generation network management, POST Luxembourg, the country's state-owned telecom and postal operator, has [partnered with Nokia to deploy Europe's first nationwide autonomous fibre network](#). The full transition to a software-defined access network is planned by the end of 2025. The aim is to increase operational efficiency, enable real-time fault detection, support energy management, and accelerate service innovation.

To boost take-up of fixed connectivity, Luxembourg launched a voucher scheme in 2023 targeting beneficiaries of social aid. In 2024, approximately 24 000 vouchers were issued, of which around 43% (10 200) were activated – an increase from 40% in 2023. The initiative has been extended into 2025 and aligns with Luxembourg's commitment to ensure universal and affordable high-speed digital connectivity under the European Declaration on Digital Rights and Principles.

Regarding spectrum policy, a [public consultation on key bands](#) (800 MHz, 900 MHz, 1 800 MHz, 2.6 GHz) ran from April to July 2024. It was open to all stakeholders and is currently under evaluation by the I.L.R. For now, **no new spectrum policy framework or regulatory changes** are envisaged.

5G

Following the roadmap adjustment, Luxembourg's 5G target remains at 100% with a completion date by 2030, as per the initial roadmap submitted in 2023. Given the latest solid figures and pace of roll-out, the target seems realistic.

Luxembourg continues to address the remaining challenges to achieving 100% 5G coverage by 2030, notably the difficulties faced in remote or topographically difficult areas and the high deployment costs for operators. Monitoring is ensured by the I.L.R through detailed regular 5G coverage reports.

Due to the country's small market size and limited number of infrastructure players, implementing certain [EU toolbox for 5G security](#) measures, like multi-vendor strategies, remains complex. Nevertheless, all national mobile networks deliver excellent non-HRV (high-risk vendors) connectivity and the [Comité national des communications](#) remains committed to liaising with them in order to push them to a higher level of resilience across all of their networks.

In 2024, the 5G MELUSINA initiative completed its inception study for cross-border rail coverage of the North Sea Mediterranean TEN-T corridor between Metz (France) and Luxembourg City (Luxembourg), with a strong interest by national actors' in moving toward implementation to enhance rail connectivity and operations.

2024 recommendation on connectivity infrastructure: Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

In 2024, Luxembourg continued the implementation of existing measures but did not take any new measures. A [public consultation on spectrum access](#) (800 MHz, 900 MHz, 1800 MHz, 2.6 GHz) was held between April and July 2024, open to all stakeholders. However, no new spectrum policy framework or regulatory changes are foreseen at this stage. The consultation notably showed that there is still no commercial demand for the 26 GHz band. Regarding 5G standalone, there is no evidence of nationwide deployment by operators. Nonetheless, Luxembourg is supporting innovative use cases through the 5G MELUSINA project, which aims to deploy 5G along cross-border railway for enhanced connectivity. Further actions are needed to facilitate access for new players and accelerate standalone 5G core deployment.

Semiconductors

Luxembourg does not have a national semiconductor production strategy but supports EU objectives by contributing to niche areas of the value chain. The country currently hosts two companies active in semiconductor-related fields, notably in materials and coating technologies, and aims to increase this to four by 2030. No new measures were introduced in the 2024 roadmap, and support continues through monitoring and targeted RD&I funding.

Edge nodes

According to the Edge Nodes Observatory, Luxembourg is estimated to have deployed a total of 20 edge nodes by 2024, a progression of +100% since 2023. This is double the amount estimated for 2023 (10, number revised since SDDR 2024).

In its revised roadmap, Luxembourg did not provide a national target for edge nodes but continues to monitor the work on the definition of a methodology for the KPI assessment. The revised roadmap introduces additional details for the related existing measures. In 2024, Luxembourg advanced its edge-node deployment by preparing the publication of a full open-source technology and governance stack, including APIs, user management systems, contracts, and governance models. This work, scheduled for release between 2025 and 2026, aims to lower investment barriers and facilitate the large-scale roll-out of secure private, semi-public, and public edge nodes. Progress was also made under the Important Project of Common European Interest for Next-Generation Cloud Infrastructure and Services (IPCEI-CIS), with Luxembourg developing two cybersecurity-focused edge nodes for the European cybersecurity data space. Looking ahead, Luxembourg will launch sector-specific R&D&I calls aligned with GAIA-X standards to drive uptake in strategic sectors such as health, finance, and mobility. These measures, alongside continuous open-source publication efforts, are set to accelerate trusted edge-cloud deployment and strengthen cross-border interoperability through to 2030.

Quantum technologies

Luxembourg's national quantum strategy, by the beginning of 2025, focuses on integrating quantum technologies into its high-performance computing ecosystem and on developing a national quantum communication. Following a call launched by the EuroHPC Joint Undertaking in December 2023, Luxembourg was selected in 2024 to host a European quantum computer, which will be integrated with the national MeluXina supercomputer. In line with this strategic vision, the country also plans to deploy a quantum simulator connected to MeluXina.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Luxembourg hosts a dynamic ecosystem of startups and scaleups, particularly in sectors such as fintech, healthtech, cleantech, and cybersecurity. However, a large share of enterprises – especially SMEs – still lag behind in adopting advanced digital technologies. Strengthening the diffusion of ICT capabilities across all firms, notably through tailored support for SMEs, would address structural bottlenecks in digital uptake and unlock productivity gains critical for sustaining inclusive economic growth.

SMEs with at least basic digital intensity

As of 2024, 70.27% of SMEs in Luxembourg reached at least a basic level of digital intensity, up from 66.25% in 2022⁶, with an annual growth rate of 3.0%. Therefore, the degree of digital intensity of Luxembourgish SMEs was just below the EU average of 72.91%. Looking specifically at more digitally engaged SMEs, 34.02% had high or very high digital intensity, slightly exceeding the EU average of 32.66%. This indicates a relatively good level of digital engagement by SMEs in Luxembourg, though with room for further improvement to reach the EU averages and the Digital Decade target.

Luxembourg still aims for 90% of SMEs to have basic digital intensity, in line with the EU target for 2030. However, given current levels and uptake trends, this objective might be difficult to achieve, due to persistent uptake challenges, especially among the smallest firms. Structural barriers – such as limited internal capacity, cost sensitivity, and a lack of familiarity with advanced technologies – continue to hold back many SMEs. To address this, the revised roadmap introduces two major new SME-specific measures in the section related to the take-up of advanced technologies. [Fit 4 Digital – AI](#) supports SMEs in identifying relevant AI use cases, conducting feasibility studies, and drafting tailored implementation roadmaps. Several consultants, accredited by Luxinnovation, are already working directly with SMEs under this programme, and public co-funding is available to support implementation. The new [SME Packages focusing on AI and cybersecurity](#) extends existing aid schemes by providing financial support for concrete investments in AI and cybersecurity tools.

These measures complement existing tools such as [Fit 4 Digital](#), which offers digital maturity assessments and co-funding for improvements in IT, cybersecurity, and software; and [Fit 4 Innovation](#), which covers consultancy costs for operational audits to help SMEs redirect resources towards innovation. However, one persistent barrier remains: the fixed EUR 15 000 cost of a full operational audit under Fit 4 Innovation, which – despite public co-funding of 50% – can discourage smaller companies from participating. To address this, the government launched a [reform of the Fit 4 programmes](#) in 2024 to increase accessibility, improve promotion, and highlight successful use cases to build trust and engagement. Additional support tools include the [SME Packages – Digital](#) (supporting

⁶ 2022 is the last comparable year that used a similar methodology for measuring the digital intensity of enterprises.

Luxembourg

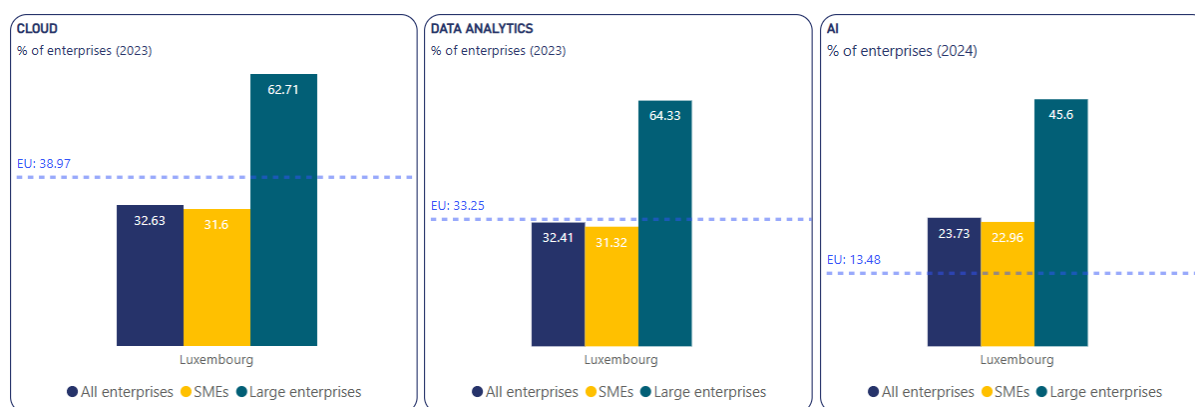
digital marketing, business management tools, and e-invoicing, with guidance from certified advisors) and the continued operation of the [Letzshop.lu](https://www.letzshop.lu) platform, helping local retailers establish an online presence. Luxembourg is also developing an Open Cybersecurity Dataspace and open-source cybersecurity services to give SMEs access to secure, low-cost tools and data environments.

2024 recommendation on digitalisation of SMEs: Aim to reach the 2030 target by adopting further measures, when necessary, to convince less digitalised SMEs to engage in a digital transition to boost their growth.

Luxembourg addressed fully the recommendation by putting significant policy actions into place in 2024. The country notably launched new major SME-focused measures and initiated programme reforms to lower access barriers. While these actions show strong commitment, continued attention will be needed to engage less digitalised SMEs and accelerate progress towards the 2030 target.

In 2024, Luxembourg's **European Digital Innovation Hub L-DIH** continued supporting the digital transformation of the manufacturing sector, notably through AI and cybersecurity. It offers a combination of 'test before invest' services, training, and digital maturity assessments. Through a structured three-level approach – including awareness-raising Tech Talks, hands-on Tech Test workshops, and tailor-made support – [manufacturing SMEs can trial digital solutions](#) like AI, IoT, and augmented reality before investing, with co-financing options available to lower barriers and reduce the risks associated with adoption.

Take up of cloud/AI/data analytics



The latest available data shows that in 2024, 23.73% of enterprises in Luxembourg were using AI technology, significantly above the EU average of 13.48%. While this is an impressive 74.19% increase from 2023, when AI adoption was 14.45%, the country lags behind its national trajectory (40.63%). More specifically, 22.96% of SMEs in Luxembourg integrated AI solutions, whereas large enterprises had a higher uptake rate of 45.6%. This resulted in a 22.64 percentage point gap between SMEs and large enterprises, which was narrower than the EU-level gap of 28.53 percentage points. While Luxembourg demonstrates strong AI adoption compared to the EU, closing the adoption gap between SMEs and large enterprises remains crucial to ensuring widespread digital transformation.

Adoption of cloud, data analytics, and the three technologies together were not measured in 2024.

The latest available data shows that in 2023 cloud uptake in Luxembourg was 32.63%, falling short of the EU average of 38.97%. More specifically, among SMEs, the adoption rate was 31.6%, while that

of large enterprises was almost double (62.71%) used cloud services. This resulted in a difference of 31.11 percentage points in uptake between SMEs and large enterprises in Luxembourg, which was consistent with the EU-level gap.

In 2023, 32.41% of enterprises in Luxembourg performed data analytics, slightly lower than the EU average of 33.25%. Among these, SMEs had an adoption rate of 31.32%, while the percentage for large enterprises was significantly higher at 64.33%. This indicates a gap of 33.01 percentage points between SMEs and large enterprises, which is lower than the EU average gap of 39.72 percentage points.

According to the latest available data (2023), over 1 out of 2 enterprises (52.01%) in Luxembourg engaged with AI technologies, sophisticated or intermediate cloud computing services, or data analytics, just below the EU level uptake of 54.7%. More specifically, the uptake among SMEs was slightly lower at 50.96%, while large enterprises had a notably higher rate of 82.84%. This indicates a percentage point difference of 31.88 in uptake between SMEs and large enterprises in Luxembourg.

In conclusion the rate of adoption of cloud computing, data analytics, and AI technologies in Luxembourg was mixed compared to the EU averages, with particularly strong uptake of AI but slightly lower uptake of cloud services and data analytics. A significant disparity in technology adoption was observed between SMEs and large enterprises, with the latter exhibiting much higher uptake rates across all three technologies. Despite SMEs constituting most enterprises with 10 or more employees (95.6%) and contributing a larger share of the country's economic value added than large enterprises (44.3% vs 40.7%), their comparatively lower adoption rates indicate untapped potential for digital transformation. Bridging this adoption gap is vital for enhancing the overall digital maturity of Luxembourg's economy and sustaining its competitive edge within the EU.

In its adjusted roadmap, Luxembourg maintained its ambition for 2030, namely a 75% adoption rate of technologies by enterprises by 2030, in line with the EU target. While the ambition remains high, current uptake levels are significantly below target – particularly for cloud services, where adoption by businesses remains limited. The roadmap outlines a gradual acceleration starting from 2024, particularly for cloud services, once national platforms and SME-oriented applications are in place, and for AI, driven by the launch of Fit 4 Digital – AI and improved SME packages. These initiatives aim to lower barriers through feasibility studies, co-funding, and targeted outreach. However, given the slow uptake to date and the resource constraints of many SMEs, sustained effort and close monitoring will be needed to ensure the planned acceleration materialises and to avoid a last-minute push closer to 2030.

- [Cloud](#)

Luxembourg's target for Cloud uptake by enterprises remains at 75% by 2030. It is in line with the EU target. The updated roadmap confirms that while first implementation steps will begin in 2024, the significant impact on SME cloud adoption is only expected in the second half of the decade. By 2025, Luxembourg cloud providers will launch the first services adapted to national needs, including accounting, ERP, and tax tools. These applications will be designed for interoperability with government APIs and will ensure data portability. In parallel, the SME Packages have been extended to cover cloud and cybersecurity OPEX by the end of 2024. These foundational measures, while already outlined in earlier plans, are now entering an operational phase, with take-up expected to accelerate markedly from 2026 onwards.

On 4 February 2025, the CLAUSEN project – linked to the IPCEI-CIS – was formally launched by two ministers. It will implement an Open Cybersecurity Dataspace and set up a national Open Source

Promotion Office (OSPO). These structures will promote open-source tools developed by the Computer Incident Response Center Luxembourg (CIRCL) and the NC3 Cybersecurity Competence Center and facilitate access to trusted cloud and edge services beyond the direct IPCEI participants, including to SMEs. In addition, Luxembourg contributes to the IPCEI-CIS with open-source tools for Security operations centre (SOC) and Computer Security Incident Response Team (CSIRT) functions and technologies that preserve privacy and trade secrets, capable of running on edge nodes.

- [Data Analytics](#)

Luxembourg's target for Data Analytics take-up by enterprises remains at 75%. It is in line with the EU target by 2030. While no new standalone new measure for big data was introduced in the revised roadmap, the strategy to integrate it with SME cloud onboarding reflects a horizontal approach aimed at scaling analytics adoption through digital infrastructure investment.

- [Artificial Intelligence](#)

Luxembourg's target for Artificial Intelligence take-up by enterprises remains at 75%. It is in line with the EU target by 2030.

The adjusted roadmap introduces two new targeted measures to support AI adoption, especially among SMEs (see section above). The first one is [Fit 4 Digital – AI](#), launched in February 2025, which helps SMEs identify AI use cases, conduct feasibility studies, and develop tailored roadmaps. The second one is the newly introduced [SME Packages – AI](#), a financial support scheme aimed at co-funding concrete investments in AI tools and services, bundled under State aid rules. These two instruments are strategically coordinated to facilitate the implementation of the action plans emerging from the diagnostic phase. It builds on existing programmes and addresses key barriers such as cost, expertise, and technical readiness. While the policy shift is notable and well-aligned with the 2030 target, the adequacy of the approach will depend on sustained outreach, accessibility for smaller enterprises, and visible success stories to build trust and confidence in AI use.

A major milestone was reached in late 2024 with Luxembourg being selected to host one of the European 'AI Factories'. This will significantly accelerate the country's AI ambitions through the deployment of MeluXina-AI – a supercomputer optimised for artificial intelligence – and the creation of a dedicated AI Factory to drive innovation and application development in the years ahead.

The 2025 Eurobarometer shows that 85% of Luxembourgish people think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values. It represents a big increase of 9 percentage points compared to last year, reflecting the growing interest of the citizens at this respect.

2024 recommendation on AI and Data Analytics: Consider further awareness-raising measures and/or training directed at SMEs to adopt AI and data analytics as means to boost competitiveness.

Luxembourg addressed fully the recommendation by putting significant policy actions into place in 2024. The country added two major new measures in its adjusted roadmap to support the adoption of AI by enterprises, strengthening SME capacity to adopt AI technologies competitively (described above).

On data analytics, no information is available on measures taken to address the recommendation.

At the beginning of 2025, Luxembourg had two unicorns - the same number as the previous year. Luxembourg has not set a national target for unicorns, acknowledging that its small market size and its role as a testbed for innovation make such forecasting particularly challenging. Many startups launched in Luxembourg scale their operations in larger EU markets, limiting the likelihood of unicorns emerging locally.

Although, Luxembourg did not introduce new measures in the revised roadmap it advanced on a number of existing policy actions, reinforcing their implementation and impact. The flagship [Fit 4 Start](#) acceleration programme, launched in 2015 and running in its 14th edition in 2024, remains a cornerstone of early-stage start-up support. It provides coaching and grant funding of up to EUR 150 000 for start-ups in digital technologies, healthtech, and space. In 2024, the programme received 429 applications from across the globe, reflecting its growing international visibility.

The country continued to implement ‘[From Seed to Scale](#)’ its strategic framework to boost the national scale-up ecosystem. Rather than duplicating existing support mechanisms like Fit 4 Start, this roadmap focuses on the next growth phase – helping high-potential start-ups become scale-ups and eventually global players. Key actions launched under ‘From Seed to Scale’ in 2024 include the [Scaleup pilot programme](#), which supports companies with a strong team, proven traction, and international ambitions. Three Luxembourg-based firms were selected in the pilot’s first round. The roadmap also guided the launch of the [Automobility Incubator](#) in Bissen, a dedicated facility designed for innovative mobility companies, offering 2 500 m² of R&D and co-working space.

Furthermore, the roadmap supports the [Luxembourg Venture Days](#), a major matchmaking event for start-ups, scale-ups, and investors. In 2024, the event gathered over 1 800 participants and more than 200 investors, underlining Luxembourg’s emergence as a venture capital-friendly environment. Complementary instruments like the [Digital Tech Fund](#) (DTF), with nearly EUR 40 million in seed funding, and the [Luxembourg Future Fund II](#) further improve access to financing in strategic sectors such as fintech, cybersecurity, and space. In 2024, the DTF provided funding for 17 investments. The financed companies employ around 500 people in strategic sectors. However, limited market size, challenges in talent attraction, and high living costs continue to act as structural barriers to scaling locally. To address this, Luxembourg simplified access to public support in 2024 by standardising the Fit 4 programme family, while maintaining central roles for [Luxinnovation](#) and the [L-DIH](#) in guiding companies through digital and innovation funding opportunities. The national ecosystem now includes over 500 start-ups, with international visibility enhanced through platforms like [Startup Luxembourg](#) and events such as the Luxembourg Venture Days. Altogether, this coordinated policy mix is steadily reinforcing the country’s profile as a dynamic and investor-ready innovation hub in Europe.

Strengthening Cybersecurity & Resilience

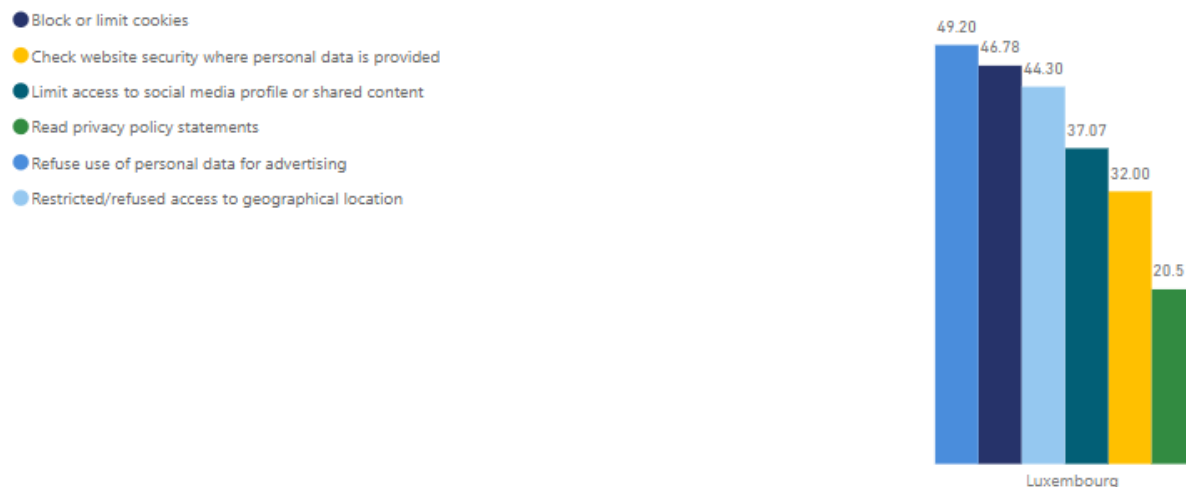
In Luxembourg, 3 out of 4 (75.49%) people took at least one action to protect their data online, exceeding the EU average of 69.55% ⁷. More specifically, 44.16% took three or more actions (deeming them as having above basic digital safety skills). Refusing the use of personal data for advertising was

⁷ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

Luxembourg

the most common measure (49.2%), while reading privacy policy statements was the least frequent (20.51%).

Type of activities to protect personal data online (% of individuals)



Luxembourgish enterprises tend to experience less incidents related to cyberattacks, but employees are less aware of their ICT security related obligations compared to the EU average. The number of enterprises that experienced ICT security incidents leading to unavailability of ICT services due to attack from outside (e.g. ransomware attacks, denial of service attacks) dropped slightly from 4.34% in 2022 to 3.34% in 2024 thus falling below the European average (3.43%). In addition, Luxembourgish enterprises are less prone to incidents related to hardware or software failures (13.01%) than their EU peers (17.97%). In terms of measures, 86.80% of enterprises deployed some ICT security measures (below the EU average of 92.76%) and only 54.12% made their employees aware of their obligations in ICT security related issues, below the EU average (59.97%).

Luxembourg is among the EU leaders in the roll-out of the secure Internet Protocol version 6 (IPv6) for end users. Concerning the deployment of secure internet standards, Luxembourg is performing well in the roll-out of IPv6 for end users (40%, vs an EU average of 36%) and is slightly above the EU average on the server side (24%, vs an EU average of 17%). IPv6 is an important protocol as it ensures the scalability, stability, and security of the Internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have been long depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out as it introduces security features to DNS. In Luxembourg, the DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology) is 83% (Q3 2024), well above the EU average of 47%.

According to the Digital Decade Eurobarometer 2025, 87% of Luxembourgish citizens think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies.

Luxembourg's cybersecurity strategy takes a multi-layered, sector-specific approach, combining regulatory alignment, institutional capacity building, and public-private collaboration. For SMEs, the strategy relies on awareness-raising campaigns and practical tools such as the [SME Packages – Cybersecurity](#), launched in March 2025, to offer subsidised access to secure digital tools. These

packages are deployed in cooperation with the House of Entrepreneurship, the Chambre des Métiers, and the Luxembourg House of Cybersecurity (LHC), and are complemented by events such as the 'Future Ready Days' focused on AI and cybersecurity.

On 4 February 2025, the '[CLAUSEN](#)' project, led by the Luxembourg House of Cybersecurity (LHC), was officially launched with two ministers signing the contract. The project will now begin to implement the Open Cybersecurity Dataspace and establishing the Open Source Promotion Office (OSPO), both set to be operational in 2025. The OSPO will promote open-source tools developed by LHC entities CIRCL and NC3 Cybersecurity Competence Centre and will also play a key role in the European Cybersecurity AI Factory coordinated by the LHC.

In the healthcare sector, Luxembourg's strategy prioritises alignment with the GDPR, the upcoming European Health Data Space (EHDS) regulation, and the requirements of the NIS2 Directive, whose national transposition is currently underway. This is complemented by strong incident response systems, high-end authentication, encryption of sensitive data, and systematic audits. Collaboration with cybersecurity entities helps healthcare institutions remain updated on evolving threats. The effectiveness of these actions will be measured through indicators such as reduced incident frequency, faster response times, and improved compliance and staff awareness.

On the skills and awareness front, initiatives range from expert training to public campaigns. The national [BEE SECURE](#) programme – highlighted as a best practice in last year's Digital Decade report – continues to provide cyber awareness trainings, activities and resources for children, families, and educators. For professionals, cybersecurity skills are developed through programmes embedded in national digital upskilling strategies and partnerships led by the LHC.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Luxembourg approaches digitalisation with a strong emphasis on inclusiveness, targeting persistent divides in gender, age, education, and socio-economic background. Although the country performs above the EU average in digital skills overall, disparities remain – most notably between men and women, and between higher- and lower-educated individuals. In response, the revised roadmap includes expanded partnerships with civil society, tailored digital literacy programmes, and new tools for different learning contexts. The labour market benefits from the Skillsbridges initiative and targeted actions to attract more women into ICT careers, yet the stagnation in ICT specialist growth and declining share of women in tech highlight persisting challenges. Luxembourg is expanding the accessibility of public services through measures such as the new Digital Mandate and a redesigned Guichet.lu interface, structured around life events, simplified language, and inclusive access tools. Luxembourg also maintains a strong focus on child protection and online safety through structured initiatives such as BEE SECURE. While civic engagement online is not explicitly addressed, the country's efforts towards digital equity put in a good position to ensure that the benefits of digitalisation are shared across all societal groups. Moreover, according to the 2025 Eurobarometer, 84% of Luxembourgish people think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 74% consider it would improve their daily use of digital technologies, and 91% think public authorities should consider it important to ensure that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services.

Equipping people with digital skills

Basic Digital Skills

In 2023, Luxembourg stood above the EU average, with 60.14% of its population proficient in basic digital skills. Without updated data for 2024, analysing different demographics offers valuable information.

- **Gender Gap:** Luxembourg has a notable gender gap with 63.60% of men and 56.56% of women having basic digital skills, creating a 7.04 percentage point disparity. This gap is significantly larger than the EU average (2.23pp), pointing to scope for improvement.
- **Education Level:** The correlation between education and digital skills is clear in Luxembourg. For those with higher education, the proficiency rate stands at 79.68%, on par with the EU average (79.83%). Those with no or low formal education have a much lower proficiency rate at 31.70%, with a gap of 28.44 percentage points from the national average, which is wider than the EU average gap (21.95pp).
- **Living Areas:** Residents in towns and suburbs of Luxembourg have the lowest levels of basic digital skills at 56.42%, still above the EU average for those areas. The gap between these residents and the national average is 3.72 percentage points, which is marginally higher than the EU average, the country being quite homogeneous in this dimension

Luxembourg

- **Age Groups:** Interestingly 35-44-year-olds are the most digitally skilled age group in Luxembourg, with a 70.80% proficiency rate, surpassing the EU average (65.26%). The youngest (16-24-year-olds) have a 59.66% proficiency rate and are lagging behind the EU average for this age group (69.98%). The least skilled are the 65-74-year-olds at 39.26%, but this group is above the EU average for their age cohort (28.19%).
- **Digital Skills Index components:** Luxembourg excels in the Digital Skills Index competencies, scoring above the EU average in all five areas. It boasts the highest score in communication and collaboration skills at 95.02%, significantly outperforming the EU average. Its lowest score is in safety skills at 75.49%, which is still above the EU average.

In summary, Luxembourg's digital skills landscape is strong, particularly in communication and problem solving. Despite the high overall digital proficiency, there is a clear need to address the gender gap and support lower-educated individuals. With its solid performance across all skill areas, Luxembourg is well-positioned to tackle these challenges and continue to enhance its digital capabilities.

Luxembourg's target for the basic digital skills of the population remains at 80% by 2030, in line with the EU target. In its revised roadmap, Luxembourg introduces several new measures towards achieving this target and expanding access to upskilling opportunities to all population segments, expanding partnerships and diversifying its training offer.

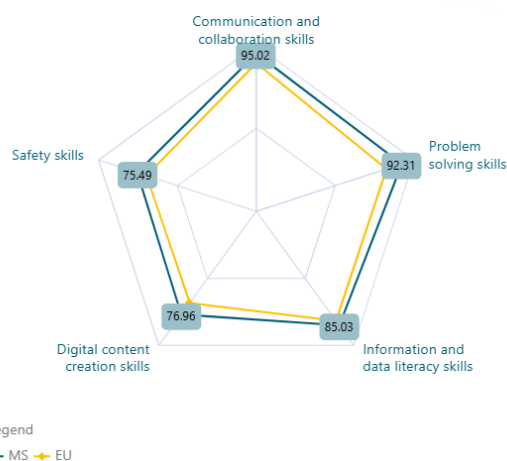
Several new or renewed agreements have been introduced to enhance inclusiveness and tailored learning, including cooperation with the non-profit organisations Digital Inclusion and GoldenMe, which target vulnerable groups: migrants and older adults respectively. Participants notably learn how to use Windows, set up and use an email account, browse the internet and use myGuichet and other common online services in Luxembourg.

To raise awareness and engagement in a variety of settings, Luxembourg has developed new learning formats adapted to different age groups and learning contexts These include 'Big Data Life', an interactive tool introducing children and young adults to online privacy issues, and the 'Changemaker Games', a hybrid escape game designed to encourage critical thinking about responsible consumption among secondary school pupils.

In 2024, Luxembourg's employment agency ADEM ran two full-time digital skills programmes to support jobseekers. The *Basic Digital Skills* course helped adults over 30, while *Digital Fundamentals* targeted those aged 16 to 29. Together, they trained nearly 150 participants - with a female participation of 70% in the former and 45% in the latter - in essential digital tools for today's job market.

In addition, the Skillsbridges programmes, launched in September 2024, aim to address the shortage of qualified labour and support professional transitions with courses covering areas such as artificial intelligence, data analysis, cloud computing, and e-marketing. The courses show strong early demand and promising results, with high registration rates, waiting lists, and completion rates between 71%

Digital Skills Index components
% of individuals



and 92%, indicating effective alignment with labour market needs and strong participant engagement. Furthermore, the Ministry for Digitalisation launched an online trainer platform and supports monthly IT trainer meetups with [ErwuesseBildung](#) to foster a national network of digital educators and amplify local training capacity.

Finally, the government [Zesummendigital platform](#), centralises information on digital inclusion initiatives, key stakeholders, and educational resources in Luxembourg. It also provides awareness tools and self-help materials to promote digital inclusion for all audiences.

While these developments reflect a strong commitment to inclusivity and innovation, the roadmap also recognises persistent challenges such as the gender digital divide and lower uptake among older populations. Ensuring adequacy will thus require continued efforts to scale, evaluate, and adjust these measures to meet the evolving needs of all demographic groups.

2024 recommendation on basic digital skills: Strengthen the strategy to develop the population's basic digital skills.

Luxembourg addressed fully the recommendation by putting significant policy actions into place in 2024. The country added six new measures on basic digital skills to its revised roadmap. Initiatives continue across formal and non-formal education for children and students, including new measures on digital responsibility and privacy. For older people, ongoing workshops are under way to support digital inclusion. The workforce benefits from expanded training via *Skillsbridges*, and jobseekers are supported through tailored courses such as *Basic Digital Skills* and *Digital Fundamentals*. These actions are complemented by the implementation of the OECD Skills Strategy for Luxembourg.

ICT specialists

In Luxembourg, the percentage of ICT specialists as a share of total employment was 8.0% in both 2023 and 2024, which was higher than the EU's 4.8% and 5.0% respectively. The country is on track according to its national trajectory. However, Luxembourg recorded no growth in this area (0.0%), compared to the EU average of 4.2%.

Regarding the gender distribution among ICT specialists, Luxembourg had 22.5% of women ICT specialists in 2023, higher than the EU average of 19.4%. However, by 2024, this figure dropped to 17.4%, below the EU average of 19.5%. The growth rate for women ICT specialists in Luxembourg was -22.7%, significantly lower than the EU average of 0.5%. In 2022, the percentage of enterprises providing ICT training was 21.84%, lower than the EU average of 22.37%. However, by 2024, Luxembourg's figure rose to 24.84%, surpassing the EU's 22.29%. The annual growth rate for Luxembourg in this area was 6.6%, significantly higher than the EU average of -0.2%.

Luxembourg's ICT training sector is on a positive trajectory, with a robust annual growth rate. However, the stagnation in the growth of ICT specialists and the decline in the percentage of women ICT specialists are areas of concern. Policies aimed at fostering growth in the ICT specialist sector and promoting gender diversity are essential to ensure Luxembourg's competitiveness and inclusivity in the ICT landscape.

In terms of demand from the labour market, Eurostat experimental statistics based on web scraping show that in Luxembourg, the profiles of 'software and applications developers and analysts' are the most sought after, representing 62.6% of online job advertisements for ICT specialists (58.0% at EU

level). In addition to this dominant group, two other profiles are in higher demand in Luxembourg than in the EU on average: 'information and communications technology operations and user support technicians' (14.0%), and 'Database and network professionals' (11.6%).

Luxembourg still aims to have 10% of ICT specialists in employment by 2030, in line with the EU target. In response to challenges such as skills shortages and gender imbalance in the digital sector, the revised roadmap introduces two targeted measures to strengthen the national pipeline of ICT professionals. First, the law of 7 August 2023 (in force since 1 September) introduced key changes to simplify the employment of third-country nationals already residing in Luxembourg. A central tool is ADEM's annually published **List of Professions Facing Significant Shortages**, based on objective labour market indicators such as vacancies, jobseeker availability, and unfilled positions. For professions on this list, the labour market test is waived, and a certificate is issued within five days – streamlining recruitment for in-demand roles like ICT specialists. This marks a strategic shift toward more data-driven and responsive workforce planning, aligning migration and training policies with real economic needs. This data-driven approach also marks a strategic shift towards proactive workforce planning, helping to ensure that ICT education and upskilling efforts translate into tangible labour market outcomes. Second, the measure **ICT specialists and gender convergence: motivate girls for STEM** – co-steered by the Department of Media, Connectivity and Digital Policy (SMC), together with the Ministry of Equality (MEGA), the Ministry of Education, the '*Maison de l'orientation*' and IMS Luxembourg – introduces dedicated mentoring and hands-on experiences for girls aged 15–16 through partnerships between schools and employers. By involving female students in real-world STEM challenges under the guidance of professionals, the initiative addresses gendered stereotypes early in the educational pipeline and seeks to build long-term interest in ICT careers. Both measures respond directly to gaps identified in past assessments and reflect a maturing strategy that couples structural insights with inclusive interventions. Their adequacy will depend on effective implementation, particularly in ensuring uptake across sectors and sustained cooperation between ministries, schools, and industry actors.

To complement the new measures set out in the roadmap, Luxembourg is stepping up efforts to address gender disparities in ICT careers. Several initiatives are underway: support sessions for women in career transitions (MEGA, WIDEANDCO SIS), Business Intelligence Academy courses for non-tech women (WeSTEM+), and women-only groups in the 'Elements of AI' program, where participation by women averages around 50%. Moreover, the study '*Identifier les causes de la faible présence des filles et des femmes dans les filières et les métiers de l'ICT*' presented during the [Girls in ICT Day 2025](#), conducted by WIDEANDCO SIS on behalf of MEGA, highlights the need for role models and inclusive teaching. MEGA also organises school workshops promoting gender equality in digital fields. As a follow-up to the successful Girls in ICT Day 2025 round table, Luxembourg prepares a wider outreach format entitled '*Femmes & Tech: Dialogues inspirants*'. This initiative will create structured but informal encounters between female professionals and secondary school pupils, including parents and teachers, to encourage dialogue and show perspectives on careers in and with ICT. The format draws inspiration from Digital Decade best practices such as Croatia's 'Women in Digital'. Launch is foreseen during the 2025/26 school year.

Luxembourg also continues to implement targeted measures to expand Luxembourg's pool of expert digital professionals. In 2024, ADEM significantly expanded its training offer for jobseekers aiming to upskill or reskill into technical ICT roles. One of the flagship programmes is the *42 Luxembourg School*, operated by the Digital Learning Hub (DLH), which enabled 130 jobseekers in 2024 to undertake an intensive coding training designed to prepare them for careers in software development. Furthermore,

2500 jobseekers participated in various DLH trainings, aimed at increasing access to fast evolving digital domains. Overall, in 2024, the DLH delivered 397 courses across key areas such as cybersecurity, artificial intelligence, blockchain, data science, programming, and IT administration, attracting over 4,000 enrolments, with 44% of participants being women. ADEM also collaborated with the CNFPC on a 4-month Full Stack/Web Developer programme for 30 participants and launched the ‘e-Services 4 Inclusion’ training with JWAY, supporting 35 jobseekers in low-code/no-code tools for digital services.

Advanced training opportunities are reinforced through master’s programmes at the University of Luxembourg in key subjects such as cybersecurity, data science, high-performance computing, and information systems security. These initiatives aim to strengthen Luxembourg’s strategic capabilities in high-tech and sovereign digital infrastructures.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

In 2024, Luxembourg’s total score for digital public services for citizens was 97.66, surpassing the EU average score of 82.32, with a growth rate of 3.0% lower than the EU’s 3.6%. The country is on track according to its national trajectory. For cross-border digital public services for citizens, Luxembourg scored 95.36 in 2023 and 98.57 in 2024, both higher than the EU averages of 68.37 and 71.28, respectively. Yet, Luxembourg’s growth rate of 3.4% was lower than the EU average of 4.3%. However, the share of people using government internet websites or apps is decreasing in Luxembourg, from 90.89% in 2022 to 88.38% in 2024, but it remains far above the EU average of 74.71% in 2024.

In the realm of digital public services for businesses, Luxembourg’s reached a perfect score of 100.0 in 2024, significantly higher than the EU average score of 86.23. The country is on track according to its national trajectory. For cross-border digital public services for businesses, Luxembourg scored 93.33 in 2023 and a perfect 100.0 in 2024, higher than the EU averages of 73.13 and 73.76, respectively. Luxembourg’s growth rate of 7.1% significantly exceeded the EU average of 0.9%.

Regarding access to e-health records, Luxembourg’s total score was 76.1 in both 2023 and 2024, falling short of the EU averages of 79.12 and 82.7, respectively. Although the country is on track according to its national trajectory, Luxembourg experienced no growth between 2023 and 2024, while average growth in the EU was 4.5%.

e-ID

In 2023, 75.30% of Luxembourgish people had used their eID to access online services for private purpose in the last 12 months (53.97% for the business sector), which is above the EU average (41.11%). By the end of 2024, the [GouvID](#) application had been downloaded 91,792 times (or by 14% of the country’s population, compared to 9% end of 2023). Luxembourg’s electronic signature verification and validation platform has been operational since April 2024, enabling state agents to securely verify eIDAS-compliant electronic signatures, stamps, and timestamps, thus supporting the uptake of end-to-end digital administrative procedures for citizens and businesses.

Luxembourg is actively advancing on its national implementation of the EU Digital Identity Wallet (EUDI Wallet) in line with the amended eIDAS Regulation. Following the strategic decision to discontinue the national e-wallet project due to legal and timing constraints, the country now focuses on delivering a minimum viable product (MVP) of the EUDI Wallet. This MVP, expected to be tested and refined by mid-2025 within the large-scale pilot POTENTIAL, will progressively integrate the full set of functionalities required under EU law. Once certified, the Wallet will provide citizens with secure,

interoperable access to electronic identity services and a broad range of attribute attestations across the EU.

Luxembourg is leading the work on identification for e-government services within the Advanced Project for Trusted Identity Technologies and Unified Digital Ecosystem (APTITUDE) that will pilot the usage of EUDI Wallets. The country is also working on identification for bank account opening, the mobile driving licence (mDL) and remote qualified electronic signatures.

Digitalisation of public services for citizens and businesses

Luxembourg still aims to achieve a score of 100 for the digitalisation of public services for citizen and businesses. Given the status of ongoing projects and strategic priorities, it is expected that Luxembourg will reach the Digital Decade target by 2030.

In the adjusted roadmap, two genuinely new measures have been introduced. First, the introduction of a **Digital Mandate** aims to extend the benefits of digital public services to individuals who face barriers to accessing online procedures—whether due to limited digital skills, lack of equipment, or personal preference—by enabling them to securely delegate administrative tasks to a trusted person via MyGuichet.lu. This system, whose first iteration for able adults is planned for the end of 2025, will gradually be extended to other user groups, including individuals under guardianship or curatorship and surviving relatives, thereby fostering inclusive access to fast, user-friendly, and efficient eGovernment services. In parallel, Luxembourg carried out several actions in 2024 to enhance public awareness and accessibility of its digital services, including a major [redesign of Guichet.lu](#) with content structured by life events and easy-to-read sections in simplified French and German. Accessibility features such as adjustable displays and text readers were added. New tools like a virtual meeting room and a chatbot for appointment booking were also deployed. By the end of 2024, Guichet.lu had recorded 516 182 private spaces (+11.7% compared to the end of 2023) and 130 207 professional spaces (+15.7%). The MyGuichet.lu application had been downloaded 481 041 times (+28.8% over one year). Furthermore, a national consultation involving 7 889 citizens was launched to guide the creation of local service desks, ensuring human support remains available for those less comfortable with digital channels.

The second new measure in the roadmap is the draft law on the use of data in a trusted environment and focusing on the national implementation of the 'once only' principle. It complements the implementation of the EU Data Governance Act with national provisions, creating a comprehensive legal and operational framework for the reuse of public sector data in a trusted environment. It establishes the basis for a national interoperability programme, including a harmonised public data inventory, a semantic repository, and a single point of access to public data. The bill also supports flagship projects such as the automation of procedures related to births and deaths, and the systematisation of the 'Once Only' approach on the national single digital gateway. **Its adoption, expected by end 2025, is expected to significantly reduce administrative burden and accelerate data-driven public service delivery.**

Luxembourg actively strengthens the sovereignty of its public services by prioritising national and European digital solutions. The [Luxembourg National Data Service \(LNDS\)](#), operational since 2023, facilitates the secure secondary use of public sector data for innovation, with over 60 staff and strong public-private cooperation. The national [Luxchat](#) system, based on open-source French technology, enhances secure mobile communication across government, businesses, and citizens. Additionally, the

GovCloud infrastructure, operated by the Government IT Centre, offers a sovereign, energy-efficient 'as-a-service' model to public administrations.

e-Health

Luxembourg still aims at a score of 100 for the access to medical records, in line with the 2030 EU target. However, the score hasn't changed since last year, so sustained efforts seem necessary.

The country did not include any new measures in its adjusted roadmap.

On [eSanté](#), the number of patient accounts is 209 299 as of 31 March 2025, with an average of 3 749 activated per month. The agency also lists 1.2 million DSPs (*Dossier de soins partagé*), of which only half are affiliated to Luxembourg residents.

According to the 2025 Eurobarometer, 73% of Luxembourgish people think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) during their daily life by 2030.

2024 recommendation on e-Health: (i) Make the data types of e-prescription and e-dispensation available to people through the online access service; (ii) Ensure that all data types are made available in a timely manner; (iii) Enhance the authentication method for logging into the online access service by using a notified e-ID; (vi) Increase the supply of health data by onboarding more categories of healthcare providers

Luxembourg made some efforts to address the recommendation through new policy actions in 2024.

The roll-out of ePrescription and eDispensation is planned as part of the implementation of the EHDS regulation and Luxembourg's participation in the EU4Health programme. A new digital health strategy, still under development, will align with EHDS requirements and prioritise the timely availability of key health data categories, such as patient summaries, prescriptions, imaging, and lab results. Work is also underway to strengthen authentication by allowing patients to access services through a central e-ID-supported portal. Finally, increasing the supply of health data by onboarding more healthcare providers is a key objective of the upcoming strategy. However, as the strategy is still being finalised, no concrete outcomes were achieved in 2024, and regular coordination with healthcare providers continues in preparation.

Building a safe and human centric digital environment and preserving our democracy

In Luxembourg, online participation in political and civic life is rising. In 2024, 24.36% of people used the internet to participate in consultations, to vote or to share opinions online. This share is above the EU average (20.45%) and trending upward (21.47% in 2022).

To further improve democratic processes, the government has announced an analysis phase, under the 2023-2028 coalition agreement, to explore the secure and simplified implementation of electronic voting in polling stations. This would mark a significant step towards digital electoral innovation while preserving election integrity.

It is worth mentioning that Luxembourg's Parliament has adopted the Digital Services Act (DSA), aligning with EU efforts to create a safer and more transparent online environment. The DSA bans targeted advertising to minors, strengthens tools to report illegal content, and increases algorithm

transparency. The Luxembourg Competition Authority will oversee enforcement, with powers to investigate and fine violations up to 6% of global turnover. It will coordinate implementation with national authorities, such as the ‘*Commission nationale pour la protection des données*’ ([CNPD](#)), under a cooperation agreement signed on 11 March 2025.

In 2025, Luxembourg’s central bank and the ECB had to face a surge of disinformation around the digital euro, fuelling public confusion and scepticism. This highlighted the urgent need to strengthen resilience against disinformation, prompting Luxembourg to launch broader public awareness and education initiatives.

To address such challenges, Luxembourg has continued to take multifaceted measures to target disinformation. Luxembourg partners with the [EDMO Belux observatory](#) to ensure access to fact-checking services and multilingual educational resources. Furthermore, legal instruments like the Press Aid Law (2021) and the Law on Freedom of Expression in the Media uphold journalistic integrity, while the Consumer Code and Criminal Code address misleading content and reputational harm.

BEE SECURE, the national Safer Internet Centre, leads large-scale public awareness campaigns. Its 2024/25 [campaign ‘Monkey see – monkey do’](#) focused on AI-generated disinformation, especially in the context of political elections. Through multimedia content and public displays, it educated citizens – particularly youth – on the risks of deepfakes and how to recognize manipulated media. In schools, over 1 200 digital safety training sessions were conducted in 2024 alone, including specific modules on disinformation like ‘[check your facts](#)’, requested [more than 400 times](#) for grades 8 and 9 since 2022. Due to the high demand, the training module has been upgraded and updated. It will be offered under the name Fact Check – Safe and Sound starting with the 2025/2026 school year.

Protecting minors remains a top priority. Luxembourg implements age-appropriate awareness measures, such as the National Action Plan ‘[sécher.digital](#)’ launched by the Ministry of Education, Children and Youth for the 2024/2025 school year. It promotes a balanced and responsible digital culture in schools, focusing on digital well-being, AI literacy, digital skills, and administrative simplification. [BEE SECURE’s Stopline platform enables](#) anonymous reporting of illegal content, and a dedicated helpline offers support to parents, educators, and children.

Data from 2023 confirms the relevance of these actions. Nearly half (45.82%) of Luxembourg residents encountered hostile or degrading online messages, with youth aged 16-24 particularly affected (58.35%). Moreover, 63.4% of individuals reported exposure to dubious online content, and 40.29% verified its accuracy – indicating a relatively strong culture of critical engagement. Young people not only experienced more disinformation (74.05%) but also checked sources more often (48.23%) than adults (41.52%).

According to the Digital Decade Eurobarometer 2025, Luxembourgish people strongly think that the action of the public authorities is urgent to protect children online regarding the negative impact of social media on children’s mental health (97% of Luxembourgish people), cyberbullying and online harassment (97%) and to put in place age assurance mechanisms to restrict age-inappropriate content (95%).

Leveraging digital transformation for a smart greening

Luxembourg prioritises the green transition, linking it to digitalisation through targeted initiatives. Energy, SMEs, and agriculture benefit from digital platforms and tools supporting sustainability, circular economy, and climate resilience, reflecting a cross-sectoral approach to a greener, more competitive economy.

Regarding the awareness of its population, in 2024, a quarter of Luxembourg's population (25.73%) considered energy efficiency to be important when purchasing ICT devices (EU: 19.35%) but the eco-design of the device was considered important by only 10.81%, below the EU average of 12.04%. However, those two eco-friendly criteria are far less important to buyers than the price, the performance, and the design of the ICT device.

Luxembourgers tend to recycle more their laptop (12.84%), mobile phone (11.48%) and desktop devices (16.18%) than the EU average (11.31%, 10.93%, and 14.66% respectively).

In April 2024, the Ministry for Digitalisation [handed over 334 laptops](#), collected by the 'Centre des technologies de l'information de l'État' (CTIE) from various public entities, to the Digital Inclusion association. Digital Inclusion will refurbish the devices and distribute them to people who request the association's help.

In its revised roadmap, Luxembourg has added five new measures in order to twin the green and digital transition. Among these, the '[SME Packages – Sustainability](#)' programme empowers SMEs to lower their environmental footprint by improving energy and water efficiency, enhancing waste management, and carrying out carbon assessments. Beneficiaries can access to a state aid of 70% of eligible costs between EUR 3 000 excl. VAT and EUR 25 000 excl. VAT, for implementing sustainable solutions, often complemented by digital tools to optimise customer communication and internal processes. Similarly, the '**Fit 4 Sustainability**' programme provides SMEs with comprehensive environmental diagnostics – covering decarbonisation, water use, and product life cycle analysis – followed by tailored recommendations and potential investment support to implement these changes.

Complementing these measures, the Product Circularity Data Sheet (PCDS) initiative led by Terra Matters G.I.E., established by the Ministry of the Economy and the Chamber of Commerce, introduces a trustworthy system for managing circular product data. By facilitating third-party verification of circularity claims, it aims to increase transparency and trust across digital product value chains and promote responsible consumption.

In agriculture, Luxembourg is leveraging digital technology to drive green transformation. The MA-eFaST project focuses on integrating databases to optimise nutrient management, reducing nitrogen loss and the need for chemical fertilisers, thus cutting greenhouse gas emissions. Meanwhile, the ADAPT project explores smart cropping techniques – like intercropping, reduced tillage, and cover crops – to mitigate emissions and preserve soil carbon. By combining real-world testing with modelling and regional climate projections, ADAPT aims to guide farmers with data-driven advice for climate-resilient farming practices across the country.

Regarding existing measure in the previous roadmap, on 20 March 2025, Luxembourg launched [Leneda](#), its national Energy Data Platform, developed by [Creos](#) Luxembourg. Mandated by law, Leneda

centralises electricity and gas data, supporting the green-digital transition by improving data accessibility, transparency, and efficiency. It offers secure access to near real-time consumption and production data, trusted data sharing, and unique Energy IDs for faster procedures. Leneda marks a key step towards a more sustainable, competitive energy system. It may also include water and heat data in the future.

The country also continued to strengthen its strategy linking the digital and green transitions, in line with the *'Ons Wirtschaft vu muer'* roadmap and the National Energy and Climate Plan (PNEC). Efforts focus on optimising the energy efficiency and greening the supply of digital infrastructures, such as datacentres, through measures like promoting renewable energy adoption, waste heat recovery, immersion cooling, and material efficiency. The MeluXina supercomputer, ranked among the most energy-efficient globally, highlights this ambition. In addition, Sector-specific initiatives, such as funding for smart agriculture solutions and AI-based smart grid projects, further support the deployment of digital solutions that reduce carbon footprints across the energy, transport, and agriculture sectors.

According to the Digital Decade Eurobarometer 2025, 77% of Luxembourgish people consider digital technologies important to help fight climate change, while 81% of Luxembourgish respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities.

2024 recommendation on green ICT: (i) Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular datacentres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.

(ii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

(i) Luxembourg addressed fully the recommendation by putting significant policy actions into place in 2024. Luxembourg added five new measures and continued to strengthen its strategy to twin the green and digital transitions through sector-specific initiatives, enhanced SME support, and the promotion of energy-efficient digital infrastructures such as datacentres and the national supercomputer MeluXina.

(ii) No information is available on measures taken to address the recommendation.

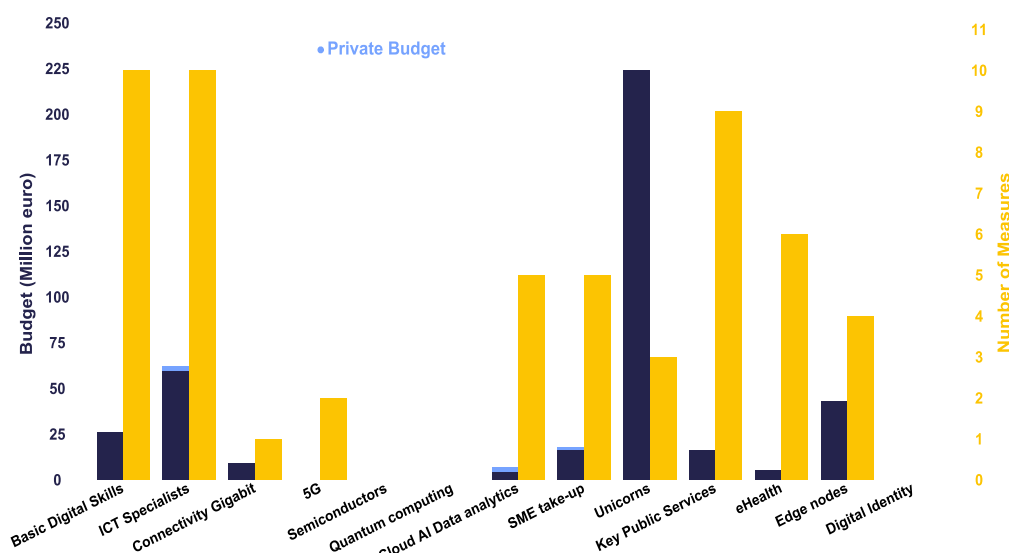
Annex I – National roadmap analysis

Luxembourg's national Digital Decade strategic roadmap

Luxembourg submitted a fully revised national Digital Decade roadmap on 2 December 2024, containing more than 30 new and edited measures and revised trajectories. The roadmap notably strengthens the focus on SMEs and AI, with new support tools set to be launched in 2025. It addresses a substantial number of roadmap recommendations issued in 2024:

- *(i) Examine the opportunity of providing a target and trajectory for unicorns, (ii) provide a target and trajectory for edge nodes:* Luxembourg has not set a national target or trajectory for unicorns or edge nodes. For unicorns, Luxembourg highlights the small market size and its role as a testbed for innovative companies as reasons why setting a target is not feasible. For edge nodes, Luxembourg considers that due to its near-complete high-speed internet coverage and small territory, the need for edge nodes is limited, and contributions will mainly occur through participation in EU initiatives like the IPCEI on Next-Generation Cloud Infrastructure and Services. In addition, in its revised roadmap, Luxembourg did not provide a national target for Edge Nodes but continues to monitor the work on the definition of a methodology for the KPI assessment.
- *Review and reinforce, if deemed necessary at this stage, measures to contribute to the targets that are the most challenging to reach, such as the digital skills for all, the basic level of digital intensity for SMEs:* six new measures were added for digital skills and two important ones for SMEs.
- *Provide more information on the implementation of digital rights and principles, including what national measures contribute to it:* Luxembourg addressed this recommendation in the roadmap adjustment by mapping national policies and measures to the digital rights and principles, ensuring alignment with the Digital Decade objectives.

Measures and budget in national roadmap⁸



⁸ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Luxembourg

The revised roadmap continues to prioritise connectivity, cybersecurity, SME digitalisation, and in general the adoption of advanced technologies such as AI and cloud. A total of 98 measures are now part of Luxembourg's national strategic roadmap with a budget of EUR 515 million, EUR 488 million comes from public budgets, equivalent to 0.57% of Luxembourg's GDP in 2024. It covers all objectives of the Digital Decade, including human-centred digital transformation, resilience and security, technological sovereignty, the twin green and digital transition, and digital rights and principles.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Luxembourg is a member of the three established EDICs; the Alliance for Language Technologies EDIC, the Local Digital Twins towards the CitiVERSE EDIC and of the EUROPEUM EDIC. It has also offered to host an EDIC that is being set up in the area of genomics. Luxembourgish entities are indirect partners in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Luxembourg is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

The country has contributed to the Best Practice Accelerator⁹ by sharing three best practices. Two of them are part of the Digital Skills cluster: Girls in ICT Day national awareness action and Girls Deploy your Digital Talent. Another best practice - the creation and promotion of a Product Circularity Data Sheet (PCDS) - has been shared under the Green IT Cluster.

EU funding for digital policies in Luxembourg

Luxembourg allocates 38% of its total recovery and resilience plan to digital (EUR 24 million)¹⁰. In addition, under cohesion policy, EUR 6 million (representing 15% of the country's total cohesion policy funding), is dedicated to advancing Luxembourg's digital transformation¹¹. According to JRC estimates, EUR 28 million directly contribute to achieving Digital Decade targets (of which EUR 24 million comes from the RRF and EUR 4 million from cohesion policy funding)¹². Luxembourg's RRF and Cohesion Fund investments for digital policies are modest in volume but strategically focused. The largest share supports digital public services, including improvements to electronic health records and digital portals for citizens and businesses. Funding also targets emerging technologies such as cloud computing, AI, and data analytics, reflecting national efforts to build digital capabilities within the public sector. Resources are allocated to support digital late adopters and scale-ups, in line with Luxembourg's roadmap priorities on inclusion and innovation. However, key areas such as 5G, gigabit connectivity, and e-ID remain without dedicated EU funding.

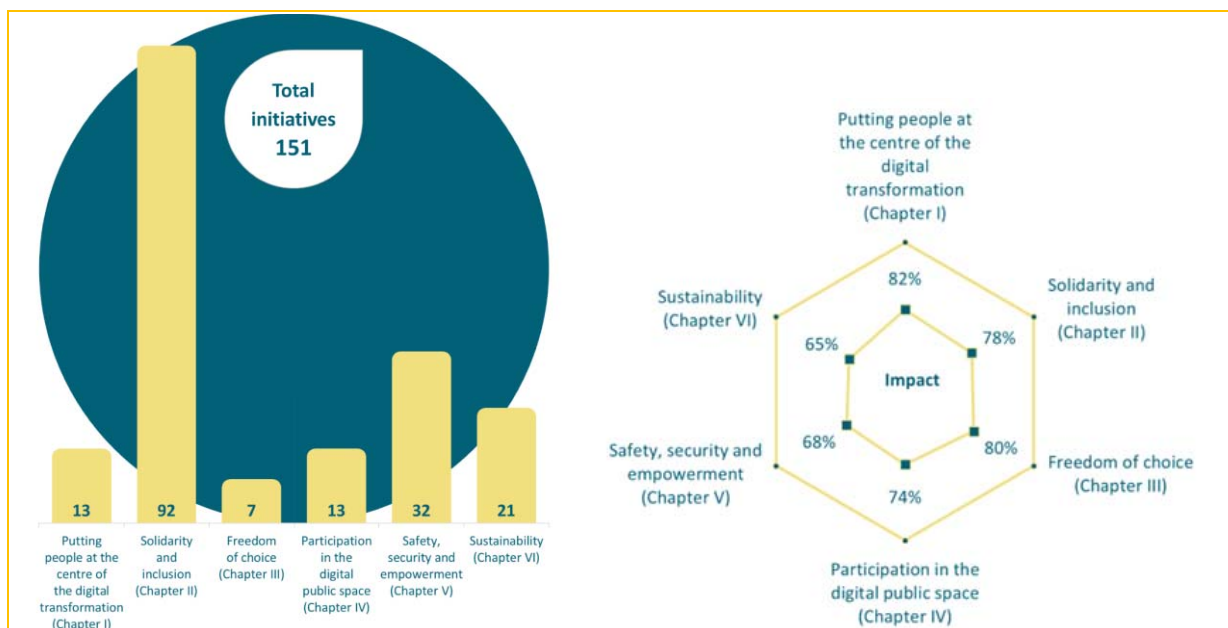
⁹ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

¹⁰ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹¹ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹² Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹³



Activity on Digital Rights and Principles (figure 1)

Luxembourg has been one of the most active Member States in implementing digital rights and principles, with over 100 initiatives overall and 20 new initiatives launched in 2024, showing significant progress towards its commitments. **Luxembourg is most active in the area of Digital education, training and skills (II).** There is room for improvement, especially with regards to A fair digital environment (III) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators developed by the support study illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Luxembourg (mainly national government) and how these are perceived by citizens.

The indicators suggest that **Luxembourg is most successful in implementing commitments related to Putting people at the centre of the digital transformation (I).** Luxembourg should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Sustainability (VI).

According to the Special Eurobarometer 'Digital Decade 2025', **58% of citizens in Luxembourg think that the EU protects their digital rights well** (a 2% increase since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting access to a trustworthy, diverse and multilingual digital environment (77%, above the EU average of 53%). They are most worried that their

¹³ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).

Luxembourg

right to a safe digital environment and content for children and young people is not well protected (34%, below the EU average of 48%).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
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DIGITAL DECADE 2025 COUNTRY REPORTS

Malta

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Executive summary

Malta performs very well on the uptake of AI and digitalisation of businesses, while there is room to further expand the pool of ICT specialists. The country is a top performer in the digitalisation of public services. Malta shows a moderate level of ambition in its contribution to the Digital Decade having set 12 national targets, 58% of which aligned with the EU 2030 targets. The country is following its trajectories moderately well with 50% of them being on track (considering 2024 trajectories defined for 4 KPIs out of 8 analysed). Malta addressed 38% of the 8 recommendations issued by the Commission in 2024 by making some changes through new measures.

Significant progress has been achieved over the last year, particularly in the share of enterprises adopting AI, which reached 17.3%, and in expanding connectivity infrastructure—most notably through the ongoing roll-out of fibre-to-the-premises (FTTP) networks. Malta has reached the Digital Decade targets for Very High Capacity Networks (VHCN) in 2019 and basic 5G coverage in 2022. FTTP deployment is still underway but is progressing rapidly towards full national coverage. Challenges remain in improving basic digital skills across the population and addressing the shortage of ICT specialists.

Malta has increasingly oriented its digital policies toward enhancing digital sovereignty, to better control and safeguard its digital infrastructure, data, and technologies, through a multi-dimensional approach. Malta is advancing digital sovereignty by strengthening national cybersecurity through initiatives like CYBER+ALT, expanding threat detection, and building secure infrastructure, while promoting local innovation via dedicated start-up funding and digital policy frameworks.

Digital Decade KPI ⁽¹⁾	Malta				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	MT	EU
Fixed Very High Capacity Network (VHCN) coverage	100.0%	100.0%	0.0%	-	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	69.6%	86.2%	23.9%	-	69.2%	8.4%	100.0%	-
Overall 5G coverage	100.0%	100.0%	0.0%	100.0%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	17	32	88.2%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	81.3%	2.2%	-	72.9%	2.8%	85.0%	90%
Cloud	58.2%	-	-	-	-	-	80.0%	75%
Artificial Intelligence	13.2%	17.3%	31.4%	18.8%	13.5%	67.2%	27.2%	75%
Data analytics	35.6%	-	-	-	-	-	51.1%	75%
AI or Cloud or Data analytics	68.3%	-	-	-	-	-	-	75%
Unicorns	4	4	0.0%	-	286	4.4%	-	500
At least basic digital skills	63.0%	-	-	-	-	-	75.0%	80%
ICT specialists	4.7%	5.2%	10.6%	5.5%	5.0%	4.2%	8.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	100.0	99.7	-0.3%	100.0	82.3	3.6%	100.0	100
Digital public services for businesses	100.0	100.0	0.0%	-	86.2	0.9%	100.0	100
Access to e-Health records	88.0	93.7	6.5%	-	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special Eurobarometer on ‘the Digital Decade’ 2025, 80% of Maltese citizens consider that the digitalisation of daily public and private services is making their lives easier. Concerning the action of the public authorities, 90% consider it important to counter and mitigate the issue of fake news and disinformation online, and regarding competitiveness, 87% consider it important to ensure that European companies can grow and become “European Champions” able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

Malta has a strong position when it comes to digital infrastructure, outperforming the EU average and reaching full VHCN and basic 5G coverage. The roll-out of fibre networks is continuing and progressing at a fast pace. Regarding 5G in the 3.4–3.8 GHz band, Malta still lags behind the EU but it is expanding rapidly.

Most of Maltese enterprises show at least a basic level of digital intensity and uptake of AI is above the EU average, although challenges persist particularly among smaller enterprises. Malta is nurturing a dynamic and expanding start-up ecosystem through concrete support measures such as the *Start-Up Finance scheme*, the *Start-Up Residence Programme*, and the creation of a €10 million *Venture Capital Fund*. The country is also investing in digital skills and innovation infrastructure, including a national roadmap that promotes emerging technologies and supports scale-ups. Malta is actively strengthening its cybersecurity capabilities and digital resilience, with the goal of reducing dependency on external technologies and enhancing control over its digital ecosystem, although challenges remain in adopting key internet standards like IPv6 and DNSSEC.

Protecting and empowering EU people and society

Most of the people in Malta have at least basic digital skills and the country made some progress on the share of ICT specialists in employment, but there is room to improve gender balance. In 2024, the share of ICT specialists in employment grew to 5.2%. While interest in STEM and ICT careers is growing, skill shortages remain a concern. The majority of the Maltese population (63%) has at least basic digital skills, and the country prioritises inclusivity in the implementation of the National eSkills Strategy 2022-2025.

Digital public services are well-developed and widely accessible, reflecting Malta’s focus on user-centric, simplified administration. National strategies promote sovereign digital solutions, aiming to ensure a secure and inclusive digital transformation for all citizens.

Leveraging digital transformation for a smart greening

Malta is committed to achieving carbon neutrality by 2050, with a focus on sustainability, resilience, and innovation across all sectors. Digital technologies are recognised as a key enabler in this transition, helping businesses adopt sustainable practices and boosting overall competitiveness. The government is fostering collaborations with the private sector to drive forward sustainability goals and integrate digital solutions in the green transition.

National Digital Decade strategic roadmap

Malta did not submit an updated national Digital Decade roadmap in 2025; therefore, the measures and targets for 2030 remain unchanged from those outlined in the initial 2023 roadmap. In 2024, Malta continued the implementation of existing measures but did not take any new measure. In total three

targets (i.e., VHCN, 5G and Digital Public Service for Citizen) have already been reached. All the other targets align with the EU level goals for 2030, except for three national targets (basic digital skills, number of ICT specialist and SMEs with at least a basic level of digital intensity) that fall slightly below the EU targets. Trajectories for edge nodes, e-Health and unicorns are missing. Although the roadmap covers nearly all objectives of the Digital Decade, some aspects may require more effort. Furthermore, the roadmap is composed of 66 measures with a total budget of EUR 285 million (equivalent to 1.27% of GDP) covering most of the targets. It still covers all objectives of the Digital Decade such as a human-centred digital space, resilience and security, sovereignty, green, and protection of the society. These achievements are the result of targeted public policies under the *Malta Digitali 2022–2027* strategy, with a strong focus on enhancing public digital services and connectivity.

Funding & projects for digital

Malta allocates 26% of its total recovery and resilience plan to digital (EUR 68 million)¹. In addition, under cohesion policy, EUR 129 million, representing 17% of the country's total cohesion policy funding, is dedicated to advancing Malta's digital transformation². Malta is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Malta is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Malta has not yet presented any project in the framework of Digital Decade's Best Practice Accelerator³.

Digital Rights and Principles

According to a support study, Malta has been one of the most active Member States in implementing the [European Declaration on Digital Rights and Principles](#), with over 100 initiatives overall and 35 new initiatives launched in 2024. Malta is most active in the area of solidarity and inclusion and digital education, training and skills. Less activity has been identified with regards to connectivity and Sustainability. Measures in the area of solidarity and inclusion appear to have most impact on the ground, in contrast to those addressing freedom of choice.

Recommendations

- **ICT specialists:** Promote ICT and STEM career opportunities and related education programmes, especially among women.
- **Basic digital skills:** Prioritise reskilling and upskilling initiatives, leveraging public-private partnerships and EU funding, and promote digital literacy particularly among those with lower educational backgrounds.
- **Cybersecurity:** Implement targeted initiatives to strengthen internet security and enhance DNSSEC adoption, and support the development and deployment of cybersecurity capabilities.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

- **AI:** Continue the efforts to strengthen the uptake of AI, especially among SMEs, and in connection with the deployment of other technologies, such as cloud and edge nodes.
- **Connectivity infrastructure:** Continue efforts to deploy fibre networks and 5G pioneer bands and promote uptake.
- **Digitalisation of SMEs:** Enhance efforts to close the digitalisation gap between SMEs and large enterprises, in order to maximise the economic potential of SMEs.

A competitive, sovereign and resilient EU based on technological leadership

Malta is strategically positioning itself as a key player in fostering a competitive, sovereign, and resilient EU through technological leadership, leveraging innovation, digital transformation, and strategic investments to enhance economic growth and security. The government continues to implement strategic policies to attract investment, particularly in research, development, and innovation (RDI) within digital technologies. The country's start-up ecosystem can count on over 300 start-ups, which contribute significantly to GDP, particularly in Fintech, gaming, and AI.

In Malta, the predominance of SMEs in the business landscape presents challenges for the adoption of digital technologies, as smaller enterprises often face resource and investment constraints. SMEs accounted for around 96.5% of all enterprises with more than 10 employees, while large enterprises accounted for only 3.5% in 2022. The size of the ICT sector was above the EU average (10.14% vs 5.46% in gross value added in 2022)⁴ and its R&D business expenditure accounted for 47.89% of total R&D expenditure in 2022 (a significant increase compared to 38.19% in 2021). Moreover, R&D personnel in the ICT sector accounted for 44.44% of total R&D personnel in 2022, increased from 40.47% in 2021.

Malta was among the early adopters of 5G in Europe, with operators rolling out commercial services to ensure widespread coverage. Investments in high-speed broadband, including the availability of fibre-to-the-home (FTTH) networks and a nationwide cable DOCSIS 3.1 network, complement the 5G network, enhancing connectivity for both businesses and individuals. Malta's national strategy aligns with EU digital targets, aiming to leverage advanced infrastructure to support smart cities, IoT applications, and emerging technologies.

Malta has set ambitious goals to position itself as a leader in the AI race. The country was among the first in Europe to launch a national AI strategy, focusing on innovation, ethical AI development, and sectoral adoption across industries such as healthcare, finance, and public services. With government-backed initiatives, investment incentives, and collaborations with academia and industry leaders, Malta aims to create a thriving AI ecosystem. While challenges remain, including in talent development and scaling AI adoption among businesses, Malta continues to strengthen its AI infrastructure to drive competitiveness and economic growth in the digital era.

As Malta advances its digital transformation, ensuring national sovereignty has become a fundamental priority across all digital initiatives. Given the country's reliance on global tech providers and digital infrastructures, safeguarding data security, regulatory autonomy, and technological resilience is crucial. This includes strengthening cybersecurity frameworks, fostering local innovation, and ensuring that critical digital infrastructure, such as cloud services and AI applications, remains under national or European governance. By prioritising sovereignty, Malta aims to enhance its digital resilience, reduce external dependencies, and maintain control over its technological future. According to the 2025 Eurobarometer⁵, 89% of Maltese think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Building technological leadership: digital infrastructure and technologies

Malta has developed a robust digital infrastructure, with high-speed connectivity, advanced cloud services, and regulatory frameworks supporting the country's digital transformation.

Connectivity infrastructure

In 2024, Malta was at 100% of VHCN coverage (2030 national target: 100%) and stood above the EU average of 82.49%. Malta already reached the target of 100% of households connected in 2019.

Malta was at 86.2% of FTTP coverage (2030 national target: 100%) in 2024, after a jump of 23.9%, and stood above the EU average of 69.24%. Malta did not provide a national trajectory point for 2024. Malta's growth rate therefore far exceeded the EU's growth rate of 8.4% (from 63.87% in 2023). FTTP coverage increased also in sparsely populated areas that, however, in Malta represent only a small share of households (0.6%). In these areas, it was 26.63% in 2024, below the EU average of 58.78%, but with a significant growth rate of 64.6%. **In 2024, Malta was at 100% of 5G coverage, in line with its national target – which it had already reached in 2022, and stood above the EU average of 94.35%.** Since 2022, all households had access to 5G, significantly exceeding the EU average. As such, Malta positions itself as a leader in overall coverage.

Malta's 5G coverage in the 3.4-3.8 GHz band remained below the EU average in 2024, but it is expanding rapidly. In 2023, total household coverage stood at 24.66%, significantly lower than the EU average of 51.06%. In 2024, Malta's coverage increased to 40%, still trailing the EU's 67.72%. However, Malta has demonstrated strong growth in this area, with a 62.2% increase, outperforming the EU's 32.6% growth rate. Similarly, coverage in sparsely populated areas reached 10.05% in 2024, compared to 26.19% in the EU. Despite this gap, Malta's growth rate in these areas is 66.4%, surpassing the EU's 65.1%, indicating accelerated expansion efforts to enhance 5G availability in both urban and rural regions.

In 2025, Malta's assignment of harmonised spectrum for 5G pioneer bands stood at 25%, unchanged compared to 2024, and below the EU average of 74.63%, reflecting partial take-up of key 5G frequencies by the market notwithstanding the fact that the spectrum has been made available.

In 2024, Malta's 5G SIM card adoption rate reached 26.6%, up from 21.32% in 2023, reflecting an annual growth rate of 24.8%. While this demonstrates a steady rise in adoption, Malta's growth rate remains lower than the 63.9% recorded across the EU. In comparison, the EU's 5G SIM penetration rose from 21.7% in 2023 to 35.56% in 2024, outpacing Malta both in adoption levels and growth rate. This suggests that while Malta is making progress in 5G adoption, it is lagging behind the broader European trend, potentially due to differences in infrastructure expansion, market dynamics, or consumer adoption rates.

In 2024, fixed broadband subscriptions for ≥ 100 Mbps in Malta stood at 79.61%, placing it above the EU average of **71.88%** for the same year and reflecting significant growth from 70.61% in 2023. This marks a notable increase, highlighting Malta's strong broadband infrastructure development. Comparatively, the EU average for high-speed broadband adoption rose from 65.9% in 2023 to 71.88% in 2024. While both Malta and the EU experienced substantial growth, Malta continues to outperform the EU average, indicating a faster transition toward high-speed connectivity. This trend suggests that Malta is prioritising faster broadband services, possibly due to private sector investments, and increasing consumer demand for high-speed internet.

Malta has experienced a steady increase in the share of fixed broadband subscriptions with speeds of 1 Gbps or higher, rising from 11.69% in 2023 to 16.99% in 2024. While this growth reflects ongoing investment in high-speed broadband infrastructure, Malta's penetration remains below the EU average, which grew from 18.47% in 2023 to 22.25% in 2024. The expansion of gigabit connectivity is essential for supporting the continued digital transformation and Malta's economic competitiveness.

In conclusion, Malta has made significant strides in developing its digital infrastructure, particularly in terms of 5G coverage and high-speed broadband. The country has achieved full 5G coverage across all households, surpassing EU averages. Despite strong progress in 5G coverage, particularly in the 3.4-3.8 GHz band, Malta still lags behind the EU in coverage. Additionally, the share of fixed broadband subscriptions ≥ 1 Gbps is growing, but remains below the EU average.

VHCN and FTTP

Malta has already achieved 100% coverage in VHCN by way of a nationwide cable DOCSIS network (since 2019) and the advanced deployment of FTTP infrastructure. For FTTP, Malta's target for 2030 remains at 100% as per the initial roadmap submitted in 2023. Given the latest figures, the target seems realistic.

Being an island in the Mediterranean Sea, Malta relies heavily on submarine cables as vital digital infrastructures to maintain its security and sovereignty. These undersea communication networks play a crucial role in ensuring reliable connectivity, supporting economic growth, and safeguarding national interests. As a small island nation, investing in and maintaining these infrastructures is essential for sustaining technological advancement and national security. Malta is involved in the MEDUSA project, including the installation of a state-of-the-art, high-capacity fibre-optic submarine cable. This initiative aims to enhance digital connectivity across the Mediterranean, strengthening Malta's role as a key hub for secure and resilient communications. By investing in cutting-edge infrastructure, the project supports economic growth, innovation, and regional cooperation, ensuring faster and more reliable data transmission for businesses and communities alike.

5G

Malta has already achieved 100% coverage in 5G. Nationwide 5G coverage was achieved by one of the three operators in 2022, while the other two mobile operators provided this level of coverage towards the end of 2023.

Malta has achieved comprehensive 5G coverage, with all populated areas benefiting from this advanced network. The country has deployed over 1100 base stations, 440 of which are equipped with 5G NR technology. The median mobile data speed stands at 81.18 Mbps, reflecting the robust performance of the network.

The roll-out of 5G in Malta has been spearheaded by key telecommunications operators, which are continuing to enhance the offer.

In 2021, Malta allocated the mid-band 3.6 GHz spectrum to operators. While the assignment was originally intended to take place through an auction, the Malta Communications Authority (MCA) opted for a direct allocation, as demand did not exceed the available spectrum. Currently, coverage stands at 40%. Although the 700MHz and 26GHz bands have been made available and the assignment framework is in place, there is currently no industry demand for their use. Operators appear to have sufficient low-band spectrum (800MHz and 900MHz) to meet existing coverage needs, and there seems to be no viable business case for deploying the 26GHz band. Given its population density, Malta

can be compared to a European city in terms of spectrum needs, and the assigned spectrum is evenly distributed among the three operators. While Malta has made progress in spectrum harmonisation, further assignments are needed to maximise 5G coverage, capacity, and performance.

2024 recommendation on connectivity infrastructure: Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

In 2024, Malta continued the implementation of existing measures but did not take any new measure. Currently all three operators active in Malta have deployed 5G based on 5G-DSS.

Semiconductors

Malta has positioned itself as a key player in the global semiconductor industry, by fostering a competitive ecosystem that supports innovation, research, and advanced manufacturing. With established semiconductor production facilities, including a major manufacturing plant operated by STMicroelectronics, Malta contributes significantly to both European and global supply chains. By strengthening Europe's semiconductor capabilities, Malta's strategy directly supports the EU's goal of technological sovereignty and reduced dependency on external supply chains.

The country actively participates in the European Chips Act. As demand for semiconductors continues to rise, Malta remains committed to strengthening chip production capacity, supply chain resilience, and technological self-sufficiency, aligning with the EU's broader strategy for digital and economic sovereignty. In this context, Malta is also establishing a National Competence Centre to support R&D, skills development and industrial innovation in semiconductor technologies. Moreover, the semiconductor sector has been identified as a strategic priority under Malta Vision 2050, reflecting its importance to Malta's long term economic and technological ambitions.

Edge nodes

Despite a specific survey has not been conducted in Malta, the Edge Node Observatory estimated a potential number of 32 edge nodes deployed in Malta. This is an increase of 88.2% compared to 2023 (when the country had an estimated 17 edge nodes). The current number of edge nodes deployed is significant considering the country's size. However, this is only an estimation and may not reflect the current reality. Maltese organisations were not surveyed to calculate this estimation, which has been produced by the Edge observatory as an extrapolation by using a clustering methodology that associates Member States based on their similarities in terms of socio-economic parameters, intensity of IT use and other indicators correlated with the actual and potential use of digital transformation. Malta does not have a 2030 target for edge nodes.

Edge computing serves as a crucial enabler for AI, future network deployments, and IoT. The national roadmap emphasises the capability of the existing infrastructure to deliver latencies below 20 milliseconds.

Quantum technologies

Malta recognises the strategic importance of quantum technologies and is aligning its efforts with the EU's broader vision. The country aims to foster research and development in quantum computing, cryptography, and communications, with a focus on building expertise and exploring industry applications. While the country is still in the early stages of adoption, potential updates to the strategy may include enhanced funding initiatives, partnerships with European research institutions, and the

integration of quantum-ready infrastructure to strengthen national and EU-wide technological resilience.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

The state of digitalisation of enterprises in Malta is more advanced than last year. However, challenges remain in scaling digital transformation, particularly for SMEs. Malta's digital start-up ecosystem continues to grow, supported by government incentives, accelerator programmes, and an increasing number of tech hubs, positioning the country as an attractive destination for innovation-driven businesses.

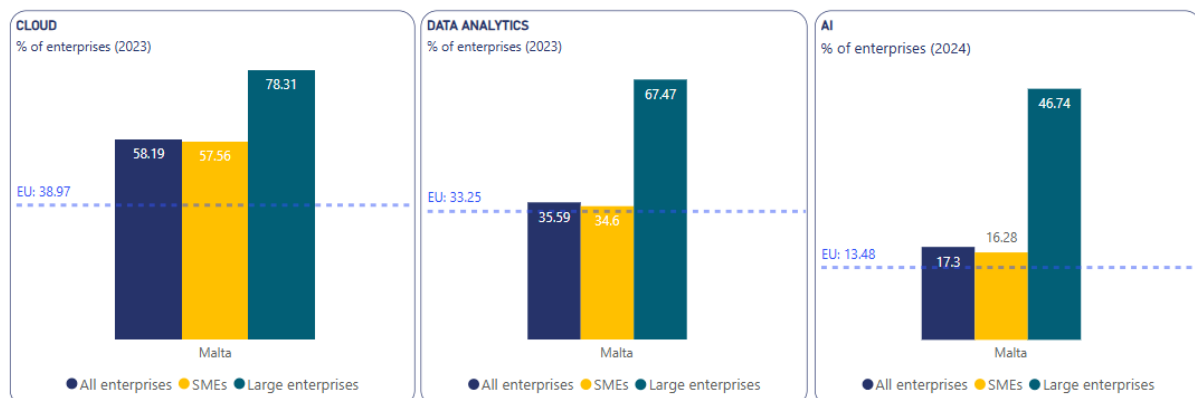
SMEs with at least basic digital intensity

In 2024, 4 out of 5 (81.28%) SMEs in Malta had at least a basic level of digital intensity (2030 national target: 85%), after an increase of 2.2% between 2022 and 2024. Malta therefore stands well above the EU average of 72.91%. More specifically, 46.93% of SMEs in Malta achieved high or very high digital intensity, significantly surpassing the EU average of 32.66%. As such, Malta positioned itself as a strong performer in SME digital transformation across the EU.

Malta's 2030 target for SMEs with basic digital intensity is slightly below the EU-level target of 90%. However, given Malta's currently high share of digitalised SMEs, reaching the EU target by 2030 is highly likely. Despite this, the 2030 target set out in the roadmap falls short of the EU benchmark, and no new SME-specific measures were introduced in 2025.

Malta hosts one European Digital Innovation Hub (EDIHs). The [DiHubMT](#) EDIH primarily assists SMEs and mid-caps by facilitating the adoption of digital technologies, offering business incubation services, and providing access to financing opportunities. DiHubMT features a state-of-the-art workspace equipped with cutting-edge technologies, including AI, augmented and virtual reality (AR/VR), 3D printing, drones, cybersecurity solutions, and robotics. It also offers 'test before invest' support to help businesses explore technologies before committing to investments. Additionally, the hub promotes digital skills development through training, upskilling, and reskilling programmes, and fosters innovation networks to encourage collaboration and the exchange of best practices⁶.

Take-up of cloud/AI/data analytics



According to new data collected in 2024, 17.3% of enterprises in Malta adopted AI (2030 national target: 27.2%) - a 31.36% increase compared to 2023 – placing it above the EU average of 13.48%.

⁶ [DiHubMT - European Digital Innovation Hub - MDIA](#).

However, **Malta is lagging behind compared to its national trajectory**. Among SMEs, the uptake rate was slightly lower at 16.28%, while large enterprises demonstrated a significantly higher rate of 46.74% (almost 1 out of 2). This reveals a gap of 30.46 percentage points between SMEs and large enterprises, which is in line with the EU gap.

In 2023, cloud uptake among Maltese enterprises was 58.19% (2030 national target: 80%), showing a strong lead over the EU average of 38.97%. More specifically, while SMEs had an uptake of nearly 57.56%, 78.31% of large enterprises adopted cloud services. Therefore, the difference in uptake between SMEs and large enterprises in Malta stood at 20.75 percentage points, which is lower than the EU-level gap of 31.68.

The latest available data shows that in Malta, 35.59% of enterprises (approximately 1 out of 3) adopted data analytics in 2023 (2030 national target: 51.1%), surpassing the EU average of 33.25%. More specifically, at 34.6%, SMEs had a lower uptake than large enterprises (67.47%). This reflects a gap of 32.87 percentage points between SMEs and large enterprises, which is lower than the EU gap of 39.72 percentage points.

When taking the three technologies together, 68.25% of enterprises in Malta engaged with AI technologies, sophisticated or intermediate cloud computing services, or performed data analytics in 2023, well ahead of the EU average of 54.7%. More specifically, at 67.67%, uptake among SMEs was slightly lower than among large enterprises (86.75%). This indicates a percentage point difference of 19.08 in uptake between SMEs and large enterprises in Malta, which is lower than the EU-level gap of 32.97. Notably, in 2022, SMEs in Malta contributed 41.8% of the total value added in the economy, whereas large enterprises contributed 34%.

Overall, the adoption of cloud computing, data analytics, and AI technologies in Malta demonstrated strong performance compared to EU averages, with a particularly high uptake of cloud services and artificial intelligence. The disparity in technology adoption between SMEs and large enterprises in Malta is smaller than the EU average, reflecting relatively more balanced engagement with digital technologies. However, SMEs' adoption rates remained consistently lower.

- [Cloud](#)

Malta's target for 2030 remains at 80%, above the EU-level target, as per the initial roadmap submitted in 2023. Given the latest (2023) figures and measures in place, the target seems realistic.

To support the further adoption and development of digital technologies, Malta has allocated a significant part of its Recovery and Resilience Plan (RRP) to digitalisation. One of the main measures adopted by the country to reach the cloud target is the **'SME digitalisation Scheme.'** The measure, funded by the RRP, seeks to support digitalisation investment initiatives and other digitalisation efforts by SMEs in several economic sectors. The Scheme is related to the cloud target, and is expected to contribute directly to the uptake of cloud computing and other related technologies.

- [Data analytics](#)

In 2024 and 2025, Malta has made notable strides in the field of data analytics, reflecting a commitment to digital transformation and innovation across multiple sectors.

The Malta Communications Authority has set its strategic direction for 2025-2027, highlighting the role of data analytics in enhancing communication services and regulatory frameworks. The strategy seeks to strengthen decision-making and service delivery within the sector through data-driven insights.

In this context, private firms are leveraging AI to boost efficiency and sustainability. Academic research is also contributing with local solutions, such as traffic prediction models. Although progress has been made, direct national measures to promote data analytics remain limited. Strategic plans call for targeted investments and initiatives like the Technology Assurance Sandbox to encourage best practices. Overall, these efforts highlight Malta's aim to strengthen its digital capabilities through data analytics.

- **Artificial intelligence**

AI is at the forefront of Malta's digital transformation efforts. Malta's National AI Strategy aims to position the country as a leader in AI by fostering innovation, investment, and ethical AI development. Launched as part of Malta's broader digital transformation agenda, the strategy focuses on three key pillars: investment, adoption, and governance. It encourages businesses to integrate AI, supports research and development, and ensures responsible AI use through regulatory frameworks. Government initiatives provide funding, training, and infrastructure to attract AI-driven enterprises, reinforcing Malta's commitment to becoming a competitive AI hub in Europe.

The 2025 Eurobarometer shows that 87% of Maltese think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values.

Malta's target for 2030 remains 27.2%, as per the initial roadmap submitted in 2023.

2024 recommendation on AI/Cloud/Data analytics: (i) Continue implementing policies in the area of digitalisation of businesses. In particular, Malta should further facilitate access to secure and sovereign advanced digital technologies and solutions and encourage investment in digital research and innovation. (ii) Raise awareness about the benefits of digital technologies and increase participation in existing funding schemes, especially among the many family-owned micro, small and medium-sized businesses making up Malta's economy.

In 2024, Malta made some efforts to address the recommendation through new policy actions in 2024: in 2024 Malta began planning a new scheme, the "**Digitalise your SME**" which was launched in Q1 2025. The programme offers additional aid intensity for projects in areas such as AI, cloud computing, quantum technologies, and cybersecurity. The support is non-repayable grants to part-finance investment in these strategic digital technologies that have been identified, taking into account the digital decade targets.

Unicorns, scale-ups and start-ups

At the beginning of 2025, Malta had four unicorns, one more than the previous year (representing a 33.3% increase). This growth highlights the resilience and potential of the Maltese start-up ecosystem, despite global economic challenges.

Malta has not set a target on the number of unicorns by 2030. Due to the country's inherent characteristics, a commitment to doubling the number of start-ups is not feasible – despite strong support measures for those that choose to set up business in Malta. Nevertheless, ongoing efforts are focused on building a start-up ecosystem that is responsive to the needs of entrepreneurs, enabling them to launch, scale, and grow sustainably.

The ecosystem remains dynamic and is supported by initiatives such as 'Start in Malta', which provides funding, mentorship, networking, and regulatory support to nurture innovation and entrepreneurship. While traditionally known for e-gaming and blockchain, the ecosystem is

diversifying into sectors like Fintech, AI, and legal tech. The **‘Start in Malta’** initiative together with the **National Malta Start-up Framework** are central to shaping a start-up-friendly environment. These efforts aim to reduce regulatory barriers, simplify equity administration, promote regional development, and support talent attraction through fiscal incentives, R&D backing, and apprenticeship programmes.

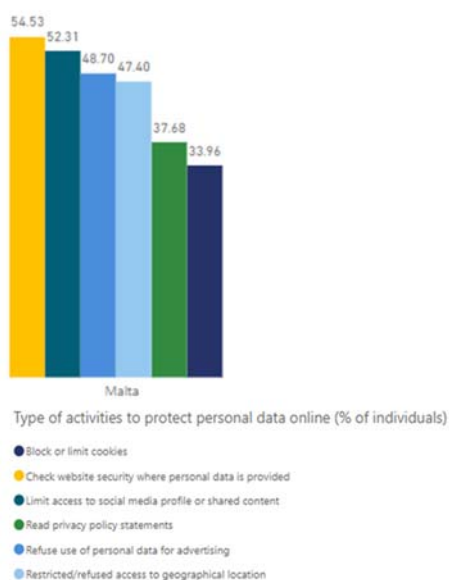
To improve access to venture capital, the government has established a EUR 10 million Venture Capital Fund, offering equity investments of up to EUR 500 000 per start-up in innovative sectors like Fintech, e-sports, life sciences and video game development. This is complemented by the Start-Up Finance Scheme, which provides up to EUR 1.5 million in repayable advances for small, innovative enterprises, particularly those in assisted areas.

Early-stage ventures benefit from initiatives like the Business Start Scheme, which offers seed funding of up to EUR 10 000, and the Seed Investment Scheme (SIS), which incentivises equity investments through tax credits, helping to reduce risk for investors in high-potential digital start-ups.

To attract international talent and capital, Malta offers a Start-Up Residence Scheme, providing residence permits for founders to establish their ventures locally. The country also positions itself as a regional hub through high-profile events like the EU Start-ups Summit (2024-2025), which is expected to bring together 2 500 participants from across Europe.

Challenges remain. Access to later-stage funding and the scaling of start-ups into unicorns are still limited, and while various types of support are in place, consistent implementation and ecosystem maturity are crucial to unlocking their full potential.

Strengthening cybersecurity & resilience



In Malta, over 3 in 4 individuals have basic digital safety skills. 78.96% of the population took at least one action to protect their data online, exceeding the EU average of 69.55%. Over half (54.73%) of the population engaged in three or more such actions (and therefore could be considered as having above basic digital safety skills). Checking if websites were secure was the most common action (54.53%), while changing browser settings to limit cookies was the least frequent (33.96%).

Regarding the resilience of digital infrastructures, awareness of cybersecurity among enterprises in Malta is decreasing and challenges remain. The percentage of enterprises experiencing ICT security incidents leading to service unavailability, such as ransomware or denial-of-service attacks, increased in Malta, from 3.35% in 2022 to 5.16% in 2024. It remains above the EU average (3.43%) reflecting

relatively low defensive measures. Around 93.91% of Maltese enterprises have implemented some form of ICT security measures, marginally above the EU average of 92.76%, and 62.54% have actively engaged in raising employee awareness of ICT security obligations, a level above the EU average of 59.97%.

Concerning the deployment of secure internet standards, in 2024, Malta's adoption of Internet Protocol version 6 (IPv6) and Domain Name System Security Extension (DNSSEC) lagged behind EU averages. Malta stood substantially below the EU average in the roll-out of Internet Protocol version 6 (IPv6) for servers (6% vs an EU average of 17%), while it had not deployed IPv6 on the user side, against an EU average of 36%. IPv6 is an important protocol as it ensures the scalability, stability, and security of the internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have been long depleted. Regarding DNSSEC, Malta's adoption rate stood at 11% in Q3-2024. This rate is notably lower than the EU average of 47% during the same period. Countries like Finland, Czechia, Luxembourg, Sweden, Denmark, and Germany led on this indicator, with adoption rates above 70%.

During 2024, Malta continued its commitment to enhancing cybersecurity and resilience in both the public and private sector. Several initiatives were launched or expanded to strengthen the country's cybersecurity. Building on previous efforts, the CYBER+ALT scheme remained a key support measure for SMEs, with increased outreach and additional funding aimed at encouraging more businesses to adopt state-of-the-art cybersecurity solutions. Recognising the evolving threat landscape, the scheme introduced new incentives to promote advanced threat detection and response mechanisms.

Following its introduction in late 2023, the Client Assessment Framework was fully rolled out in 2024, extending free security assessments to both public service entities and the private sector. This initiative provided businesses with practical insights into their cybersecurity strengths and vulnerabilities, helping them adopt stronger security measures.

The National Cybersecurity Community further solidified its role as a hub for collaboration between key stakeholders from the private sector, public administration, academia, and research. Throughout 2024, the Consultation Council overseeing this initiative worked on refining policies and frameworks to enhance cybersecurity readiness at both local and EU level. A major milestone was the establishment of a Coordinated Vulnerability Disclosure (CVD) platform, ensuring that vulnerabilities are systematically reported and addressed to safeguard critical digital infrastructure.

In addition, the Malta Critical Infrastructure Protection (MaltaCIP) Directorate continued to strengthen cybersecurity response capabilities under the EU-supported Connecting Europe Facility project. In 2024, the Directorate expanded the available internal services to operators of essential services and digital service providers. These services focused on real-time threat intelligence sharing, early warning systems, and enhanced coordination between cybersecurity stakeholders to improve national resilience against cyber threats.

A major step forward in 2024 was the further development of the National Cybersecurity Coordination Centre (NCC), which built upon its initial implementation in 2023. The NCC intensified its efforts in driving cybersecurity initiatives, including policy development, risk assessments, and cross-sectoral cooperation. As part of this, the Cybersecurity Digital Skill Level Initiative (2023-2026) saw accelerated efforts in 2024 to enhance cybersecurity awareness and competencies among individuals and organisations in Malta. This initiative remains critical in fostering a digitally secure environment and ensuring that all stakeholders are equipped to respond to emerging cyber risks. According to the Digital Decade Eurobarometer 2025, 86% of Maltese think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Malta's digitalisation strategy aims to bridge societal divides and ensure equal access to digital opportunities across various demographics. Targeted initiatives are intended to increase inclusiveness by addressing gender, geographic, age-related, educational, and socio-economic disparities. Investments in nationwide broadband infrastructure and digital hubs in remote areas help mitigate geographic disparities.

Age inclusivity is also a key focus, with specialised training programmes aimed at equipping older adults with digital literacy skills to prevent generational digital exclusion. In the education sector, digital learning is integrated into national curricula, while reskilling initiatives support individuals with lower formal education to enhance their digital competencies. To address socio-economic barriers, the government provides subsidies, public access points, and community-driven digital learning initiatives, to make sure that financial constraints do not hinder digital participation.

Beyond digital inclusion, **Malta also recognises the impact of digitalisation on democracy, media, and disinformation.** Efforts are being made to promote media literacy, ensuring that people can critically assess online information and combat the spread of fake news and foster responsible digital engagement.

The protection of children in the digital space is another important area. Initiatives include online safety education in schools, parental guidance resources, and legal frameworks that regulate harmful online content. Measures such as safer internet campaigns and collaborations with tech companies help create a secure online environment for young users.

Equipping people with digital skills

Basic digital skills

In 2023, 63.02% of individuals aged 16-74 had at least basic digital skills (2030 national target: 75%) - after an increase of 2.9% compared with 2021 - significantly surpassing the EU average of 55.56%. This achievement highlights Malta's success in promoting digital literacy across a broad demographic, ensuring a solid foundation for participation in the digital economy.

- **Gender gap:** Malta shows an uncommon situation in the gender gap, with 62.74% of men and 63.33% of women having at least basic digital skills, creating a minor gap of 0.59 percentage points in favour of women. This is against the typical EU trend, where the average gender gap is 2.23 percentage points in favour of men.
- **Education level:** Education continues to be a strong indicator of digital proficiency. In Malta, around 89.92% of individuals with higher education levels have at least basic digital skills, exceeding the EU average (79.83%). On the contrary, those with lower levels of education face

challenges, with only 30.86% having at least basic digital skills, below the EU average (33.61%) and with a gap with the national average of 41.06 percentage points.

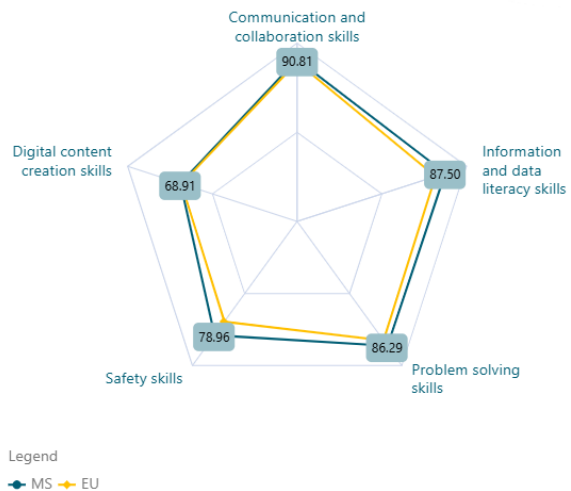
- **Age groups:** Young adults in Malta aged 16-24 are the most digitally skilled in the EU, with the highest proficiency rate of 96.09%, largely surpassing the EU average (69.98%). The senior age bracket of 65-74 has lower skills, which at 21.87% fall below the EU average for that age group (28.19%).

When looking at the Digital Skills Index components, Malta achieves above average results in all five categories. Communication and collaboration skills are the highest at 90.81%, surpassing the EU average. The lowest scored area is digital content creation at 68.91%, which is just above the EU average.

In conclusion, Malta demonstrates a robust digital skills profile, with excellent communication and collaboration skills and a commendable rate among the younger population. The relatively small gender gap is a positive in Malta's digital landscape. However, the significant gap in skill levels based on education highlights the need for focused initiatives to improve digital literacy among those with lower educational backgrounds, particularly among the older generation. Specific courses are being provided to address this gap.

According to the 2025 Eurobarometer, 82% of Maltese think that human support to help accessing and using digital technologies and services would facilitate their daily use of digital technologies. 86% of Maltese respondents think that public authorities should prioritise ensuring that people receive proper human support to accompany the transformation brought by digital technologies and services.

Digital Skills Index components
% of individuals



2024 recommendation on basic digital skills: Continue encouraging people to take part in digital skills trainings by raising awareness and facilitating access, with a special focus on vulnerable groups.

In 2024, Malta continued the implementation of existing measures but did not take any new measure. Notably, Malta has continued implementing the National e-Skills Strategy 2022-2025 aimed at promoting the inclusive and equitable development of digital skills. This strategy emphasises collaboration between the public and private sectors to align education programmes with market demands and ensure coherence among all digital skills initiatives in Malta.

ICT specialists

In 2024, ICT specialists accounted for 5.2% of total employment (2030 national target: 8%) - after an increase of 10.6% compared with the previous year - above the EU average of 5%. The country is slightly lagging behind compared to its national trajectory. Nevertheless, the growth rate observed is a promising result as, while Malta's total percentage of ICT specialists as a share of total employment was 4.7% in 2023, slightly below the EU average of 4.8%, its growth rate surpassed the EU-level growth rate of 4.2%. The percentage of female ICT specialists in Malta was 14.7% in 2024, below the EU

average of 19.5%. However, Malta's growth rate of 8.9% in female ICT specialists (from 13.5% in 2023) exceeded the EU's 0.5% (from 19.4% in 2023).

Malta demonstrates its commitment to promoting ICT training, with a higher percentage of enterprises offering such training compared to the EU average. In 2024, 31.12% of Maltese enterprises offered ICT training, compared to the EU average of 22.29%. This reveals an annual increase of 4.7% since 2022 (28.39%), while the EU average slightly declined, by 0.2% per year since 2022 (22.37%).

On labour market demand, Eurostat's experimental statistics based on web scraping show that, in the ICT field, the most sought after profile is that of software and applications developers and analysts, targeted by 40.4% of online job advertisements, compared to an EU average of 58%. In other fields, Malta shows a relatively higher demand for certain profiles than the EU average. For example, job postings for 'information and communications technology service managers' account for 6.0% of ICT-related ads in Malta, compared to 3.8% at EU level. Similarly, 'information and communications technology operations and user support technicians' make up 18.8% of Malta's ICT job ads, well above the EU average of 10.4%. This achievement highlights Malta's success in promoting digital literacy across a broad demographic, ensuring a solid foundation for participation in the digital economy.

According to the Trends in International Mathematics and Science Study (TIMSS), Maltese students performed strongly in both mathematics and science. In mathematics, they achieved an average score of 499, significantly exceeding the international average of 478, and performing on a similar level to students in countries such as Italy and Norway. In science, their results were even more impressive, with an average score of 501, comparable to peers in Italy and New Zealand⁷. Moreover, Maltese students demonstrated resilience, with approximately 13% from disadvantaged socio-economic backgrounds ranking in the top quartile for mathematics performance, exceeding the OECD average of 10%⁸.

2024 recommendation on ICT specialists: Continue skills forecasting and improve cooperation with industry and the civil society to regularly evaluate and adjust education and training offers to labour market needs and encourage women to become ICT specialists.

In 2024, Malta continued the implementation of existing measures but did not take any new measure. The government continued to collaborate with industry bodies, private sector employers, and civil society through platforms like the Digital Malta Strategy and the National e-Skills Strategy 2022-2025, ensuring that education and digital skills training remains relevant and forward-looking.

Stakeholder engagement was emphasised in the Digital Education Strategy 2024-2030, which was launched in May 2024 to improve digital competencies at all levels of education, and to support lifelong learning pathways.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

On digital public services for citizens, Malta scored 99.7 (national 2030 target: 100), surpassing the average EU score of 82.32. As such, despite a minor decline, Malta is on track according to its national trajectory, having already reached 100 in 2023. For cross-border digital public services for citizens,

⁷ TIMSS 2023 International Results in Mathematics and Science. International Association for the Evaluation of Educational Achievement (IEA), 2023.

⁸ OECD. (2023). PISA 2022 Results (Volume I): The State of Learning and Equity in Education.

Malta achieved a score of 100 in 2023, well above the average EU score of 68.37. Its score decreased slightly to 99.4 in 2024, but was still higher than the EU's 71.28. The slight decrease in the score for citizens is due to a correction in the assessment of cross-border online availability. In particular, one false positive from the previous year was adjusted (the *Career* 3.3 service, which requires in-person identification, had been mistakenly considered fully online in the earlier assessment).

In the area of digital public services for businesses, Malta's total score was 100 in both 2023 and 2024, consistently outperforming the average EU scores of 85.42 and 86.23, respectively. As such, Malta reached its national 2030 target. Similarly, for cross-border digital public services for businesses, Malta's score remained at 100 in both years, outperforming the average EU scores of 73.13 and 73.76.

On access to e-health records, Malta scored 93.71 in 2024 (national 2030 target: 100) - an increase of 6.5% compared to the previous year - outperforming the average EU score of 82.7. The country did not provide a national trajectory point for 2024, but it is progressing well.

eID

Malta has notified one electronic identification (eID) scheme under the eIDAS Regulation. The country excels in the adoption of electronic identification (eID) systems. In 2023, 54.64% of individuals used their eID to access online services for private purposes, significantly surpassing the EU average of 41.11%. This reflects Malta's strong infrastructure for secure digital authentication and its success in encouraging its population to embrace eID for a variety of purposes. On the other hand, the share of individuals using government websites slightly decreased to 81.07% in 2024, compared to 88% in 2023.

Digitalisation of public services for citizens and businesses

In 2024, Malta achieved outstanding results in digital public service accessibility, reaching a score of 99.7 for citizens and a full score of 100 for businesses, meeting the EU's Digital Decade target of providing 100% access to key public services online.

Businesses can conveniently access essential services through the businessfirst.com.mt portal, while the user-friendly servizz.gov.mt is oriented towards citizens. Malta also stands out in terms of transparency, with a score of 100. The score for pre-filled forms reached 92.6 in 2024, down slightly from 94.0 in 2023. This small decrease is mainly due to the inclusion of a newly assessed service (*Business Start-up* 6.5), which requires users to manually complete a form. The absence of an automatic pre-filling function for this and a related service lowered the overall average. This strong overall performance is further reinforced by comprehensive user support, which received a perfect score of 100. According to the 2025 Eurobarometer, 85% of Maltese people think that accessing public services online will be important for their daily life by 2030.

According to the OECD's Indicators of Regulatory Policy and Governance (iREG), Malta demonstrates a moderate level of performance in reducing administrative and regulatory burden. While regulatory impact assessments are in place for primary laws, their systematic implementation and transparency could be further strengthened. Stakeholder engagement practices exist but are not consistently applied across all stages of the regulatory process.

Efforts have been made to simplify administrative procedures and reduce compliance costs, particularly through digitalisation. The servizz.gov.mt portal facilitates access to services for the general public, while businessfirst.com.mt serves as a dedicated portal for businesses. Nonetheless,

there remains room for improvement in institutionalising good regulatory practices and enhancing *ex post* evaluation mechanisms to better assess the impact of existing regulations.

Malta's digital strategy places strong emphasis on reinforcing the sovereignty of its digital administration. A key priority is ensuring greater control over the State's information systems, with a focus on enhancing data governance, cybersecurity, and the resilience of digital infrastructure. The strategy aims to reduce dependencies on external providers where possible, promote the use of secure national platforms, and ensure that critical digital assets remain under the direct oversight of public authorities. This approach reflects Malta's commitment to safeguarding its digital autonomy while advancing the efficiency and trustworthiness of its public services.

e-Health

In e-health, Malta has achieved significant milestones, with an increasing number of individuals having access to their electronic health records in 2024. This progress reflects the country's commitment to enhancing digital healthcare infrastructure, enabling people to manage their health more effectively while supporting interoperability across healthcare systems. By promoting accessibility and interoperability across healthcare systems, Malta enables its population to take a more active role in managing its health, while supporting more connected and efficient healthcare services.

According to the 2025 Eurobarometer, 83% of Maltese think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) for their daily life by 2030.

2024 recommendation on e-Health: Offer a mobile application for citizens to access their electronic health records. Increase the supply of health data by onboarding more categories of healthcare providers.

Malta some efforts to address the recommendation through new policy actions in 2024.

Malta's e-health maturity score increased compared to last year. In Malta, all 13 data categories investigated in this framework are made available to citizens in a timely manner. Malta refers to timely data as data being available within 24 hours.

While citizens can access their electronic health records via an online portal, a mobile application is not available. The Ministry for Health (MHA) has initiated plans to also offer myHealth through a mobile application. MHA is also continuing the process to onboard existing historical health data onto the National Electronic Health Record repository as part of the process that will enable private healthcare providers to be able to link and share their own data to the same platform.

In the first months of 2024, Malta implemented the technical functionality for parents and legal guardians of children less than 18-years-old to apply to view their children's electronic health data, building on the legal basis already in place.

In 2024, more categories of healthcare providers are supplying health data, specifically public primary care physicians and community care centres and public geriatric nursing homes have connected to the system and are actively supplying data. However, none of the categories of private healthcare providers are sufficiently connected and supplying data. This remains the main gap in Malta's e-health maturity.

Building a safe and human-centric digital environment and preserving our democracy

In recent years, Malta has placed increasing emphasis on fostering a safe, inclusive, and human-centric digital environment. Promoting responsible digital engagement and empowering citizens to participate in public life through digital means are key elements of this approach. Strengthening online civic and political participation is not only vital for preserving democratic values but also for ensuring that all voices are heard in the digital age.

Between 2022 and 2024, the level of internet use for civic or political participation in Malta fluctuated. In 2022, the indicator stood at 27.77, rising significantly to 34.46 in 2023, which suggests increased online engagement in civic and political activities. However, this upward trend did not continue, as the value dropped to 24.89 in 2024, marking a significant decline. Overall, the data indicates a peak in online civic or political engagement in 2023, followed by a notable decrease the following year. Nonetheless, when compared to the EU average, Malta consistently recorded higher levels of online civic or political participation throughout the period. The EU values showed a steady, gradual increase from 17.59 in 2022 to 20.45 in 2024. While Malta experienced more pronounced fluctuations, the EU trend suggests a slow but continuous growth in digital civic engagement.

In 2023, 54.45% of individuals in Malta declared having come across untrue or doubtful information or content on internet news sites or social media, higher than the EU average of 49.25%. Among those exposed, according to the survey, 29.09% verified its truthfulness, representing a moderate level of critical engagement in assessing the reliability of the information. Youth (16-24) (61.47%) reported slightly more exposure than adults (25-64) (56.85%), with verification rates of 36.48% for youth compared to 30.4% for adults. Males (54.22%) and females (54.7%) reported nearly identical exposure rates, with similar verification rates of 30.37% for males and 27.66% for females. According to the Digital Decade Eurobarometer 2025, Maltese think that the action of public authorities is urgent to protect children online regarding the negative impact of social media on children's mental health (91% of Maltese), cyberbullying and online harassment (93%) and to put in place age assurance mechanisms to restrict age-inappropriate content (93%).

Moreover, in 2023, in Malta, 45.47% of individuals encountered online messages that were considered hostile or degrading towards groups based on factors such as religion or social views, significantly above the EU average of 33.5%. Young people (16-24) (56.44%) reported higher exposure than adults (25-64) (47.68%), highlighting a notable age-related difference. Females (49.08%) also reported higher exposure than males (42.25%), indicating a moderate gender gap.

In conclusion, the 2023 data on online interactions in Malta reveals a concerning scenario, with a high proportion of individuals encountering perceived hostile and degrading online messages and potentially misleading information online. On a positive note, however, Maltese individuals demonstrated a moderate level of critical engagement in evaluating the accuracy of online content, particularly among young people (16-24).

The impact of the spread of disinformation on Malta's youth was further corroborated by a Youth Eurobarometer survey, which revealed that Malta has the highest percentage of young people in the EU reporting frequent exposure to fake news. To combat this, discussions have been ongoing about integrating media literacy into school curricula. In March 2025, it was highlighted that media literacy

is essential in addressing misinformation, with calls to emulate models like Finland, where media literacy is part of the educational system⁹.

In terms of institutional measures, Malta has launched several awareness-raising initiatives and information campaigns designed to counter misinformation and promote responsible digital behaviour. These include fact-checking platforms, educational workshops, and collaboration with civil society organisations to strengthen digital resilience. In particular, media literacy efforts have been linked with broader data literacy actions, equipping individuals not only with the means to identify disinformation but also to understand how their data is used online and how algorithmic biases can shape the information they see. Furthermore, actions are under way to support journalists and public figures targeted by online smear campaigns, including legal protections and reporting mechanisms for online harassment.

Leveraging digital transformation for a smart greening

Achieving carbon neutrality by 2050 lies at the heart of Malta's long-term economic and environmental vision. As a small island state vulnerable to the effects of climate change, Malta is increasingly prioritising sustainability, resilience, and innovation across all sectors of its economy¹⁰. The transition to a greener future is being pursued through a series of national strategies, policy frameworks, and multi-stakeholder collaborations¹¹.

In particular, *Malta's Sustainable Development Strategy for 2050 (SDS)*, explicitly recognises digitalisation as a key enabler of sustainable development. It highlights how digital technologies can accelerate economic growth, safeguard the environment, enhance service delivery, and provide new opportunities for social and personal development. The SDS also outlines government support for businesses adopting digital tools that not only improve productivity and competitiveness but also actively contribute to the green transition.

In 2024, 35.78% of people in Malta considered energy efficiency an important factor when purchasing ICT devices, significantly higher than the EU average of 19.35%. Similarly, 28.51% of Maltese consumers valued the eco-design of devices, well above the EU average of 12.04%. However, despite these elevated figures, eco-friendly criteria remain secondary to more dominant factors such as price, performance, and overall design when making purchasing decisions.

When it comes to recycling, people in Malta appear more proactive with laptops/tablets (9.29%) and desktop computers (11.17%) compared to the EU averages of 11.31% and 14.66%, respectively. Conversely, mobile phone recycling in Malta (8.97%) falls below the EU average of 10.93%, indicating a potential area for improvement.

Reflecting a growing private sector commitment, the Malta Environmental, Social and Governance Alliance (MESGA) was established in July 2022 by 13 founding organisations, including major telecom operators. MESGA acts as a collaborative platform for Maltese businesses to lead on national ESG

⁹ [Media literacy needed in school curriculum to combat misinformation. The Malta independent, March 2025](#)

¹⁰ [The European Green Deal \(Section 2.1.3\).](#)

¹¹ [The contribution of the Communications Sector and the MCA's potential role towards achieving Malta's environmental sustainability goals. Discussion paper, Malta Communication Authority, October 2023.](#)

goals, promote responsible corporate practices, and drive forward sustainable development by example.

According to the Digital Decade Eurobarometer 2025, 83% of Maltese consider digital technologies important to help fight climate change, while 86% of Slovenian respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities. To further encourage investments, support mechanisms are in place. These include grants and Feed-in Tariffs administered by the Regulator for Energy and Water Services (REWS). These schemes, [together with others, are published on the REWS website](#), and are available to both domestic and commercial consumers. These offer the digital sector opportunities to power their operations in a more sustainable way.

Overall, the green transition is not only a clear political and economic priority for Malta, but it is also deeply intertwined with the country's digital transformation.

Annex I – National roadmap analysis

Malta's national Digital Decade strategic roadmap

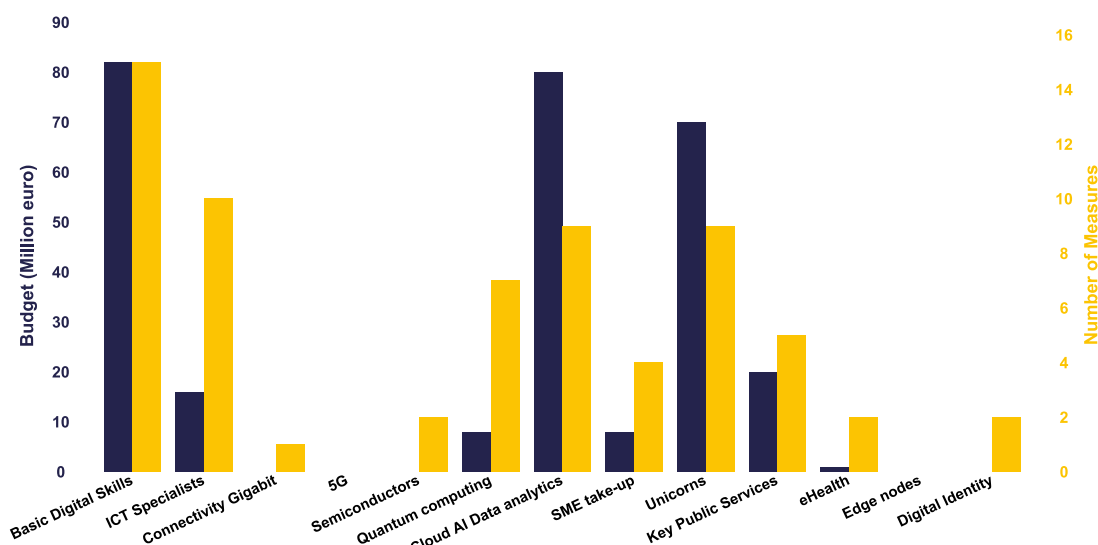
Malta did not submit a fully updated national Digital Decade roadmap in 2025. Therefore, the measures and targets for 2030 remain unchanged from those outlined in the initial 2023 roadmap, which was published in January 2024, following a comprehensive consultation process. A programme of ongoing monitoring and evaluation is in place to proactively identify potential areas for future improvement.

In 2024, Malta continued to implement existing measures but did not take any new ones. In total three targets (VHCN, 5G and Digital public service for citizens) have already been reached. The targets generally align with the EU-level goals for 2030, except for three national targets (basic digital skills, number of ICT specialists and SMEs with at least a basic level of digital intensity) which fall below the EU targets. This seems to be related to the estimation algorithm used to project historical values up to 2030.

Trajectories for edge nodes, e-health and unicorns are missing. Although the roadmap covers nearly all objectives of the Digital Decade, some aspects may require more effort, such as elements related to the green and digital activities.

The roadmap is coherent overall with the efforts needed in all the digitalisation dimensions. It consists of 66 measures with a total budget of EUR 284.9 million (equivalent to 1.27% of GDP) covering most of the targets. It still covers all objectives of the Digital Decade such as a human-centred digital space, resilience and security, sovereignty, green, and protection of the society.

Measures and budget in national roadmap¹²



¹² When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Malta is an observer to the Alliance for Language Technologies EDIC. Malta is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). It is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Malta has not yet presented any project in the framework of Digital Decade's Best Practice Accelerator¹³

EU funding for digital policies in Malta

Malta allocates 26% of its total recovery and resilience plan to digital (EUR 68 million)¹⁴. In addition, under cohesion policy, EUR 129 million (representing 17% of the country's total cohesion policy funding), is dedicated to advancing Malta's digital transformation¹⁵. According to JRC estimates, EUR 120 million directly contribute to achieving Digital Decade targets (of which EUR 62 million comes from the RRF and EUR 58 million from cohesion policy funding)¹⁶.

In its Recovery and Resilience Plan Malta focuses on digital public services, and to a lesser extent on digital skills, and digitalisation of businesses. Additional funding is provided under the EU cohesion policy and national strategies to support the digitalisation of SMEs, public administrations, and education systems.

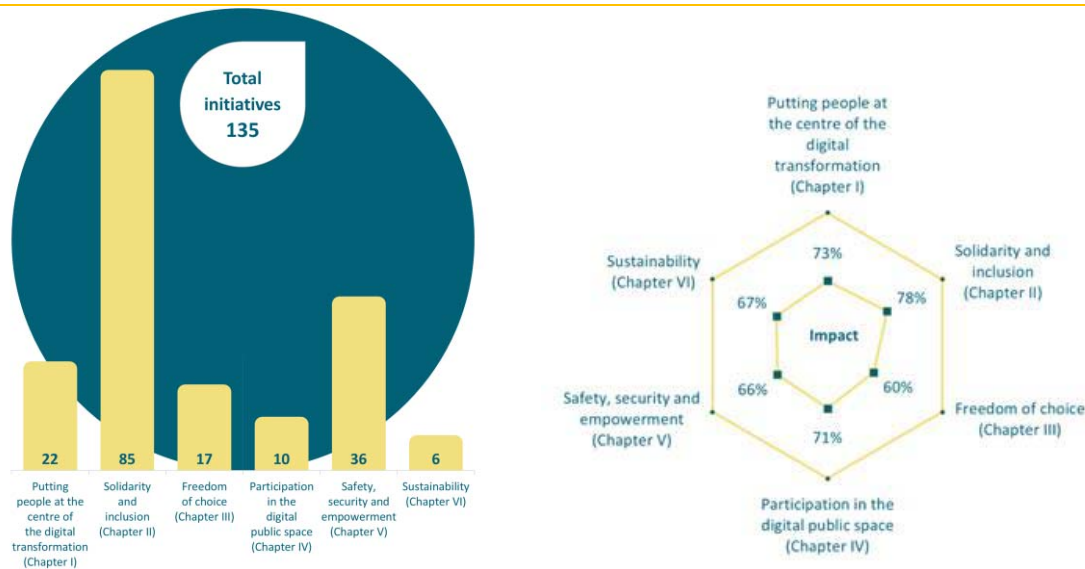
¹³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

¹⁴ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹⁵ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹⁶ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹⁷



Activity on Digital Rights and Principles (figure 1)

Malta has been one of the most active Member States in implementing digital rights and principles, with over 100 initiatives overall and 35 new initiatives launched in 2024, showing significant progress towards its commitments. Malta is most active in the area of Solidarity and inclusion (II) and Digital education, training and skills (II). There is room for improvement, especially with regards to Connectivity (II) and Sustainability (VI) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators developed by the support study illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Malta (mainly national government) and how these are perceived by citizens.

The indicators suggest that Malta is most successful in implementing commitments related to Solidarity and inclusion (II). Malta should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Freedom of choice (III).

According to the Special Eurobarometer 'Digital Decade 2025', 66% of citizens in Malta think that the EU protects their digital rights well (a 17% increase since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting basic and advanced digital education, training and skills (79%, above the EU average of 60%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (47%, corresponding to the EU average).

¹⁷ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

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DIGITAL DECADE 2025 COUNTRY REPORTS

The Netherlands

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Executive summary

The Netherlands has long been a leader in digital innovation owing to support from a strong research base. However, it faces challenges from ICT labour shortages and declining public investments in innovation and digital education. The country is very committed to safeguarding users online and focuses on countering disinformation and protecting children.

The Netherlands shows a high level of ambition in its contribution to the Digital Decade, with 10 national targets, 90% of which are aligned with the EU 2030 targets. The country is following its trajectories well, with 83% of them being on track (based on the 2024 trajectories established for 6 KPIs out of 8 analysed). The Netherlands addressed 40% of the 10 recommendations issued by the Commission in 2024, either by implementing significant policy changes (20%) or making some changes (20%) through new measures.

The Dutch semiconductor industry remains a cornerstone of its digital landscape, with growing momentum in quantum technologies. However, the discontinuation of key funding sources like the National Growth Fund have created financial uncertainty. ICT talent shortages also persist, worsened by recent budget cuts in higher education. In 2024, the Netherlands expanded its 2022 strategy against online disinformation and improved legislation to protect children online. The upcoming Netherlands Digitalisation Strategy will take a more centralised approach, focusing on enhanced digital government services at local, regional and national level, Artificial Intelligence (AI) adoption, civil servant digital skills and digital sovereignty and security.

Digital Decade KPI ⁽¹⁾	The Netherlands				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	NL	EU
Fixed Very High Capacity Network (VHCN) coverage	98.3%	98.4%	0.1%	97.8%	82.5%	4.9%	100.0%	100%
Fibre-to –the-Premises (FTTP) coverage	77.7%	85.3%	9.9%	-	69.2%	8.4%	-	-
Overall 5G coverage	100.0%	100.0%	0.0%	100.0%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	27	59	118.5%	-	2 257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	80.8%	0.5%	-	72.9%	2.8%	95.0%	90%
Cloud	60.4%	68.5%	13.5%	-	-	-	85.3%	75%
Artificial Intelligence	14.1%	23.1%	63.5%	23.0%	13.5%	67.2%	85.1%	75%
Data analytics	50.8%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	74.6%	-	-	-	-	-	-	75%
Unicorns	30	32	6.7%	-	286	4.4%	-	500
At least basic digital skills	82.7%	-	-	-	-	-	100.0%	80%
ICT specialists	6.9%	7.0%	1.4%	7.7%	5.0%	4.2%	9.2%	~10%
eID scheme notification		Yes						
Digital public services for citizens	85.9	88.5	3.1%	85.9	82.3	3.6%	100.0	100
Digital public services for businesses	86.7	88.8	2.4%	86.7	86.2	0.9%	100.0	100
Access to e-health records	72.5	65.2	-10.1%	-	82.7	4.5%	-	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

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According to the special Eurobarometer on ‘the Digital Decade 2025’, 84% of the Dutch public consider that the digitalisation of daily public and private services is making their lives easier. Moreover, 90% consider it important that public authorities counter and mitigate the issue of fake news and disinformation online. Regarding competitiveness, 83% deem it significant that European companies can grow and become ‘European Champions’ able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

The Netherlands’ connectivity infrastructure is in good shape, with widespread broadband coverage and excellent 5G services. The National Technology Strategy serves as the guiding policy for the country’s digital innovation efforts, outlining key priorities such as semiconductors, AI, quantum technology and cybersecurity. In its approach to semiconductors and quantum technologies, the country aims to strike a balance between promoting technological leadership and protecting its critical supply chains. On the digitalisation of businesses, while most Dutch businesses have achieved a basic level of digitalisation, smaller enterprises often struggle to keep pace with the adoption of key digital technologies, particularly AI. This challenge may be exacerbated by the fragmented nature of AI innovation in the country, which is largely driven by regional partnerships. As a result, funding opportunities and the overall national strategy can appear disjointed and unevenly accessible to these smaller businesses. Finally, to address digital threats and promote digital initiatives, the Dutch Cybersecurity Strategy remains the primary initiative in the Netherlands. Encouragingly, progress was made in 2024 towards centralising government efforts and strengthening public-private collaboration in this area.

Protecting and empowering EU people and society

The Netherlands has a strong digital skills profile with very good scores across regions and genders, although some differences remain across age groups and education levels. Recent budget cuts in higher education, combined with existing ICT labour shortages, could in the future challenge the digital labour market. The roadmap has therefore been adjusted to support ICT teaching and regional plans to increase the ICT workforce. The gender imbalance in ICT specialists in employment and the decline in women employed in this field are also significant. The country has good digital public services and is working on digital accessibility to ensure everyone can participate in the digital transition. It is also continuing its commitment to countering disinformation and safeguarding children’s rights online.

Leveraging digital transformation for a smart greening

The Netherlands is stepping up its commitment to sustainable digitalisation with the launch of the Sustainable Digitalisation Action Plan. This plan, which features in the ‘Green & Digital’ cluster of the Digital Decade’s Best Practice Accelerator, outlines measures to leverage digital tools to reduce energy consumption, monitor and mitigate the environmental impact of the digital sector and strengthen public-private collaboration in information sharing.

National digital decade strategic roadmap

The Netherlands submitted a fully revised national Digital Decade roadmap on 31 January 2025. It contains around 15 new measures and four revised targets. In the revised roadmap, the Netherlands addressed a substantial number of roadmap recommendations issued in 2024. The country raised the ambition of its national targets for VHCN, the digitalisation of SMEs and the uptake of data analytics, aligning them with the EU targets for 2030. The Dutch national target for ICT specialists remains slightly

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below that of the EU (at 9.2% of the total employed population working as ICT specialists instead of 10%). There is no target for access to e-health records, as it would be difficult to draw up, given the decentralised healthcare system. The revised roadmap continues to prioritise digital public services and shows an increased focus on ICT specialists. It contains **59 measures and has a budget of EUR 5.25 billion, of which EUR 5.22 billion comes from public budgets (equivalent to 0.46% of GDP)**. It still covers a diverse range of Digital Decade objectives, with strengthened commitments to the digital and green transition, promoting a human-centred digital space and protecting society online. The roadmap also includes more details on the consultation with stakeholders with respect to the original roadmap.

Funding & projects for digital

The Netherlands allocates 26% of its total Recovery and Resilience Plan to digital (EUR 1.2 billion)¹. In addition, under cohesion policy, EUR 170 million, representing 11% of the country's total cohesion policy funding, is dedicated to advancing the country's digital transformation².

The Netherlands is a member of the 'Alliance for Language Technologies' European Digital Infrastructure Consortium (EDIC) and of the 'Local Digital Twins towards the CitiVERSE' EDIC. The country participates directly in the important project of common European interest (IPCEI) on Microelectronics and Communication Technologies and in the IPCEI on Next Generation Cloud Infrastructure and Services. It is also a participating state of the European High-Performance Computing Joint Undertaking (JU) and of the Chips JU.

The Netherlands has contributed to the Digital Decade Best Practice Accelerator³ by sharing two best practices in the 'Business Uptake' cluster (with the National technology Strategy) and the 'Green and Digital' cluster (with the Sustainable Digitalisation Action Plan).

Digital rights and principles

According to a support study, the Netherlands has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 60 initiatives overall and three new initiatives launched in 2024. The Netherlands is mostly active in ensuring people remain at the centre of the digital transformation, while less activity was identified with regards to ensuring a fair digital environment. Measures related to digital solidarity and inclusion appear to have most impact on the ground, in contrast to those addressing digital safety, security and empowerment.

Recommendations

- **Quantum/semiconductors:** find alternative sources of funding (both public and private) to capitalise on the Netherlands' competitive advantage in the areas of semiconductors and quantum technologies, while maintaining a good business environment for long-term digital innovation.
- **ICT specialists:** attract a more diverse pool of ICT talent by taking advantage of untapped potential workers (i.e. people with a migrant background and those working in part-time employment).

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Follow up on recent plans to reduce labour market shortages, paying particular attention to attracting more ICT talent, improving labour market matching and providing suitable funding for higher education. Respond to worries regarding recent budget cuts in higher education.

- **Artificial Intelligence:** strategically allocate a combination of public and private resources to support SMEs' take-up of key digital technologies, in particular AI. Improve collaboration between scattered regional initiatives and set out a clear vision and strategic plan for AI to fully harness its potential.
- **Basic digital skills:** complement the ongoing efforts at local and regional level to ensure digital inclusion and good levels of digital skills by setting up national curriculum plans and funding. This could include integrating technology literacy or similar courses in the national curriculum.
- **Green transition:** continue efforts to contribute to the green transition, also by translating the Sustainable Action Plan into an actionable programme and creating more synergies among measures and policies within and beyond the government.

A competitive, sovereign and resilient EU based on technological leadership

The Netherlands has long been a pioneer in research, development and innovation (R&D&I), playing a leading role in the global semiconductor industry and making significant strides in quantum technologies. The country still appears to be an innovation leader in the [European Innovation Scoreboard 2024](#). However, recent cuts to the public budget and the suspension of the fourth and fifth rounds of the National Growth Fund have led to a **notable decline in the country's innovation trajectory**. Investments in public R&D have decreased from 0.75% of GDP in 2021 to 0.64% of GDP in 2023 (falling below the EU average of 0.72%).

One of the key factors underpinning the Netherlands' highly digitalised economy and society is **its excellent connectivity infrastructure, which provides a strong foundation for digital growth and innovation**. Leveraging this excellent connectivity base, **Dutch companies continue to have a strong position in both digital engagement and the adoption of key digital technologies**. Nevertheless, **a significant gap persists between small and medium-sized enterprises (SMEs) and larger companies in the adoption of key digital technologies** like cloud computing, data analytics and Artificial Intelligence (AI). This gap is particularly concerning, given that SMEs accounted for approximately 96.1% of domestic enterprises in 2022. The Dutch ICT sector represented 5.31% of the gross value added in 2022⁴ (improving from 4.88% in 2013), but is still slightly below the EU average of 5.46%. The financing system, although well-developed, is less accessible to smaller companies, which also poses challenges to the country's overall competitiveness.

The Netherlands is currently preparing its [new Dutch Digitalisation Strategy](#) to unify the government's approach to digitalisation and boost the government's digital services, digital infrastructure, autonomy and resilience at different levels (national, regional and local). The strategy will focus, among other things, on the effective use of AI and data in the public sector. At the same time, it will also promote digital sovereignty by reducing dependency on external cloud providers and foster a more robust and secure digital ecosystem within the government. In parallel, when it comes to innovation subsidies and strategic efforts, the [National Technology Strategy](#) remains the overarching Dutch policy for prioritising critical technologies like semiconductor, AI, quantum and cybersecurity technologies. The strategy features in the 'Business Uptake' cluster of the Digital Decade's Best Practice Accelerator.

Building technological leadership: digital infrastructure and technologies

The Netherlands' **connectivity infrastructure is in good shape**, with several key performance indicators (KPIs) outpacing the corresponding EU averages. This aligns well with a notable majority (92%) of Dutch citizens considering the development of efficient and secure digital infrastructures to be a crucial priority for public authorities (according to the Special Eurobarometer⁵ on the Digital Decade 2025). Some challenges remain in the **coverage of rural and remote areas** and in ensuring the **affordability of fixed high-speed internet services**.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

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Connectivity infrastructure

The Netherlands has achieved 98.41% of Fixed Very High-Capacity Network (VHCN) coverage, which is well above the EU average and close to its 2030 national target of 99.90%. For households in rural areas, VHCN coverage was 88.38% in 2024, above the EU average of 61.89%. Overall, **the country is on track according to its national trajectory.**

The Netherlands performed well in Fibre-to-the-Premises (FTTP) coverage, achieving 85.35% coverage in 2024, with a growth rate of 9.9%. For households in sparsely populated areas, the Netherlands' FTTP coverage was 78.79% in 2024, which was significantly higher than the EU average of 58.78%. However, very little progress has been made since 2023, when FTTP in rural areas was 78.42%. **The country did not provide a national trajectory point for 2024 or a 2030 national target.**

Finally, the country already achieved full 5G coverage in 2022 and is therefore on track according to its national trajectory. As a result of the allocation of the 3.5 GHz band, 5G coverage in the 3.4 – 3.8 GHz band significantly increased in 2024, reaching 99.37% of households. Regarding 5G spectrum, the Netherlands assigned 66.67% of 5G pioneer bands in 2025, which is double the figure for 2024 (33.33%), but still lower than the EU average of 74.63%.

VHCN and FTTP

As the Netherlands has made good progress with both VHCN and FTTP, it is currently focusing on covering the remaining addresses and investigating pricing dynamics to benefit consumers.

The most recent data from the Broadband coverage in Europe 2024 study shows that, in that year, 98.41% of Dutch households had VHCN coverage and 85.35% had fibre. According to the [telecom monitor published by the Authority for Consumers and Markets \(ACM\)](#), in Q3 2024, the roll-out of fibre optic reached nearly 7.94 million households (up from 7.69 million households in the previous quarter). 3.03 million of those households had a fibre optic plan (up from 2.99 million in Q2). Meanwhile, the country is gradually switching off copper, with the number of houses using coax or copper cable services decreasing further last year. Moreover, [mobile-data consumption](#) surpassed its all-time peak of 600 million GB.

In the revised 2024 roadmap, the Netherlands provides a new target value for VHCN (99.9%) by 2030, which is aligned with the EU target (100%). This projected value, which the **country is overall on track to meet**, is based on the main market players' expected roll-out plans. In a [letter to Parliament](#) sent by the Minister of Economic Affairs in September 2024, the government also highlighted its intention to have households' fixed internet connection upgraded from 100 Mbps to 1 Gbps before 2030.

Despite progress, the current situation still presents some challenges that require attention. VHCN coverage in rural areas was lower (88.38%) than overall coverage (98.41%) in 2024. At the time the letter was written, approximately 27 500 households in rural or underserved areas lacked access to fixed fast internet, with many of them relying on connections slower than 30 Mbps. Although telecom operators are expected to address the needs of 15 500 of these households by 2028, around 12 000 households are at risk of remaining without fixed high-speed internet by the end of the decade. This represents an improvement on the 2022 projection of 19 000 households being without fixed high-speed internet by 2030. To bridge this connectivity gap, the government points to wireless alternatives, such as fixed wireless solutions and satellite internet. Additionally, State aid may be necessary beside these market efforts, with local government in provinces like Friesland and Groningen exploring funding options to expand high-speed internet coverage in their rural territories. To further support

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these initiatives, the government will continue to provide provinces with access to expertise and knowledge, sharing the latest fixed broadband coverage data and facilitating efforts to roll-out fibre in the remaining underserved areas.

With regard to take-up, 85.38% of fixed broadband subscriptions in the Netherlands had speeds of 100 Mbps or higher in 2024, up from 72.03% in 2023. Fixed broadband subscriptions with speeds of 1 Gbps or higher remain less attractive, accounting for only 10.53% of fixed broadband subscriptions. This is below the EU average of 22.25%, but up from 4.13% in 2023.

Recent market research and surveys have shed light on trends in the Dutch telecom market and consumer behaviour, revealing that **broadband subscription prices in the Netherlands remain relatively high**. Despite the availability of more affordable and higher-quality fibre/cable-based plans, many consumers are hesitant to switch from low speed, (mostly) copper legacy subscriptions. In 2024, the ACM conducted a comprehensive [scan of the Dutch telecom market](#) and a [consumer survey](#) to better understand consumer behaviour in the sector. The survey's findings are telling: 53% of consumers consider the price of their fixed internet subscription to be high, and a significant majority (63%) pay more than EUR 50 per month for their broadband subscription. Furthermore, when choosing a fixed internet subscription, 61% of consumers prioritise fixed monthly costs, compared with 52% who prioritise quality and reliability of their internet connection. However, the survey also reveals a paradox: households with slower broadband plans (under 100 Mbps) pay an average of EUR 44 per month, which is higher than plans offering faster speeds (EUR 38 for 100-250 Mbps and EUR 41 for 250-750 Mbps). Moreover, many consumers in the budget segment have 'dormant' contracts, and therefore miss out on discounts available to those with active contracts. This suggests that, although higher-quality and more affordable plans exist, consumers often fail to take advantage of them. In response, the ACM has announced plans to further investigate this issue and is encouraging telecom operators to better inform customers about their cheapest options, emphasising that access to the internet must remain affordable for all.

Beyond VHCN and FTTP coverage, global digital connectivity through submarine cables is also a key Dutch priority, with the country providing a crucial port and infrastructure network for international undersea cables. The Netherlands participates in several ongoing projects that are receiving EU funding from the Connecting Europe Facility Digital programme. In April 2024, the new [CELIA Caribbean European Territories Cable](#) project kicked off as a collaboration between French and Dutch operators to build a submarine cable with the goal of improving connectivity with the two Caribbean islands of Martinique (France) and Aruba (the Netherlands). The end of December saw the start of [the BCA submarine cable project](#), which will study and design the future installation of a submarine cable connecting certain Overseas Countries and Territories (the islands of Bonaire, Curacao and Aruba) with the EU. Finally, in February 2025, the Dutch Subsea Cable Coalition [signed](#) a memorandum of Understanding to develop the Pan-Arctic Cable System. This will significantly improve the country's internet resilience, increase its bandwidth capacity and diversify its routing options.

5G

With 5G coverage at 100%, the Netherlands has already achieved the 2030 EU target. A noteworthy development in the 5G space in 2024 was the launch by one of the main Dutch telecom operators' of [Klik&Klaar](#): a home internet service operating on 3.5 GHz frequencies. The service offers affordable, high-speed internet with download speeds up to 300 Mbps and upload speeds up to 30 Mbps across the country. Being independent of the traditional fixed-line infrastructure, it is designed for easy self-installation, with users simply needing to plug in the provided modem to go online. By December 2024,

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there was already a lot of interest in the solution from Dutch consumers. Also interesting to note is that 127.46%⁶ of the population had a 5G SIM card in 2024, which is well above the EU average of 35.56%.

2024 recommendation on connectivity infrastructure: ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

In 2024, the Netherlands continued to implement existing measures, but did not take any new measures. After the 3.5 GHz band auction was completed in July 2024, the three main Dutch telecom operators secured their spectrum allocation, providing a solid foundation for the development of advanced 5G services. In addition, the Netherlands is investigating potential future demand for other frequency bands (the 26 GHz band and the 3.8 – 4.2 GHz band for local or regional private 5G networks). Opening up access to this additional spectrum would facilitate innovation in both B2B and B2C applications. For businesses, this spectrum could help with everything from smart city solutions to digital applications. For consumers, it could lead to new services, such as enhanced mobile broadband and new types of connected devices, all operating on private networks.

Semiconductors

The semiconductor industry remains a cornerstone of the digital landscape in the Netherlands. Over the past year, there has been a growing focus on drawing up a strategic framework for the sector that balances promoting technological leadership and protecting critical value chains. This has been accompanied by sustained investments from both public and private sources. On a strategic level, the country successfully set up the Semiconductor Board NL in January 2025, consisting of different companies in the Dutch semiconductor ecosystem and relevant ministries. The Semiconductor Board NL is tasked with developing and overseeing the implementation of a sector-wide semiconductor strategy designed to reinforce and maintain the technological leadership of Dutch companies. The Board offers strategic guidance, sets priorities, identifies challenges and actively supports the executive of initiatives essential to securing an internationally leading, sustainable knowledge and an industrial position by 2035.

To further enhance cooperation in the field, the Netherlands also took the lead in setting up the Semiconductor Coalition with eight other EU Member States in March 2025. The goal is to build up a common European strategy to increase and strengthen the EU's position in the global semiconductor supply chain by increasing production capacity, investing in cutting-edge research and developing a skilled workforce. A declaration with concrete ideas on how to move forward is expected to come in the next months. These two key strategic milestones demonstrate the Netherlands' commitment to continued growth and global leadership in the semiconductor sector.

At the level of projects and funding, several impactful initiatives are in place. The launch of 'Project Beethoven' (worth EUR 2.5 billion) triggered a new phase of public and private investments to improve housing, transportation, education and electricity in the Eindhoven region, one of Europe's fastest-growing tech hubs. In December 2024, for example, a group of Dutch tech companies, including ASML and chipmaker NXP, [pledged around EUR 200 million](#) to improve infrastructure in the region. Additionally, the [NXTGEN HIGHTECH programme](#), officially launched in 2023, is developing a new generation of semiconductor equipment. In 2025, [six new projects](#) started as part of the programme.

⁶ The percentage of the population with 5G SIM cards can exceed 100% because people can have more than one SIM card.

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These bring together researchers from various knowledge institutions and industry partners to improve the design and manufacturing of complex systems; develop new tools and methods for testing and analysing materials; and boost the speed and accuracy of detection and sensing technologies that have applications in fields like biomedicine and semiconductor production.

Moreover, the PhotonDelta growth fund programme, launched in 2023 with a total budget of EUR 471 million, aims at the development and industrial take-up of the photonic integrated circuits industry in the Netherlands. From this programme, EUR 54 million will be allocated to the national co-funding of the photonics pilot line PIXEurope, that was selected under the EU Chips Joint Undertaking. On 5 February 2025, the R&D programme PhotonDelta announced a [call for proposals](#) concerning photonic technology, with over EUR 7 million being available to support the country's photonics market and supply chains. At EU level, the country also continues to be active in the multi-country project on Microelectronics and Communication Technologies.

2024 recommendation on semiconductors and quantum computing: continue to secure public funding and stimulate private investments to capitalise its competitive advantage in the areas of semiconductors and quantum technologies, while maintaining a good business environment for long-term digital innovation.

In 2024, the Netherlands continued to implement existing measures but did not take any new measures. A [report from TechLeap](#) reveals that the country ranks second in Europe in terms of per capita investments in semiconductors. Moreover, from 2019 to 2024, over 80% of the total venture capital investment in next-generation technologies and computing infrastructure was focused on the semiconductor industry. However, the recent shifts in government priorities have resulted in budget cuts to R&D, despite the fact that it is crucial for both technological innovation and the development of skilled talent in the sector. Moreover, the discontinuation of the National Growth Fund, which was meant to secure a EUR 20 billion investment over several years in key sectors including semiconductors, created some budget gaps and uncertainty. While the government still maintains a focus on semiconductors, budget cuts present a hurdle to the country's continued leadership in this critical industry. To continue driving innovation in the semiconductor sector, the country is now looking to create public-private partnerships and find alternative funding models to fill the void left by these cuts.

Moving forward, just as for other critical technologies, an essential aspect of the semiconductor policy in the Netherlands will be about finding a balance – as a matter of both economic and national security – between promoting and protecting the country's semiconductor industry. The government's [announcement](#) at the start of 2025 that it will tighten its export checks on advanced semiconductor manufacturing equipment from April is consistent with this line of thinking.

Edge nodes

According to the Edge Node Observatory, the Netherlands is estimated to have deployed a total of 59 edge nodes by 2024, up from the 27 in 2023. No national target or trajectory was set for the deployment of edge nodes in the Dutch national roadmap, as the country favours a more quality-oriented target.

2024 recommendation on edge nodes: consider measures specific to edge nodes deployment, supplementary to the Important Project of Common European Interest on Next-Generation Cloud Infrastructure and Services (IPCEI-CIS) participation.

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In 2024, the Netherlands continued to implement existing measures but did not introduce any new measures or plans for developing a specific strategy soon. Nonetheless, the country continues to be involved in the IPCEI-CIS, which focuses on the industrial deployment of advanced cloud and edge computing technologies. The country also highlights that it will continue to track the findings of the European Edge Observatory for the Digital Decade and will consider the need for new measures if deployment is lagging.

Quantum technologies

Interest in – and activities around – quantum technologies are gaining momentum in the Netherlands. The government is leading the way with the [Quantum Delta NL programme](#), which is progressing well. The project's first two completed phases focused on consolidating quantum infrastructure and research (for instance by granting funds for the award of more than 50 PHD scholarships) and improving an R&D network infrastructure between the cities of Delft, Amsterdam and Eindhoven. The third and final phase will now focus on deployment and commercialisation, with some work on developing use cases for the government in sectors like defence and cybersecurity having already started. Some of the main recent milestones include:

- the [securing of a EUR 273 million investment](#) from the National Growth Fund in July 2024, as part of the third phase.
- the [launch](#) of the Quantum Delta NL Participations Fund in February 2025, with EUR 5 million secured already to support early-stage quantum startups at global level.
- the completion of about 80% of the upgrade of the cleanroom facility, following the [allocation of EUR 150 million](#) from the National Growth Fund to the NanoLab Cleanroom project in April 2024.

2024 recommendation on semiconductors and quantum technologies: continue to secure public funding and stimulate private investments to capitalise its competitive advantage in the areas of semiconductors and quantum technologies, while maintaining a good business environment for long-term digital innovation.

As in the case of semiconductors, the Netherlands continued to implement existing measures in the field of quantum technologies in 2024 but did not introduce any new measures. Quantum Delta NL, one of the main instruments for building the Dutch quantum ecosystem, has benefited greatly until now from the National Growth Fund. However, the fund's discontinuation will make it harder to secure both large-scale and long-term investments in the technology. Aside from supporting key projects, the fund played a crucial role in convincing private investors of the reliability and profitability of quantum investments. Moving forward, the government will focus on finding alternating funding resources to achieve a sustainable investment climate and maintain the technology's momentum. These include public-private partnerships, EU funding and private and venture capital investments.

As in the case of semiconductors, the Dutch government is trying to balance innovation and national security. In October 2024, new regulations were introduced that require companies to obtain an export permit to sell quantum computers outside the EU. The regulations will apply to eight types of quantum computers, to quantum measurement equipment and to chipmaking technologies.

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In parallel, the Netherlands continues its fruitful collaboration with EU countries. In March 2024, it signed the European Declaration on Quantum Technologies (also known as the Quantum Pact) with 19 Member States. The country also continues its commitment to the trilateral collaboration with Germany and France. The three countries organised a joint [European Quantum summer school](#) for Master's students in July 2024 and made progress in setting up a European Quantum Campus, which will be a network of locations with R&D facilities tailored to the needs of quantum start-ups.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

In broad terms, Dutch enterprises are highly digitalised compared with those in other EU Member States. However, SMEs are lagging behind larger companies when it comes to adopting key digital technologies like cloud computing, AI and data analytics. The slowdown in start-up creation and the consistently low rate of companies scaling up are also limiting the competitiveness of Dutch tech companies, highlighting the need for more early-stage funding and reducing the regulatory burden.

SMEs with at least basic digital intensity

Dutch SMEs maintain a strong position in both basic and advanced digital engagement. In 2024, 4 out of 5 (80.83%) Dutch SMEs had achieved at least a basic level of digital intensity (the 2030 national target is 95%), maintaining a similarly high level as in 2022 (80.06%). 2022 is the last year that can be compared using a similar methodology to measure the digital intensity of enterprises. The Netherlands consistently exceeds the EU average of 72.91%, particularly in terms of high or very high digital intensity. In 2024, 44.22% of Dutch SMEs reached this level, far surpassing the EU average of 32.66%.

In 2024, the Dutch government presented a national target for SMEs' basic digital intensity of 95%, which is above the 90% EU target. However, **the current trajectory suggests that Dutch SMEs may fall short of this goal,** with only 88.19% projected to reach a basic level of digitalisation by 2030. The government acknowledges that this target may be difficult to meet, as SMEs face barriers such as limited financial resources, resistance to change and a lack of skilled staff. These challenges were highlighted in recent evaluations of the national pilot projects 'My Digital Case' and the 'Digital Workplaces', which are designed to help SMEs improve their digital skills, strengthen their online presence and better understand ICT investments. From 2020 to 2023, the 'Digital Workplaces' programme supported around 10 500 SMEs, with 7 500 taking further steps to digitalise their operations. Similarly, the 'My Digital Case' pilot projects supported approximately 11 500 SMEs in 2022 and 2023.

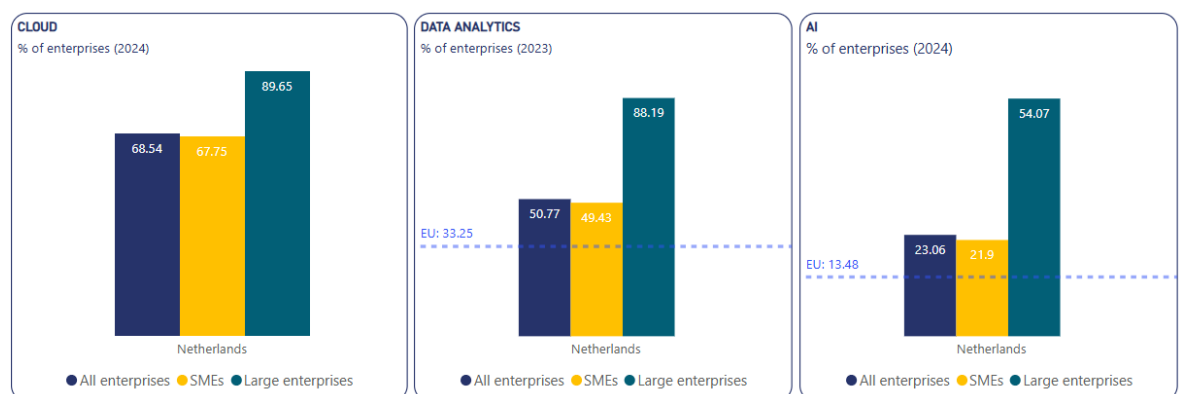
At local level, approximately 400 regional hubs and initiatives are now dedicated to supporting SMEs across different sectors in their digital transformation journeys. A key initiative among these is the 'Smart Makers Academy', which was launched in 2020 to assist SMEs in the manufacturing sector. The academy operates through various regional hubs, offering practical, short-term training programs to optimise production processes and foster product development through digital technologies. In 2024, the academy received an additional subsidy of EUR 254 228 from the Dutch Government to expand its reach. Due to strong demand from SMEs, particularly in the area of generative AI, the initiative will continue through at least until the end of 2025 and will extend its programmes to the healthcare and green sectors.

In parallel, the five Dutch European Digital Innovation Hubs (EDIHs), which were launched in 2023 with funding from the Digital Europe Programme, continue to act as crucial regional touchpoints, helping SMEs understand and leverage digital solutions to enhance their businesses. In 2024, these hubs made significant progress in advancing digital transformation across sectors. The focus has shifted

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from raising awareness to providing active support for companies' digital implementation, with the EDIHs playing a key role in contributing to the Commission's Digital Maturity Assessment Tool. Looking ahead, the goal is to better align the EDIHs' services with national priorities, while strengthening coordination with existing national and regional initiatives.

Take up of cloud/AI/data analytics



The Netherlands demonstrates a **robust overall performance with regard to the adoption of cloud computing, data analytics and AI technologies**, significantly exceeding the EU averages across all three areas. However, **large enterprises have consistently higher adoption rates than SMEs – particularly for AI – than SMEs**. Reducing this disparity could further strengthen the digital industrial ecosystem and enhance the competitiveness of SMEs within the Dutch economy. Adoption of cloud and data analytics, as well as the adoption of the three technologies together, were not measured in 2024.

2024 recommendation on adoption of digital technologies by enterprises: continue to support the adoption of advanced digital technologies, with particular attention to scaling up successful AI innovations and improving access to finance, data and computing infrastructure.

The Netherlands continued to implement existing measures, but did not introduce any new measures in 2024. See more details in the sections below.

- **Cloud**

According to the latest available data, the adoption of cloud computing in the Netherlands reached **68.54% in 2024** (the 2030 national target is 75% and the national trajectory reaches 85.3%), up significantly from 60.39% in 2023. However, a disparity persists between SMEs and larger enterprises. While SMEs achieved a cloud uptake of 67.75%, large enterprises' adoption rate of 89.65% was significantly higher. This translates into a 21.9 percentage point difference in cloud adoption between the two groups. Nevertheless, this gap has narrowed compared to 2023, when the difference was 24.37 percentage points, indicating a trend towards greater convergence in cloud computing adoption rates.

In its adjusted roadmap, the Netherlands projected to have **85.3% of enterprises adopting cloud computing by 2030**, which is higher than the EU's 75% target.

⁷ The cloud graph does not include the EU average because, while the Netherlands has data for cloud for 2024, this was not collected at EU level in 2024.

2024 recommendation on cloud: (i) ensure the broad uptake of the next generation of cloud infrastructure and services under development in the IPCEI-CIS by companies of all sizes, including by developing a country-specific dissemination strategy; (ii) contribute to the dissemination activities led by the Cloud IPCEI Exploitation Office.

In 2024, the Netherlands continued to implement an existing measure, namely the IPCEI-CIS, and actively promoted its three projects. Aside from participating in European coordination meetings and forums to discuss the IPCEI-CIS (i.e. the IPCEI CIS governance bodies), the government made public announcements and published press releases to provide updates on the state of the play of its IPCEI-CIS projects. In January 2025, the Ministry of Economic Affairs published a [Parliamentary letter](#) addressed to the House of Representatives about the progress of the IPCEI-CIS. The letter mentioned:

- the government's close contact and meetings with the Dutch companies involved in the three projects;
- the progress of the Dutch projects (which started end of 2023);
- the release of the first concrete results for one of the projects (Open FEDerated ecosystem), which was also covered in the Dutch media;
- the plan to present progress at EU level this year.

Furthermore, the Netherlands intends to host the IPCEI-CIS General Assembly 2026. In this event, special attention will be given to the dissemination of the project's results over the wider cloud community.

Aside from the involvement in the IPCEI-CIS, **the country's efforts in cloud computing are mainly focused on addressing the Parliament's economic and security concerns around the government's heavy reliance on a small number of external public cloud services.** In mid-March 2025, the Dutch Parliament approved motions urging the government to reduce its reliance on US cloud providers by developing an alternative Dutch cloud platform. A new government cloud strategy for cloud use by public authorities in the Netherlands is expected to be released soon (around Q2 2025). The government also signalled its great interest in EU-wide action to build and stimulate the growth of federative European alternatives to hyperscale cloud providers.

- [Data analytics](#)

Data from 2023 showed that 50.77% of Dutch enterprises used data analytics (the 2030 national target is 75%), showing a strong lead compared with the EU average of 33.25%. For SMEs, the percentage was 49.43%, while the uptake was notably higher among large enterprises at 88.19%. This resulted in a gap of 38.76 percentage points between SMEs and large enterprises, which is similar to the average gap in other EU countries. Despite aligning its national target for the adoption of data analytics with that of the EU (75%), **the current trajectory suggests that Dutch enterprises may fall short of this goal,** with only 61.20% projected to adopt the technology by 2030.

The [Centre of Excellence for Data Sharing and Cloud](#) remains the main measure promoting the use of data analytics and cloud computing by companies in the Netherlands. In 2024, it continued to provide information on data-sharing tips and tools, data sharing initiatives and practical solutions to scale up market adoption through a [knowledge base](#) on its website, and through articles and public events. For instance, the Centre hosted the [Data Sharing Festival](#) in February 2024 in collaboration with the Dutch government to discuss best practices in scaling up the market adoption of safe and secure data sharing

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practices. The Centre also joined the Dutch pavilion at the [Hannover Messe](#) trade fair in April 2024 to showcase Dutch companies' innovative solutions related to data analytics (and cloud services).

- **Artificial intelligence**

According to new data collected in 2024, 23.06% of enterprises in the Netherlands reported using AI technology (the national 2030 target is set at 75%, although the 2030 national trajectory reaches 85.1%), well ahead of the EU average of 13.48%. This reveals a high average growth rate (63.5%) compared with 2023, when AI uptake was 14.1%. Overall, the country is on track according to its national trajectory.

Although the AI adoption rate is higher than the EU average for all enterprises, only 1 in 5 SMEs (21.9%) used AI in 2024 (EU average of 12.64%), while over half (54.07%) of large enterprises were able to adopt AI technology (EU average of 41.17%). This gap of 32.17 percentage points slightly exceeds the EU gap of 28.53 percentage points. According to the Dutch National Statistical Institute's [2024 AI Monitor](#), most companies use AI technologies for text mining (13.5%) and natural language generation (12.3%). The information and communication industry was most likely to use AI technology (about 58% of companies), followed by companies specialising in business and financial services (39.8% and 37.3% respectively). Finally, for those companies who reported never using AI, most of them (74.6%) explained that this is due to a lack of knowledge of the technology, while others (more than half of the companies) mentioned privacy concerns.

A [report from TechLeap](#) reveals a more nuanced picture of the AI ecosystem in the Netherlands, describing the strengths and challenges of 'AI companies'. These are companies that use AI technologies in their core services; develop AI infrastructure and algorithms; produce hardware; and are end-users of AI solutions. According to the report, AI companies represent 9% of the total Dutch tech scale-up landscape. Most scale-ups have been set up recently and are currently looking for funding for their early-stage growth. These companies tend to encounter recurring challenges, with funding being the most common barrier, followed by a lack of industry awareness, difficulties for smaller companies to access the market and a lack of talent. Other challenges include difficulties accessing data and computing power, the burden of regulations and ethical concerns. With regards to funding, the report highlights that Dutch venture capital firms often prefer not to invest in AI scale-ups because they are deemed too risky.

AI innovation in the Netherlands is largely driven by (regional) public-private partnerships. The Dutch AI Coalition is a key example of this, founded and funded by several central government departments and bringing together more than 500 companies, organisations and institutions involved in the world of AI to stimulate collaboration, development and innovation. The coalition operates in different local [AI hubs](#), located across various regions of the country. Notable hubs include the [AI Hub Amsterdam](#), which focuses on the research and development of AI applications primarily in healthcare, business innovation and services for individuals, and the [AI Hub Brainport](#), which specialises in AI applications for healthcare, mobility and manufacturing. Since 2025, the Dutch AI Coalition has joined forces with another public-private initiative, [AiNed](#), to form the [AI Coalition 4 Netherlands](#). This merger aims to further stimulate AI innovation in the country. The coalition has been actively supporting AI projects, and notable successes include the AiNED MIT call for projects in 2024, which awarded a total grant of EUR 3.55 million to [14 projects](#) that aim to stimulate AI innovation in SMEs. Another similar call for projects is planned in 2025, together with the launch of five applied learning communities, four innovation labs and the preparation for the start of the new European Language and Speech Technology for AI labs.

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The government's regional approach to AI presents both challenges and opportunities. On the one hand, the fragmented funding that is spread across seven regional hubs can sometimes be a hurdle for smaller enterprises looking for funding. On the other hand, the regional and sectoral organisations, each producing their own vision and agenda for AI, can also be considered a strength. For instance, in 2024, the municipality of Amsterdam, with the help of its residents, developed its own [vision for AI](#), focusing on how the technology can improve decision-making processes and help build a smarter city, while always respecting core human values like public trust and privacy. Other regional initiatives and guidelines also emerged in the same year, aiming to promote the responsible development and use of AI. For example, the Union of Water Boards developed its [AI compass](#) to help water companies use AI intelligently and ethically. The Association of Provincial Authorities also published a [Guide on Digital Ethics](#), with a section focusing on AI use.

Aside from leveraging its strong regional AI Network, the Netherlands also intends to build up its AI infrastructure and invest in attracting talent. AI will be one of the priorities of the new Netherlands Digitalisation Strategy expected in Q2 2025, which will address the need to accelerate AI adoption for innovation in the public sector. The government also reported on plans to develop a new direction for the [Strategic Action Plan on AI \(2019\)](#). Finally, the Netherlands is exploring the possibility of building an AI Factory to enhance its computing power.

The country is also taking a proactive approach when it comes to mitigating AI's potential risks and aligning with EU rules. It launched the [National Algorithm and AI Register](#) for the public sector and published its [vision on Generative AI](#) in January 2024. Subsequently, the country [adopted a guide on AI Regulation](#) in October 2024. This guide provides organisations and businesses with insights into how to interpret and apply the EU AI Act. Overall, according to the Eurobarometer on the Digital Decade 2025, a staggering 88% of Dutch citizens agree there is a need for public authorities to play a proactive role in ensuring that the development of AI and new technologies aligns with EU rights and values.

Unicorns, scale-ups and start-ups

At the beginning of 2025, the Netherlands had 32 unicorns, with two new unicorns emerging in 2024, which indicates a mature tech ecosystem. However, as underlined in the [State of Dutch Tech Report 2024](#), the country is currently facing a period of stagnation, characterised by declining investments and a decrease (from 39 to 30) in the number of start-ups that are able to successfully scale up. Accessing venture capital and issues linked to regulatory requirements are some of the main challenges faced by Dutch start-ups.

The start-up scene in the Netherlands is quite diverse, with most tech companies concentrated in three key regions: North and South Holland and Utrecht. In 2024, the two key areas driving the most investments were the cloud hosting industry (accounting for about 20% of venture capital investment) and the semiconductor industry. Conversely, Dutch AI investments lagged behind other EU Member States' investments, showing that the sector is still relatively small and has not yet reached maturity.

Looking closely at investments, although the Dutch venture capital landscape grew significantly by 47% from 2023 to 2024 to reach a total of EUR 3.1 billion, a more nuanced picture emerges in the background. **Early-stage investments and domestic investments have experienced a sharp decline** (from 61% in 2023 to 15% in 2024), suggesting a shift in investor sentiment. Furthermore, the investment landscape appears to be quite cautious, with larger institutional investors, such as pension funds, preferring to invest in real estate rather than new tech businesses. Scale-ups are having a hard time reaching full commercialisation, especially [when seeking funding exceeding EUR 50 million](#). Additionally, [studies](#) show that Dutch SMEs are 40% less likely to apply for a bank loan than SMEs in

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other Member States. All these factors ultimately hinder SMEs and start-ups from accessing the financing they need to grow and thrive.

Several existing financing schemes for start-ups and scale-ups have been boosted to address some of the above challenges. In 2024, for example, [Invest-NL](#) introduced an additional EUR 100 million in blended finance instruments to attract institutional investors and support scale-ups. With an eye to national security, the government also proposed extending the Dutch investment screening law to include screenings of foreign investments on sensitive technologies like AI and biotech. Another example of public support for start-ups and scale-ups is the government-led [Techleap initiative](#), which focuses on helping start-ups to scale-up, attract investments and take advantage of other stakeholders' and entrepreneurs' knowledge.

It is important to note that an increase in the regulatory and administrative burden is negatively impacting companies, particularly SMEs, start-ups and scale-ups. In 2024, more than half of the Dutch companies (51%) [reported](#) encountering regulatory burdens, up from 42% in 2023. Almost half (49%) of the Dutch SMEs reported devoting more than 10% of their staff to address regulatory requirements and reporting, which is one of the highest levels in the EU. The government mentioned that it wants to cut red tape and invest more in digital technology companies, but did not provide more details on how this will be achieved.

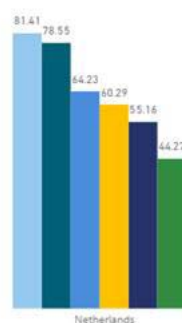
Strengthening Cybersecurity & Resilience

Dutch individuals demonstrate a high level of awareness regarding digital threats and take proactive measures to protect themselves. According to a [Eurostat analysis on the safety component of the Digital Skills Indicator](#), 92.7% of individuals have taken at least one action to safeguard their online data (see the graph below for more information on the types of action analysed). This is significantly above the EU average of 69.55%. Furthermore, 77.39% of individuals have adopted three or more precautionary measures, with the most common being restricting or refusing access to their geographical location (81.41%). In contrast, reading privacy policy statements is the least frequent action, undertaken by only 44.27% of individuals.

In the business sector, enterprises are increasingly implementing cybersecurity measures, although ongoing security challenges highlight the need for continued awareness-raising efforts. The number of Dutch enterprises experiencing ICT security incidents due to external attacks, such as ransomware and denial-of-service attacks, decreased slightly from 6.89% in 2022 to 5.05% in 2024. Although this represents a decline, the incidence rate remains higher than the EU average of 3.43%. The government's [cybersecurity assessment report](#) highlights that in 2024, the most common ICT security incidents were ransomware attacks resulting in data breaches, with the [ICT sector being the most affected industry](#). In terms of common consequences, according to [EUROSTAT data](#), 25.75% of enterprises experienced ICT-related security incidents leading to the unavailability of ICT services, the destruction or corruption of data, or the disclosure of confidential data. More broadly, the government's assessment report highlights the increased pace

Type of activities to protect personal data online (% of individuals)

- Block or limit cookies
- Check website security where personal data is provided
- Limit access to social media profile or shared content
- Read privacy policy statements
- Refuse use of personal data for advertising
- Restricted/refused access to geographical location



and complexity of cyberattacks by state actors, which are due to the current geopolitical tensions, and large-scale system failures, which often arise because of dependencies on a limited number of digital providers.

In light of these challenges, Dutch enterprises are taking significant steps to enhance their cybersecurity. A significant 95.75% of enterprises have deployed ICT security measures, exceeding the EU average of 92.76%. However, there is still room for improvement, particularly in terms of employee awareness and the perception of cybersecurity as a strategic added value. Currently, only half (50.01%) of the enterprises have made employees aware of their obligations in ICT security-related issues, highlighting the need for greater emphasis on cybersecurity awareness and training. At national level, the Dutch Trust Centre and the National Cybersecurity Centre put together some key [steps](#) that organisations can follow to meet basic security needs, including: identifying and assessing risks; promoting safe behaviour in the workplace; protecting systems, applications and devices through secure settings and threat detection; restricting access rights to sensitive data sets; and preparing for cyber incidents in advance.

When it comes to efforts by public authorities, 91% of Dutch citizens who replied to the Eurobarometer on the Digital Decade 2025 believe that measures to enhance cybersecurity, better safeguard online data and ensure the overall safety of digital technologies are crucial in facilitating the daily use of digital technologies. The 2022-2028 Dutch Cybersecurity Strategy remains the primary government initiative to enhance digital resilience and counter digital threats. The [October 2024 progress report](#) sheds light on some notable developments in 2024, including:

- the establishment of the foundation for the Cyber Resilience Network, which aims to strengthen cybersecurity cooperation between private and public entities;
- preparatory work to merge the three government cybersecurity organisations (the National Cybersecurity Centre, the Digital Trust Centre and the Computer Security Incident Response Team for Digital Service Providers) into a single entity;
- progress on transposing the revised European Network and Information Security Directive into Dutch law through the Cybersecurity Act.

The Netherlands had also launched several initiatives in 2024 that are interesting in the light of the [Commission's Action Plan](#) to strengthen the cybersecurity of hospitals and healthcare providers, with several initiatives launched, including:

- the update, with new implementation tools to be released in 2025, of the NEN-7510 standard for information security, with which healthcare providers must now comply;
- the upgrade of the open-source tool ([OpenKAT Tool](#)), that helps healthcare institutions identify potential security vulnerabilities, was improved last year;
- the extension of the National Cybersecurity Centre for Healthcare's network to more healthcare sectors, including ambulance care and home care, and the development of a new testing framework to simulate real-world cyberattacks on healthcare institutions.

Finally, the Netherlands is making good progress in deploying secure internet standards, particularly with the adoption of the Internet Protocol version 6 (IPv6). On the server side, the country achieved a notable adoption rate of 39% as of Q3 2024, surpassing the EU average of 17%. End users are also embracing IPv6, with a deployment rate of 34%, which is roughly in line with the EU average of 36% during the same period. Domain Name System Security Extensions, which introduces security features

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to DNS, is another important standard that has been rolled out. In the Netherlands, the DNSSEC validation rate was 58% in Q3 2024, which was above the EU average of 47%.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

The Netherlands continues its efforts to ensure that no one is left behind in the digital transition by **providing people with human support** (a measure deemed important by 92% of citizens) and **improving government services for individuals and enterprises**. With its upcoming Netherlands Digitalisation Strategy, the government wants to improve its digital public services to ensure that they are interoperable, accessible and easy to use. Nonetheless, **shortages of ICT specialists in the labour market and declining basic skills (including digital skills)**, especially among students in economically disadvantaged contexts, **remain significant challenges for the country's productivity, competitiveness and digital transformation**.

In 2024, a growing number of Dutch individuals engaged in online political and civic activities. However, like in many EU countries, the digital space is also plagued by disinformation and hostile messages. To address these issues, the Dutch government has announced new measures, including a reporting facility for disinformation and funding for fact-checkers, while also focusing on protecting children's rights in the digital environment and promoting mental health support for younger people.

Equipping people with digital skills

Basic Digital Skills

The Netherlands has a strong digital skills profile, with very good scores across geography and gender. According to data from 2023, the country has already reached the 2030 EU target, with a high proportion (82.70%) of its population having basic digital skills (the 2030 national target is 100%), which far surpasses the EU average (55.56%). However, some differences still exist across age groups and education levels. Moreover, data shows declining basic skills and underachievement, particularly in STEM subjects.

While there is no new data for 2024, an in-depth analysis based on demographics provides a view of the country's digital proficiency:

- **Age groups:** 91.13% of 16 to 24-year-olds are very digitally proficient, which is much higher than the EU average (69.98%). However, 65 to 74-year-olds are the least digitally proficient, with only 66.54% of this age group having basic digital skills, showing efforts are still needed to address this section of the population. Nonetheless, this is still much higher than the EU average of 28.19%.
- **Education level:** the correlation between education and digital skills is evident. An impressive 94.38% of the Dutch population with higher education have basic digital skills, a figure that greatly exceeds the EU average (79.83%). For those with lower education levels, 68.09% have basic digital skills, which is 14.61 percentage points lower than the national average. An [EU study on computer and information literacy](#) reveals that more than half of the eighth-grade students surveyed were low-achievers in digital skills. The report also highlights the large disparities in basic digital skills between students with different parental education levels.

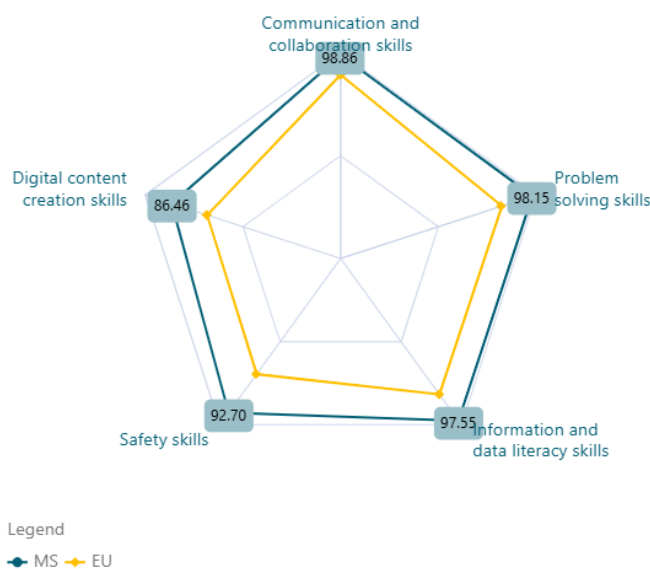
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Moreover, disadvantaged schools tend to have higher shortages of teachers, impacting the quality of STEM education in some parts of the country.

- **Living areas:** geography also appears to have some impact on the level of basic digital skills. 80.06% of rural residents in the Netherlands have basic digital skills, which is the lowest proportion across all the living areas. Still, this is considerably higher than the EU average in rural areas.
- **Gender gap:** 82.83% of men and 82.56% of women had basic digital skills in 2023, which does not indicate a clear gender gap.
- **Digital Skills Index components:** the Netherlands excels in the Digital Skills Index competencies, with scores above the EU average in all categories. The country has an exceptionally high score in communication and collaboration skills (98.86%), and even its lowest-scoring area, digital content creation skills (86.46%), scores well above the EU average.

In the 2024 adjustment of the roadmap, the Netherlands formalised its national target for basic digital skills, aiming to reach 100% of the population. If the current measures are extended and implemented correctly, the target seems realistically achievable by the end of the decade.

Digital Skills Index components
% of individuals



2024 recommendation on basic digital skills: introduce measures to help concretise national plans to boost digital skills and awareness in schools, to complement the ongoing efforts at local and regional level to ensure digital inclusion.

In 2024, the Netherlands continued to implement existing measures but did not take any new measures. The country continued to implement actions outlined in its roadmap, including the 'Count on Skills' programme, which leverages a network of municipalities to fund courses and training aimed at improving adults' basic skills, including digital literacy. While the programme officially concluded in 2024, research indicates that its local, community-based approach to training and funding has been highly effective, leading to the decision to continue its implementation. Other initiatives that take a similar decentralised approach, such as '#AllDigital', the 'Digital Society Alliance' and 'Information Points Digital Government', continued to operate in 2024. They aim both to improve basic digital skills and to foster individuals' participation in the digital society. However, with regard to tackling digital inclusion, the adjusted roadmap did not propose any new measures, specifically addressing the digital skills gaps across different age groups and education levels.

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ICT specialists

In 2024, ICT specialists represented 7% of the Netherlands' total workforce (the 2030 national target is 9.2%), which is higher than the EU average of 5%. However, the country is lagging behind its national trajectory. With ICT specialists representing 6.9% of the total workforce in 2023, the growth rate observed in the Netherlands (+1.4%) is much lower than the EU average (+4.2%).

There are still large gender differences in employed ICT specialists. In 2024, 81.30% of the ICT specialists in employment were men and 18.70% were women. **Eurostat also indicated a slight drop in the proportion of female ICT specialists in employment** from 2023 to 2024. In 2023, 18.9% of ICT specialists in the Netherlands were female, compared with 19.4% for the EU. This figure decreased slightly to 18.7% in 2024, while the figure for the EU increased to 19.5%. The overall trend is worrying, particularly given the lack of targeted measures currently in place.

[TechLeap's report](#) is useful in shedding light on some significant issues faced by Dutch companies when looking for digital talent. It highlights that the country lacks technical experts like engineers and software developers most of all. 71.9% of online job advertisements are for ICT specialists and 48% of companies report that these profiles are the hardest ones to find. This can partly be explained by the low proportion of STEM students and graduates. In 2022, the proportion of students in STEM subjects was 17.4%, which was much lower than the EU average of 27.1%, and only 5% of them were women (which is below the EU average of 8.6%). Moreover, the proportion of STEM graduates was 20.1% of all tertiary graduates, which was lower than the EU average of 26.6%. Companies also report difficulties in attracting and retaining talent, due to limited resources and strong international competition. These significant labour shortages are also evident in other sectors of the economy, with some [reports](#) predicting a shortfall of approximately 1.4 million workers by 2030, which will impact the digital and tech sectors in particular.

The Netherlands' target for ICT specialists remains 9.2% of the total workforce, which is close to the EU target of 10% by 2030. Given that this indicator is growing at a slow rate, it is unlikely that the target will be achieved, unless ongoing efforts start having an impact soon.

2024 recommendation on ICT specialists: Closely monitor the implementation of existing measures and partnerships to upskill and retain ICT specialists, including women. Design incentive schemes to increase the attractiveness of STEM disciplines, particularly for girls, and to boost the number of young people interested in taking up ICT-related studies or careers. Further reinforce collaboration between industries, education institutions and the public administration to improve the link between vocational education and the labour market needs.

The Netherlands made some efforts to address the recommendations through new policy actions in 2024. Published in 2023, the 'Action Plan on Green and Digital Jobs' will continue to be the guiding initiative to boost enrolment in STEM courses, help ICT specialists find a job, improve productivity and strengthen governance through to 2030.

- The government plans to monitor the implementation of the action plan using new indicators and enhanced data. A public website ([Monitor – AGDB](#)), providing accessible information and statistics on education and the labour market, is set to be launched in 2025.
- In 2024, the government announced a EUR 750 million investment by the National Growth Fund to support the programmes [TechWadraat](#) and *Sterk Techniekonderwijs* over the next eight years. The aim is to strengthen STEM and technology education in primary and secondary schools. In both programmes, attention will be paid to involving under-represented groups, including girls. In parallel, the Co-teach Informatica initiative continues to support schools in teaching ICT-related topics with the help of ICT professionals.
- As part of the 'Human Capital Agenda ICT', in 2024 10 Dutch regions developed regional action plans to increase the ICT workforce and address the ongoing demand for ICT skills development and reskilling. In October 2024, a new taskforce was launched to improve both the number and quality of cybersecurity professionals. The regional plans can be found on the [programme's website](#). Following the discontinuation of the National Growth Fund, some funding was reduced while the strategies were still being implemented. As a result, the regions are working to secure regional investments, as well as national and EU subsidies. A dashboard ([pr-eDICT](#)), providing the regions with information about education, transitions from education to the ICT labour market and vacancies, is also available. The tool is designed to help streamline regional strategies and anticipate market needs.
- In 2024, the 'Taskforce for Diversity and Inclusion' continued its efforts to foster diversity within the technology industry by sharing knowledge and best practices. Although the subsidy for the taskforce ended in December 2024, the initiative will continue under the banner 'digital talent' supported by stakeholders from the digital sector. The government will also continue to work with the companies that participated in the initiative.
- 'I-Strategy-Programme', 'I-Vakmanschap' and 'RADIO' also continue to improve civil servants' digital skills, boost the number of ICT specialists and enhance the level of IT research within the government.

In addition to the above measures, the government is planning to reduce labour market shortages through a broad labour market agenda, which was presented in a [letter](#) to Parliament on 13 December 2024. Its initiatives will include improving the quality of work, reducing the regulatory burden to make it easier for companies to employ people, improving labour market matching and investing in technologies that contribute to labour productivity. More concrete plans are scheduled to be unveiled in the course of 2025.

Despite ongoing efforts, the recent budget cuts in higher education (approximately EUR 1.2 billion), combined with the recently announced Spring Memorandum (which includes an additional cut of EUR 59 million in higher education), could potentially force universities to reduce the number of ICT courses that they offer, thus exacerbating the existing ICT workforce shortages. Additionally, the [decline](#) in foreign students across most disciplines, with even steeper declines in AI-related courses (-13%), could further negatively impact the ICT workforce, leaving more positions unfilled. The Dutch labour market also features a high proportion of self-employed and part-time workers, which is

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affecting overall productivity and discouraging companies – particularly smaller enterprises – from investing in long-term training for their employees. In 2024, 79.32% of large companies (with 250 employees or more) provided ICT training to their personnel, while a much smaller proportion of small companies (19.47%) (with 10 to 49 employees) were able to provide this kind of training. In 2022, 29.1% of enterprises with 10 or more employees offered ICT training, a figure that decreased to 26.57% in 2024. Although that figure is still above the EU's average of 22.29%, the country's annual growth rate of -4.4% in this area is significantly lower than that of the EU (-0.2%).

[Key digital public services and solutions – trusted, user-friendly, and accessible to all](#)

The Netherlands consistently excels in digital public services, outperforming the EU average for both citizens and businesses. In 2023, the country achieved a total score of 85.87 for digital public services for citizens, surpassing the EU's score of 79.44. This upward trend continued in 2024, with the Netherlands scoring 88.53 (the 2030 national target is 100) and exceeding the EU's score of 82.32. Despite a strong overall performance, the growth rate for the Netherlands in this category was 3.1%, which is slightly lower than the EU average growth rate of 3.6%. In the area of cross-border digital public services for citizens, the Netherlands scored 78.27 in 2023 and 80.27 in 2024, both of which surpass the EU's respective scores of 68.37 and 71.28.

The Netherlands also performs well in digital public services for businesses, outpacing the EU in terms of total scores. In 2023, the country scored 86.67, compared with the EU's score of 85.42, and in 2024, it scored 88.75 (the 2030 national target is 100), exceeding the EU's score of 86.23. Additionally, the Netherlands excelled in cross-border digital public services for businesses, scoring 73.33 in 2023 and 77.5 in 2024, which are both higher than the EU's scores of 73.13 and 73.76, respectively. Notably, the country's growth rate in this category was 5.7%, significantly outpacing that of the EU (0.9%).

The Netherlands faces some challenges in providing access to e-health records, with a score of 72.47 in 2023, which was lower than the EU's score of 79.12. This gap widened in 2024, with the country scoring 65.18, compared with to the EU's score of 82.7. This decline can be attributed to the discontinuation of a pilot program in 2024, which had previously assisted legal guardians and authorised persons in accessing health data on behalf of others. The termination of this service resulted in a decrease in two sub-indicators. As in 2023, three of the six applicable categories of healthcare providers (which are all private in the Netherlands) are connected and supply data to the national health database. Rehabilitation centres, geriatric nursing homes and mental health facilities are not yet included.

[e-ID](#)

In line with the EU eIDAS Regulation, the Dutch authorities are on track to introduce an EU digital wallet. As scheduled, the first version of the Dutch public e-ID wallet was launched in 2024, with initial testing conducted in collaboration with the municipalities of Amsterdam and Nijmegen. The pilot programme involved 57 users with varying digital skills from different age groups, who used the wallet to access online public services. The results showed a generally positive user experience, although there are still some areas for improvement. Future iterations of the Dutch wallet will build on this foundation, incorporating key features such as the generic issuance of Electronic Attestations of Attributes, backup and recovery options, wallet-to-wallet interaction, offline functionality and additional enhancements.

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The government also reported that online digital identity login methods are becoming increasingly popular, with Dutch people logging in over 550 million times using [DigiD](#) (an e-ID service available in the country) in 2024, which is an almost 15% increase compared with 2023. Other existing e-ID systems, including eHerkenning and eIDAS, are being consolidated into a single, secure access system. This system ensures secure and reliable access to government services by requiring individuals and businesses to use recognised login tools. However, it still offers the flexibility to choose from multiple login methods, addressing potential issues of vulnerability and system malfunctions.

The Netherlands co-leads the new WE BUILD (Wallet Ecosystem for Business & Payment Use cases, Identification, Legal person representation and Data-sharing) consortium that will pilot the use of EU Digital Identity Wallets. Six Member States and over 170 entities from various public and private sectors are participating in the project. It focuses on piloting the wallets with regard to identification, legal representation and data-sharing across 13 use cases in the areas of businesses, supply chain and payments. Several Dutch stakeholders are also participating in the **APTITUDE (Advanced Project for Trusted Identity Technologies and Unified Digital Ecosystem) consortium** that focuses on advancing the use of wallets for travel and payment purposes across four use cases: payments, mobile vehicle registration certificates, digital travel credentials and tickets and travel check-in.

Digitalisation of public services for citizens and businesses

The proportion of Dutch individuals using public authorities' websites or apps remained stable, at 96.38% in 2024, which is very close to the 96.85% reported in 2022. This proportion remains far above the 2024 EU average of 77.71%. Similarly, a notable majority of citizens (94%) see digital technologies as important means to access public services, according to the Eurobarometer on the Digital Decade 2025. To meet this high demand, the Netherlands **formalised its national targets in 2024, aiming to reach a score of 100 for the digitalisation of public services for citizens and businesses. For both KPIs, the country is on track according to its national trajectory.**

In the last year, the country advanced the digitalisation of its public services by continuing to implement existing measures. The Service Public Communication (DPC) has improved the online solution that helps competent authorities to implement the Single Digital Gateway regulation, making it easier to find and edit texts. Moreover, to assess and optimise online government websites, the government commissioned a [study](#) focusing on users' experience of [overheid.nl](#) (the central government platform that provides individuals and businesses with access to private information and public services), and of [Mijnoverheid](#) (a personal digital mailbox for mail from the government). The study's findings indicate that users are generally satisfied with the platforms and perceive them as reliable and easily accessible entry points. However, opportunities remain to create a more seamless, unified and interoperable government experience. Furthermore, the study highlights the potential for leveraging AI to enhance the accessibility and efficiency of government services, which is a promising avenue for future development. Finally, the government [postponed](#) the coming into effect of the second part of the Modernisation of Electronic Administrative Communication Act from January 2024 to January 2026. The Act will make it mandatory for administrative bodies to enable individuals and businesses to formally get in touch with them through digital means.

e-Health

The Netherlands still does not explicitly refer to a national target or trajectory for access to e-health records, as these would be difficult to establish given the country's decentralised healthcare system. In its revised roadmap, the country increased the total budget for e-health and introduced a new measure, namely '*MijnGezondheidsoverzicht*' ('My Health Overview'). This is a digital platform where

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all individuals will be able to access their health data at any time. Unlike the Personal Health Environment, which is an optional platform with personalised functionalities like self-tracking and video consultations, 'My Health Overview' will give individuals a central and complete view of their official health data. The nationwide roll-out of the platform is expected to take place gradually, with the first products made available around 2027.

2024 recommendation on e-health: make more health data types available to citizens through the online access service and increase the supply of health data by onboarding more categories of healthcare providers.

The Netherlands addressed the recommendation by continuing existing measures and putting in place new policy actions in 2024. With an allocated budget of EUR 27.7 million, 'My Health Overview' will give Dutch individuals access to a more complete set of health data. In 2024, the government also worked with healthcare organisations to make a more diverse and complete health data set accessible online, including not only medical records and test results, but also medication history, vaccination records and treatment plans. This is also thanks to the collaboration with a wider range of healthcare providers (i.e. mental health professionals, pharmacies etc.). It remains to be seen how these efforts will influence the e-health indicator in the future.

Several Dutch companies have also developed innovative ways to integrate digital solutions like AI to reduce administrative costs and free up the health workforce. [Autoscriber.com](https://www.autoscriber.com), for instance, transforms conversations between patients and doctors into structured e-health records through AI-powered speech recognition.

Building a safe and human centric digital environment and preserving our democracy

Dutch individuals are increasingly engaging in political and civic activities online. In 2024, 29.58% of them used the internet to participate in consultations, vote or express opinions, surpassing the EU average of 20.45% after increasing steadily from 22.95% in 2022. **However, like in many other Member States, the digital space is plagued by misleading content and disinformation.** In 2023, 70.71% of individuals reported encountering false or dubious content online, a figure significantly higher than the EU average of 49.25%. Of particular concern is that 80.69% of those affected by misleading content were young people aged 16-24. Fewer than half of users (46.93%) verified the accuracy of the information they encountered, compared with 59.99% of young users (16 to 24-year-olds).

Hostile and degrading messages, affecting young people and female users in particular, are also quite common in the Dutch online space. Almost half of the population (48.40%) reported encountering hostile or degrading messages online in 2023. Young people (16 to 24-year-olds) were particularly affected, with 61.19% reporting such experiences compared with 48.75% of adults (25 to 64-year-olds). The proportion of female users encountering these kinds of messages online is among the highest in the EU (50.68%).

To counter disinformation, the Dutch government announced a new package in 2024 in a letter to Parliament. The letter focuses on the progress made with the 2022 government-wide Strategy for Effectively Tackling Disinformation and highlights a commitment to focus on new measures, including:

- setting up a reporting facility where people can report harmful content, including disinformation on social media platforms;

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- setting up a dispute resolution body that allows people to seek dispute resolution regarding content moderation decisions taken by online platforms;
- strengthening the Dutch network of fact-checkers by providing additional funding to the Belgium-Netherlands Digital Media and Disinformation Observatory consortium, while also exploring new funding models to support the independent work of fact-checkers in the future.

In parallel, some studies are being carried out to provide evidence for potential future actions against disinformation. Wageningen University & Research is conducting a research study on the impact of disinformation on public health, policymaking and societal trust. In parallel, the University of Amsterdam is leading an empirical analysis on how digital online platforms approach moderation. The analysis covers not only how much content is subject to moderation, but also what kind of content is most commonly removed or flagged. The Netherlands is also funding the Network Media Literacy for its management of the [isdatechtzo.nl website](https://isdatechtzo.nl), which provides people with information and tools to recognise fake content through fact-checking.

With 93% of Dutch citizens recognising an urgent need for public authorities to mitigate the negative impact of social media on children's mental health, as well as to combat cyberbullying and online harassment, the Netherlands reinforced its commitment to safeguarding children's rights in the digital environment in 2024, marked by a series of key developments. The multifaceted Dutch approach integrates legislation and policy with supervision and awareness efforts. This includes ensuring compliance with the General Data Protection Regulation, using tools such as the Children's Rights Impact Assessment to help organisations assess the effects of digital products on children's rights, and promoting the Dutch Code for Children's Rights, which outlines principles to help developers mitigate online risks for children. Additionally, the country is actively raising awareness through campaigns about online risks targeted at children and caregivers, while also introducing at a later time the Children's Rights Label and Game Check tool to help parents make informed decisions about the digital platforms and games their children use.

Beyond digital rights, **the Netherlands is also focusing on broader mental health support for younger generations.** Initiatives like [@ease](https://@ease.nl) – a free platform designed for students, teachers, and parents – offer resources, advice and tools to manage mental health challenges such as stress and anxiety. This initiative is part of a wider effort to improve mental health awareness and support, ensuring that young people have the resources they need to navigate digital spaces and personal well-being. Moving forward, the introduction of tools such as age-verification methods in restricting access to inappropriate content for children remains to be seen, a measure that 88% of Dutch citizens consider essential to protecting children online.

Leveraging digital transformation for a smart greening

The Netherlands is intensifying its efforts towards achieving sustainable digitalisation. The [Sustainable Digitalisation Action Plan](#) (launched in June 2024), which also features in the 'Green & Digital' cluster of the Digital Decade's Best Practice Accelerator, marks a significant step forward. This plan focuses on harnessing digitalisation to promote sustainability across various sectors, including energy, mobility, industry, buildings, agriculture and government. It also emphasises the need to make the digital sector more sustainable, targeting key areas such as hardware, software and end-user devices. The plan also aims to strengthen public-private collaboration, and focuses on information-sharing, standardisation and fostering innovation.

When it comes to purchasing and disposing of ICT equipment, Dutch consumers and enterprises exhibit distinct priorities and behaviours, reflecting a mix of environmental awareness and practical considerations. Most Dutch consumers (75.89%) prioritise the brand, design and size of the equipment when buying ICT equipment. A smaller percentage of buyers (19.63%) took the equipment's energy efficiency into consideration, which is line with the EU average of 19.35%. Even fewer buyers (5.13%) based their decision to buy a product mainly on the possibility of extending its lifespan. Around half (48.1%) of enterprises selected ICT services or equipment on the basis of their environmental impact, which is below the EU average of 58.5%.

Recycling old ICT equipment seems to be more of a common practice in the Netherlands than in other EU countries, with 27.87% of people recycling their old desktop computers, 12.96% recycling their mobile phones and 16.21% recycling their laptops or tablets in 2024. This is more than the EU averages of 14.66%, 10.93% and 11.31%, respectively. 72.6% of enterprises also recycle ICT equipment, although this is slightly lower than the EU average of 77.4%. Overall, according to the Eurobarometer on the Digital Decade 2025, a growing majority of Dutch citizens (75%, up 3 percentage points from last year) believe that digital technologies play a crucial role in combating climate change, with 83% emphasising the need for public authorities to take decisive action in this area.

2024 recommendations on green ICT: (i) continue developing a coherent approach to twinning the digital and green transitions, including by supporting relevant pilots. First, continue to promote energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs. (ii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing

The Netherlands addressed the recommendations by putting new policy actions in place. In June 2024, as anticipated in the 2023 roadmap, the country set out the Sustainable Digitalisation Action Plan. It consists of 44 action points to make the digital sector more sustainable; take advantage of digitalisation to advance sustainability in different sectors; and ensure there is a solid framework to support the first two lines of action (with, for example, the establishment of knowledge centres for sustainable digitalisation). The actions will be implemented through cross-governmental participation (across ministries and national organisations) and public-private collaboration.

The Dutch government has made significant strides in recent months as part of the action plan. In 2024, it commissioned two research papers, which are currently in the final stages of completion. One explores the energy and water usage of AI, and the other aims to expand the inventory of available data and databases on sustainable digitalisation. Additionally, the Netherlands has prioritised the greening of data centres, developing a comprehensive list of recognised measures to reduce energy consumption in these facilities. The country is also in the process of setting up a Sustainable Digitalisation knowledge centre. This will be a dedicated (potentially online) platform where public and private organisations can access reliable information on the digital and green transition, including EU regulations, subsidy opportunities, standardisation guides, upcoming events and interactive tools designed to foster sustainable digitalisation practices. A key component of the action plan is the National Coalition of Sustainable Digitalisation, a private-public partnership that has grown steadily over the past eight months. The coalition's achievements include a highly successful National Conference on Sustainable Digitalisation and the forthcoming Sustainable Impact Assessment, scheduled for release in mid-2025.

An evaluation of the action plan is currently underway (Q4 2025), with the possibility of new actions soon.

In parallel, **the Netherlands has also been collaborating with other countries on the topic of sustainable digitalisation.** It has exchanged knowledge and best practices with French policy advisers and regulators on methods for monitoring the environmental impact of digital technologies. It has also contributed to the OECD Working Party on Connectivity Services and Infrastructures' recent revision of the recommendation on ICT and the environment. The recommendation confirms the importance of aligning digital technologies with environmental sustainability.

On top of government initiatives, several Dutch companies are offering digital solutions to improve sustainable practices. An example of such a solution is [HULO.ai](#), which uses AI algorithms to detect and locate water leaks in real time.

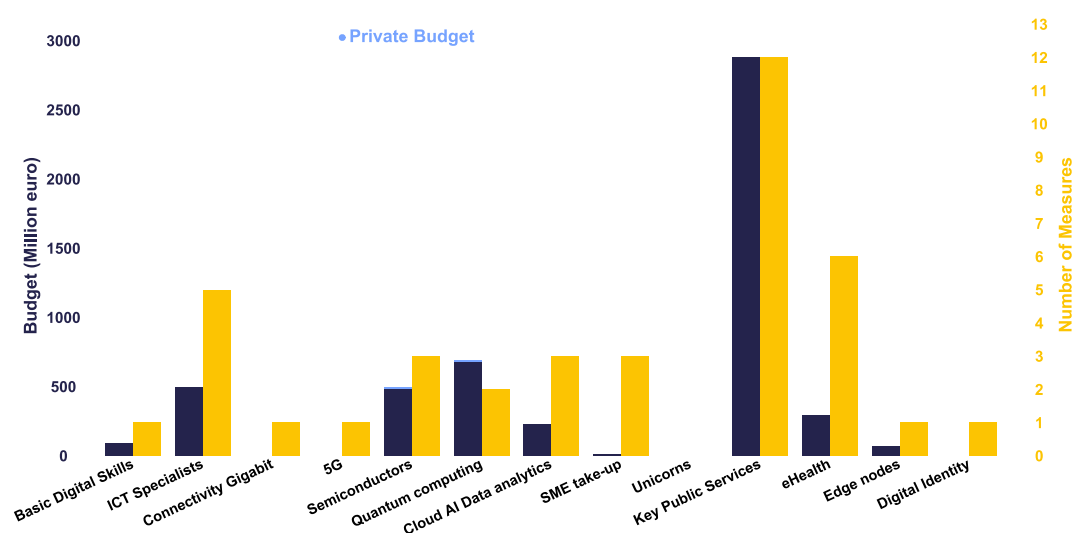
Annex I – National roadmap analysis

On 31 January 2025, the Netherlands submitted a fully revised national Digital Decade roadmap containing around 15 new measures and four revised targets. The budgets of several measures included in the original roadmap have been revised slightly upwards or downwards. Some edits were made because of clerical mistakes or to adjust new planned and allocated budgets. Overall, the 2024 adjustment addresses a substantial number of roadmap recommendations issued in 2024. However, the 2023 national roadmap has not yet been published online.

With regards to targets, the Netherlands proposed a target and trajectory for at least basic digital skills (100%) and for the digitalisation of public services for both citizens and businesses (100 out of 100). The country did not provide a target and trajectory for unicorns and edge nodes, because it favours a more quality-oriented target. Nor did the country present a target and trajectory for access to e-health records, as this would be difficult to establish given the Netherlands' decentralised healthcare system. The country raised its national targets for VHCN (to 99.9%), for SMEs with at least a basic level of digital intensity (to 95%) and for the take-up of data analytics by enterprises (to 75%). For ICT specialists as a proportion of people in employment, the Netherlands opted to keep the original national target for 2030 (9.2% of people in employment, which is still very close to the EU target of 10%).

With regards to measures, the Netherlands introduced five new measures in its national roadmap to support ICT specialists, highlighting its commitment to continue and closely monitor their implementation. The measures focus on boosting enrolment in STEM courses, providing regional support to help ICT specialists find jobs, as well as strengthening STEM and technology education in primary schools. Some measures also focus on continuing efforts to foster diversity within the technology sector and improving the digital skills of civil servants. One measure ('Smart Makers Academy') was associated with the ICT specialists target, although its main objective is to support SMEs in the manufacturing industry to adopt digital technologies.

Measures and budget in national roadmap⁸



⁸ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

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Some measures included in the roadmap were linked to the relevant parts of the declaration on **digital rights and principles** and the Digital Decade general objectives, aligning in particular with the Commission's priorities on the green and digital transitions. The revised roadmap includes more details on the **consultation with stakeholders** than the original roadmap did.

In total, the national roadmap includes **59 measures with a budget of EUR 5.25 billion, comprising EUR 5.22 billion from public budgets** (equivalent to 0.46% of the Netherlands' GDP). The highest number of measures and the highest share of the budget are targeted at digital public services.

Annex II – Multi-country projects (MCPs) and funding

Multi-country projects and best practices

The Netherlands is a member of the 'Alliance for Language Technologies' European Digital Infrastructure Consortium (EDIC) and of the 'Local Digital Twins towards the CitiVERSE' EDIC. The Netherlands requested to be an observer in the prospective EDIC in the area of public administration, for which the formal application has been submitted. It is also a candidate to host an EDIC in the area of mobility and logistics and is working towards setting up an EDIC in the area of digital common goods (i.e. open-source software and hardware, open data, open educational resources, open standards etc.).

The Netherlands is participating directly in the IPCEI on Microelectronics and Communication Technologies and in the IPCEI on Next-Generation Cloud Infrastructure and Services. The Netherlands is also a participating state of the European High-Performance Computing Joint Undertaking (JU) and of the Chips JU.

The Netherlands has contributed to the Digital Decade Best Practice Accelerator by sharing two best practices in the 'Business Uptake' cluster (with the National technology Strategy) and the 'Green & Digital' cluster (with the Sustainable Digitalisation Action Plan).

EU funding for digital policies in the Netherlands

The Netherlands allocates 26% of its total Recovery and Resilience Plan to digital (EUR 1.2 billion)⁹. In addition, 11% of the country's total cohesion policy funds (EUR 170 million) is dedicated to advancing the Netherlands' digital transformation¹⁰. According to JRC estimates, EUR 892 million directly contribute to achieving Digital Decade targets (of which EUR 834 million come from the RRF and EUR 58 million from cohesion policy funds)¹¹.

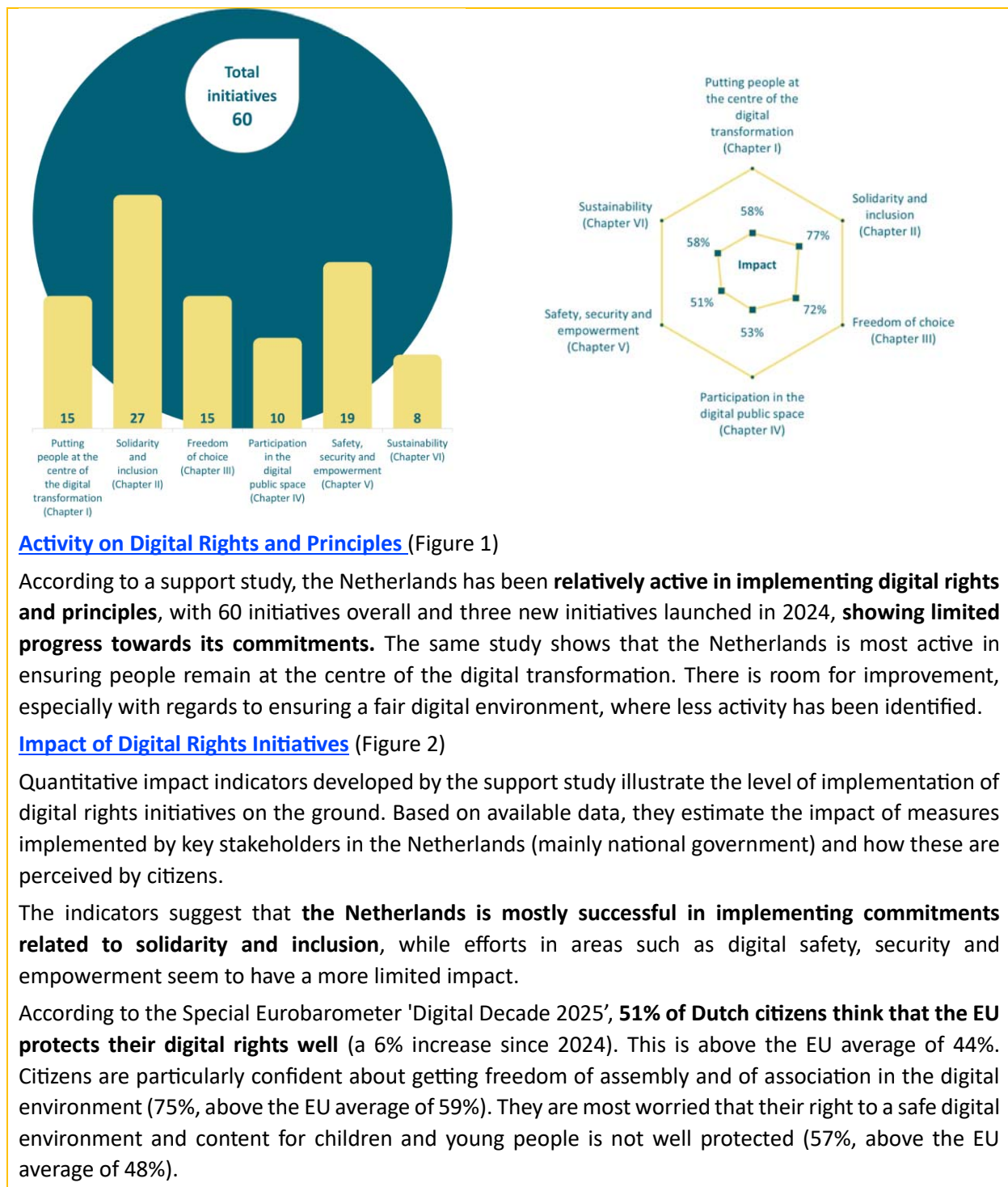
The most significant digital measures in the Dutch Recovery and Resilience Plan are dedicated to investments in innovative digital technologies, notably quantum technologies and AI; the development of digital skills across different levels of the education system, including efforts to make education more inclusive; investments in ICT infrastructure and sector-specific expertise and knowledge in the education system; and the digitalisation of key public services, with an emphasis on enhancing transparency and accessibility for citizens and businesses.

⁹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹⁰ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹¹ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹²



¹² Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
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Poland

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Executive summary

Poland has well-developed fixed connectivity infrastructure but continues to be affected by a low level of digital skills among its population and limited adoption of advanced technologies by companies. The country sees cybersecurity, advancing breakthrough technologies such as quantum computing and artificial intelligence and development of capacity in semiconductors manufacturing as important areas for development.

Poland shows a moderate level of ambition in its contribution to the Digital Decade having set 14 national targets, 71% of which are aligned with the EU 2030 targets. The country is following its trajectories moderately well with 63% of them being on track (considering 2024 trajectories defined for 8 KPIs out of 8 analysed). Poland addressed 55% of the 11 recommendations issued by the Commission in 2024 by making some changes through new measures.

Digital Decade KPI ⁽¹⁾	Poland				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	PL	EU
Fixed Very High Capacity Network (VHCN) coverage	81.1%	83.8%	3.4%	84.1%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	75.4%	77.8%	3.1%	84.1%	69.2%	8.4%	100.0%	-
Overall 5G coverage	71.9%	89.3%	24.1%	98.3%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	42	82	95.2%	11	2257	90.5%	370	10000
SMEs with at least a basic level of digital intensity (2)	-	69.0%	6.4%	-	72.9%	2.8%	90.0%	90%
Cloud	46.5%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	3.7%	5.9%	60.8%	4.3%	13.5%	67.2%	10.0%	75%
Data analytics	19.3%	-	-	-	-	-	35.0%	75%
AI or Cloud or Data analytics	51.8%	-	-	-	-	-	-	75%
Unicorns	10	11	10.0%	13	286	4.4%	20	500
At least basic digital skills	44.3%	-	-	-	-	-	80.0%	80%
ICT specialists	4.3%	4.5%	4.7%	4.3%	5.0%	4.2%	6.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	63.7	70.7	10.9%	81.5	82.3	3.6%	100.0	100
Digital public services for businesses	72.9	85.0	16.6%	87.4	86.2	0.9%	100.0	100
Access to e-Health records	90.0	91.8	2.0%	88.0	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics
(2) DESI 2025 reports Version 4 of the Digital Intensity Index, which is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory, which is based on Version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special Eurobarometer on ‘the Digital Decade’ 2025, 78% of Polish citizens consider that the digitalisation of daily public and private services is making their lives easier. Concerning the action of the public authorities, 84% consider it important to counter and mitigate the issue of fake news and disinformation online. And regarding competitiveness, 84% consider it important to ensure that European companies can grow and become ‘European Champions’ able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

The country's fixed connectivity infrastructure is well-developed, but 5G deployment has been delayed due to the late allocation of pioneer bands: 3.4-3.8 GHz was allocated in December 2023 and the auction for 700 MHz was completed in March 2025. Poland has come significantly closer to the EU average in terms of the digital intensity of enterprises, but it still scores below the EU average in this respect as well as in the uptake of more advanced technologies by companies. However, it is making progress in areas like quantum computing - first quantum computer should be installed in 2025 – and AI, where the Polish large language model (PLLuM) became available in February 2025 and the country is a part of consortium to host one of the AI Factories. Finally, cybersecurity is one of the key priorities for the Polish administration, which deploys measures to enhance this at different levels of government and to improve the relevant skills of citizens. However, the NIS2 Directive has yet to be transposed into the Polish legal system.

Protecting and empowering EU people and society

Regarding at least basic digital skills, the distance to the national 2030 target remains significant and the low level of digital skills among older and less educated people persist. The lack of ICT specialists is one of the barriers to the digitalisation of enterprises in general, as well as to the uptake of more advanced technologies, and for ensuring protection against cyberattacks. Poland's goal of ensuring that ICT specialists represent 6% of the workforce by 2030, is lower than the EU target. On the other hand, Poland has made progress in digitalising public services, and has seen growth in the use of eID and in access to medical records online. However, the country still needs to address issues such as disinformation, improve coordination between state actors in this area, and enhance people's critical skills to deal with online threats.

Leveraging digital transformation for a smart greening

Polish authorities recognise the link between the digital and green transformations, with the draft State Digitalisation Strategy aiming to promote an environmentally friendly ICT sector and digital ecology. However, the country's digital sector energy consumption is expected to grow rapidly, driven by data centre needs. Measures to ensure the availability and reuse of data on energy sector activities are yet in planning stage. Moreover, recycling of ICT equipment is low despite Poles prioritising energy efficiency when buying ICT devices. The country has, however, implemented measures to promote the use of digital technologies to better protect the environment, including some Smart Cities solutions. The draft State Digitalisation Strategy includes actions aimed at raising citizens' awareness of the environmental impact of ICT and promoting basic knowledge of digital sustainability.

National Digital Decade strategic roadmap

Poland formally adopted its national Digital Decade roadmap on 22 October 2024. As a result, the previous country report, which was published in July 2024, relied on the draft roadmap, which was shared with the Commission on 30 January 2024. The differences between the draft and the formally endorsed document were not substantial. The Polish roadmap is composed of 55 measures with a budget of EUR 12.4 billion, equivalent to 1.47% of GDP. Polish authorities expressed their intention to adjust the national roadmap in line with Article 8 (3) of the decision establishing the Digital Decade Policy Programme, but at the time of writing, neither the formally endorsed document, nor the draft version, has been shared with the Commission.

In 2024, Poland was working on a comprehensive State Digitalisation Strategy to outline priorities for the digital transformation of Poland until 2035 and provide a basis for public spendings in this area. The implementation of the strategy, whose adoption is expected by mid-2025, will be aligned with various existing and upcoming documents, both at national and EU level, to ensure a comprehensive and coordinated approach to digital development.

Funding & projects for digital

Poland allocates 21% of its total recovery and resilience plan to digital (EUR 7.5 billion)¹. In addition, under cohesion policy, EUR 5.7 billion, representing 8% of the country's total cohesion policy funding, is dedicated to advancing Poland's digital transformation². Poland is a member of the Alliance for Language Technologies EDIC and of the EUROPEUM EDIC. Poland is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Poland is also a participating state in the EuroHPC Joint Undertaking (JU) and in the Chips JU.

Poland has not yet presented any projects in the framework of Digital Decade's Best Practice Accelerator³.

Digital Rights and Principles

According to a support study, Poland has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 62 initiatives overall and 6 new initiatives launched in 2024. Poland is most active in the area of digital education, training and skills. Less activity has been identified with regards to a fair digital environment and sustainability. Measures in the area of freedom of choice appear to have most impact on the ground, in contrast to those addressing participation in the digital public space.

Recommendations

- **Basic digital skills:** Increase the attractiveness of STEM disciplines at school to raise interest in taking up ICT-related studies and careers, including by girls and women. Strengthen the measures focused on social groups with lower digital skills, such as older adults, inhabitants of rural areas, and people with disabilities.
- **ICT specialists:** Take measures to increase the number of ICT specialists (e.g. improved training and reskilling options; incentive schemes to attract new / retain current ICT specialists, including specialists from other countries) and continue promoting ICT studies and careers to women and girls.
- **SMEs:** Enhance digitalisation of SMEs, including by directing existing support to those who lag in digitalisation and improving their awareness of the benefits offered by digitalisation and of the available support options.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

- **Cybersecurity:** Continue efforts in cybersecurity to address evolving threats, particularly for enterprises and administration.
- **Artificial Intelligence:** Create an AI friendly ecosystem by stimulating public and private investments in research and innovation, raising awareness among entrepreneurs, increasing access to specialised knowledge and computing power, and implementing consistent legal frameworks and standards.
- **5G:** Encourage operators to speed up the deployment of 5G stand-alone core networks.
- **Cloud:** Encourage the adoption of cloud technologies by businesses, focusing on sovereign European solutions.
- **Unicorns:** Continue to improve the business environment and access to finance for digital start-ups, provide more tailored support to address the challenges for scaling business.
- **Semiconductors and digital innovation:** Invest in the development and manufacturing of critical technologies in the areas of digital and deep tech.
- **Green:** Develop a system for monitoring and quantifying the emission reductions of the digital solutions deployed.

A competitive, sovereign and resilient EU based on technological leadership

Competitiveness is important for Polish policymakers, but Poland's claim to technological leadership is limited and its potential appears unfulfilled. Significant resources have been invested in projects to support the development and modernisation of enterprises, and Poland in 2024 has come closer to the EU average in terms of at least basic level of digital intensity of SMEs, but country still scores below the EU average in the uptake of more advanced technologies by companies.

Difficulties in adopting digital technologies may be partially due to the composition of Poland's enterprises' sector. SMEs account for approximately 99.8% of enterprises while large enterprises – which are much more likely to adopt digital technologies – make up only 0.2%. The Polish ICT sector represented 4.03% of gross value added in 2022⁴. That was an increase on 2021 but still lower than the EU average of 5.46%. This suggests some improvement but also overall under-development. R&D in the ICT sector represented 32.33% of businesses' total R&D expenditure and 37.18% of total R&D personnel.

Poland's fixed connectivity infrastructure is developing rather well and its coverage rate (including in rural areas) is higher than the EU average. However, deployment of 5G remains an issue. Due to delays in allocating 5G pioneer bands, only one of these bands – 3.4-3.8 GHz – has been awarded to the operators so far. The allocation of frequency reservations in the 700 MHz band is planned for early June 2025.

Poland is actively participating in the development of quantum computing (one of the six EU quantum computers will be installed in Poland in 2025) and quantum communication. It has also developed niche expertise in areas such as design of integrated circuits and photonics for microelectronics. However, its plans to develop manufacturing capacities stalled after Intel decided to pause its project to create production facility in Poland.

Poland attaches great importance to AI. Developing this technology is one of the goals of the draft State Digitalisation Strategy ([Strategia Cyfryzacji Państwa](#)). The Council of Artificial Intelligence Funds, which will be responsible for providing opinions on AI policy, as well as on financing and developing AI research in Poland should be established by the end of June 2025. Poland will host one of the EU AI factories and has developed its own large language model [PLLuM](#), which will be used to improve digital public services.

Cybersecurity and resilience are high on Poland's political agenda. Projects to raise awareness, enhance skills and strengthen the protection of the public administration are being implemented or launched.

According to the 2025 Eurobarometer⁵, **82% of Poles believe that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.**

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Building technological leadership: digital infrastructure and technologies

Poland has made progress in developing its connectivity infrastructure. Its coverage rates for Very High-Capacity Networks (VHCN) and Fiber-To-The-Premises (FTTP) are higher than the EU averages. However, Poland's growth rates for these technologies are lagging behind the EU's and its 5G coverage remains below the EU average (despite rapid growth in 2024). This is partly because the award of 5G pioneer bands was delayed and, although it did start in 2023, has not yet been completed. However, the European Electronic Communications Code was finally transposed into national law in 2024, thus providing a consistent legal framework and certainty for operators and users.

Poland is also making progress in other areas such as quantum technologies, where it is actively participating in EU projects and developing its own capabilities. However, the development of edge nodes does not seem to be receiving much governmental support and there appear to be no measures in place to support their growth. Poland is working to develop its semiconductor industry but faces challenges such as limited manufacturing capacity.

Connectivity infrastructure

Poland has 83.84% VHCN coverage (the 2030 national target is 100%) following a 3.4% increase in 2024 and is above the EU average of 82.49%. Poland is on track according to its national trajectory. However, Poland's growth rate of 3.4% trailed the EU's 4.9%. Poland's VHCN coverage for households in rural areas was 66.49% in 2024 (above the EU's 61.89%). Poland's growth rate of 16.3% was faster than the EU's 11.3%.

Poland has 77.79% FTTP coverage (the 2030 national target is 100%) after a 3.1% increase in 2024 and is above the EU average of 69.24%. Poland is lagging behind its national trajectory. Moreover, Poland's 3.1% growth rate was lower than the EU's 8.4%. Poland's FTTP coverage for rural areas was 65.64% in 2024 (higher than the EU's 58.78%). Poland's 16.5% growth rate was faster than the EU's 11.9%.

Poland's 9.11% share of fixed broadband subscriptions ≥ 1 Gbps in 2024 was much lower than the EU average of 22.25%. However, Poland's growth rate between 2023 and 2024 of 72.2% was higher than the EU's 20.5%.

Poland has 89.28% 5G coverage (the 2030 national target is 100%) after a 24.1% increase in 2024 but is still below the EU average of 94.35%. Poland is lagging behind its national trajectory. However, Poland's growth rate of 24.1% was significantly higher than the EU's 6.0%. Poland's 5G coverage for households in rural areas was 72.35% in 2024 (below the EU's 79.57%), while its growth rate of 23.7% was more than double the EU's 11.9%.

Poland's 5G SIM card share of the population was 32.6% in 2024 (below the EU's 35.56%). Poland's growth rate for this indicator of 37.6% was also lower than the EU's 63.9%.

Poland's 5G coverage in the 3.4–3.8 GHz band grew significantly from 0.0% in 2023 to 60.2% in 2024 but remained below the EU's 67.72%. The coverage for rural areas grew from 0.0% to 17.38% but was still below the EU's 25.98%. The assignment of harmonised spectrum in the 5G pioneer bands in Poland was 33.33% in both 2024 and 2025 (significantly lower than the EU's 73.4% and 74.63% respectively). Poland did not grow in this area, while the EU grew by 1.7%.

VHCN and FTTP

Poland's VHCN and FTTP targets remain at 100%, as per the national roadmap submitted in 2024. To improve fixed broadband network coverage in areas where access to high-speed internet is difficult, Poland has relied on investments under its Recovery and Resilience Plan - RRP (*Krajowy Plan Odbudowy i Zwiększania Odporności – KPO*) and the European Funds for Digital Development (*Fundusze Europejskie na Rozwój Cyfrowy – FERC*).

The Ministry of Digital Affairs states that some of the selected contractors withdrew from signing the contracts or resigned from their execution. This prompted a modification of the RRP in 2024 and a reduction in the target for additional households having broadband access (at least 100 Mbps) by mid-2026 from 931 000 to 814 000 additional households. The Ministry completed in April 2025 a fourth call for applications to ensure that this new target is achieved.

There are no new interventions to be implemented beyond those already included in the national roadmap. However, the work to update the National Broadband Plan to cover 2026-2030 should start before summer 2025.

The switching off of the copper networks (such as POTS, ISDN, HDSL, SDSL, ADSL) **is at an early stage, and there is no planned or unconditional date for its shutdown.** In December 2024, approximately 1.3 million households were within the reach of the copper network without an alternative. About 0.6 million of them were in areas with DOCSIS 3.X technology. The costs of migration are mostly borne by Orange Polska S.A., the operator of the copper network.

There were no significant changes in the fixed internet access market in 2024. Orange Polska S.A. remains the market leader (with a share below 25%). The wholesale operators (e.g. Światłowod Inwestycje, Polski Światłowod Otwarty, Nexera and Fiberhost) also play an important role in developing regional telecommunications infrastructure.

5G

Poland's 5G target remains 100% (as per the national roadmap submitted in 2024) and should be achieved by 2027. Coverage was below the EU average in 2024 but grew much faster in Poland than in the EU. Moreover, after a long delay, the award of 5G pioneer bands in Poland is now moving forward.

In December 2023, the President of the Office of Electronic Communications (*Urząd Komunikacji Elektronicznej – UKE*) granted the rights to use spectrum in the 3.4-3.8 GHz band. This resulted in 60% of Polish households being within range of a 5G network using this pioneer band by the end of June 2024.

The auction to distribute another pioneer band – 700 MHz – was launched in November 2024. Four entities submitted initial bids by the deadline in late January 2025. The [bidding was completed in March 2025](#). The allocation of frequency reservations in the 700 MHz band is planned for early June 2025.

In March 2024, the operators indicated (in reaction to the public consultation on the 26 GHz band opened by the Office of Electronic Communications) that the allocation of this band should not take place before 2026 due to the lack of availability of end devices operating in this band, as well as minimal availability of devices on the part of operators.

The standalone 5G network was not commercially available in Poland in 2024, but operators conducted pilots, research and tests in this area. The conditions set in both procedures for spectrum-awarding will require the winning operators to cover 95% of main roads and railways and 99% of households in Poland with their 5G network.

2024 recommendation on connectivity infrastructure: (i) Proceed with the allocation of remaining 5G pioneer bands. (ii) Transpose the European Electronic Communications Code into national law. (iii) Strengthen measures on 5G deployment, including those alongside the main transport corridors. (iv) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

In 2024, Poland made some efforts to address the recommendations through new policy actions.

The auction for one of the remaining 5G pioneer bands – 700 MHz – was launched in November 2024. Granting rights to use spectrum is expected before summer 2025. Due to lack of interest on the part of operators, the 26 GHz band is not expected to be allocated before 2026. As a part of the RRP's reform aiming to improve the legislative environment for the development of mobile networks by removing existing barriers to 5G deployment, the Electronic Communications Law (transposing the European Electronic Communications Code into national law) was adopted in July 2024 and entered into force in November 2024. The conditions for the 5G auctions are conducive to 5G deployment (including alongside transport corridors) but no other measures have been taken to speed up the deployment of 5G stand-alone core networks.

Semiconductors

Poland's share of global microelectronics production value chains is minimal, but its semiconductor industry has potential to contribute to the European and global technology landscape. Poland has developed niche expertise in areas such as design of integrated circuits and photonics, supported by a skilled workforce and expanding research infrastructure.

One example of such activity is the [HyperPIC](#) project by VIGO Photonics, which is funded under the Important Project of Common European Interest on Microelectronics and Communication Technologies (IPCEI ME/CT). It aims to develop and implement photonic integrated circuit technology for mid-infrared applications and will position VIGO Photonics as a global leader in this domain.

Limited manufacturing capacity remains a key challenge (particularly in front-end and back-end processes) and is restricting the industry's overall development. Global R&D centres are present in Poland, but further investment in production facilities is necessary in order to fully capitalise on Poland's domestic semiconductor market, which is driven by several different sectors (including consumer electronics and defence).

The decision of Intel in September 2024 to suspend construction of a new semiconductor assembly and test facility near Wrocław for two years is therefore a significant challenge for plans to achieve a 0.5% share in global microelectronics production value chains by 2030 (as planned in the roadmap).

The Polish Ministry of Digital Affairs reacted to this development by announcing its intention to review a [resolution establishing the National Framework for Supporting Strategic Investments in Semiconductors for 2024-2026](#). The draft document *Poland in the game for the future: Policy for the semiconductor sector 2025+* (*Polska w grze o przyszłość: Polityka dla sektora półprzewodników 2025+*) was issued in February 2025 for public consultation. It calls for attracting at least three large investors from the semiconductor sector over the next decade.

Edge nodes

The Edge Node Observatory estimates that Poland had deployed a total of 82 edge nodes in 2024, an increase of 95.2% on 2023. This is almost double (+40 edge nodes) the amount estimated for 2023.

However (according to the information provided by the Polish authorities in February 2025), **the implementation of the 'EdgePL' pilot, which is the only measure in this area included in the roadmap, has not yet started.** This suggests a delay of up to two years compared with the original timeline. The Polish authorities did not (in February 2025) mention any other public intervention in this domain.

The draft State Digitalisation Strategy ([Strategia Cyfryzacji Państwa](#)) was presented for public consultations in October 2024. It identifies edge computing as one of the breakthrough digital technologies, which may be developed with the State's support. It also includes a **goal of creating 1 000 edge nodes by 2035**, which would imply almost tripling their number from the 370 that Poland committed to deliver by 2030 in its national roadmap. However, the draft does not indicate how this goal should be achieved.

Quantum technologies

Poland is participating in projects for two out of six quantum computers planned under the European High Performance Computing Joint Undertaking (EuroHPC JU). The EuroQCS-Poland project (the first quantum computer integrated with supercomputing resources in Poland) should be established in Poznań in June 2025. Poland is also participating in the international consortium on the LUMI-Q project, which involves providing academic and industrial users with a quantum computer based on superconducting qubits with a star topology. This should also be installed in 2025.

Poland is working with other Member States to develop and deploy a quantum communication infrastructure (QCI) across the EU. Consortium [PIONIER-Q](#), which represents Poland in the [EuroQCI initiative](#), has developed the largest quantum key exchange network in the EU (with 1 770 km of optical fibres) and provides the backbone for the quantum key distribution (QKD) network that connects selected cities in Poland. The system that was demonstrated in [March 2025](#) enables encrypted communication between data centres and public administration institutions, and ensures the highest level of security of information exchange.

Developing quantum technologies to ensure secure communication as well as to enhance the productivity and competitiveness of the Polish economy (e.g. cryptography and metrology) is one of the goals of the draft State Digitalisation Strategy ([Strategia Cyfryzacji Państwa](#)) that was presented for public consultation in October 2024. However, the presentation of the dedicated policy document on quantum, which was expected in the first quarter of 2025, was postponed to the second quarter of 2025.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Poland has come significantly closer to the EU average in terms of the digital intensity of enterprises, but it still scores below the EU average in this respect as well as in the uptake of more advanced technologies by companies. This is usually attributed to a shortage of specialists with the necessary knowledge and skills (including cybersecurity or AI); high costs of applying new digital solutions; limited

access to financing; lack of motivation among the entrepreneurs to implement digital solutions combined with low awareness of potential benefits⁶; and haphazard implementation of new solutions.

At the end of 2024, Poland was home to 11 unicorns and aimed to almost double this number to 20 by 2030. However, this would still represent a limited contribution to the EU's target of nearly 500 unicorns by 2030. Poland's position fell in the Global Start-up Ecosystem Index ranking between 2023 and 2024, and its start-up ecosystem is facing difficulties in accessing funding, high labour costs, and lack of support. The Ministry of Economic Development and Technology is working on a start-up support strategy to address these challenges and improve the country's position in the global startup landscape.⁷

Several public measures (implemented mostly under the national RRP and the cohesion policy programmes) are supporting business digitalisation but have not yet had a decisive impact. To remedy some of the above-mentioned problems and make State intervention more effective, the draft State Digitalisation Strategy ([Strategia Cyfryzacji Państwa](#)) proposes to establish an entity to coordinate the digital transformation of enterprises and develop a common vision for that process at the national level, as well as to make entrepreneurs more aware of the benefits offered by digitalisation and of the available support options.

The Ministry of Economic Development and Technology is developing the Digital Transformation of Enterprises Programme, to address the current problems of enterprises related to technologies and cybersecurity. The programme will put forward actions aligned with the key objectives of the State Digitalisation Strategy and serve as a practical tool for their implementation⁸.

SMEs with at least basic digital intensity

In 2024, 68.95% of SMEs in Poland showed at least a basic level of digital intensity (the 2030 national target is 90%). This resulted from a robust year-on-year growth rate of 6.4% (from 60.95% in 2022). This was still below the EU average of 72.91% but represented significant progress. More specifically, 31.06% of SMEs achieved high or very high digital intensity (almost the EU average of 32.66%). Overall, Poland's SMEs made good progress on digital intensity levels, though efforts are still needed to achieve EU averages.

Poland has been implementing several measures to accelerate the digitalisation of enterprises listed in its roadmap. Key initiatives include calls for proposal under the European Funds for a Modern Economy (*Fundusze Europejskie dla Nowoczesnej Gospodarki* – FENG) and the recovery and resilience plan to enhance the digitalisation of SMEs. Businesses of all sizes could use the Digital Kit for Companies (*Cyfrowa wyprawka dla firm*) to receive comprehensive digitalisation advice in one place or Biznes.gov.pl to get information on business start-up funding.

Nine European Digital Innovation Hubs (EDIH) were available to provide comprehensive support to SMEs in the areas of digitalisation and digital transformation. They offer services such as training, testing of new technologies, and support in accessing investments and innovative ecosystems.

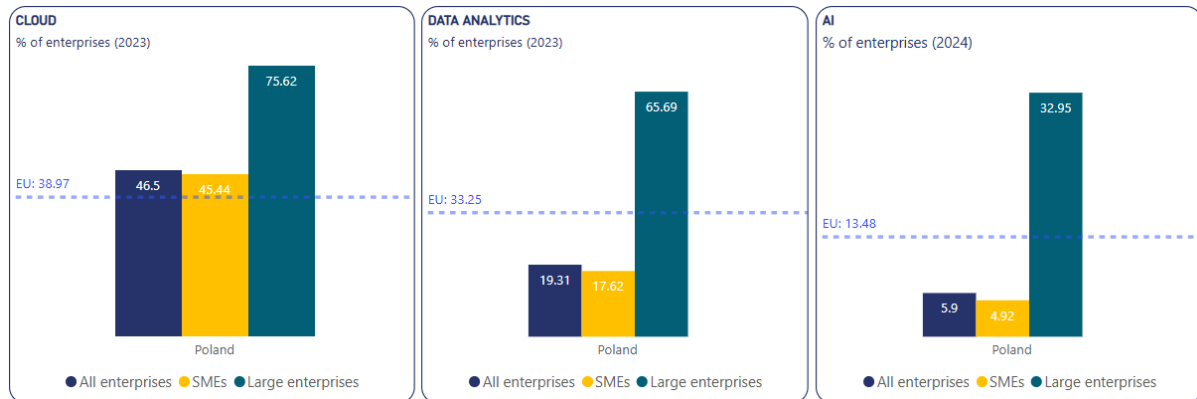
⁶ This is particularly relevant given the SMEs account for approximately 99.8% of Polish enterprises. The results of the project [Advancing The Digital Transformation of Polish Enterprises \(Wzmocnienie cyfrowej transformacji polskich przedsiębiorstw\)](#) indicate that close to one third of them have a low level of digitalization and operate locally, convinced that the minimum is enough, while further 9% are micro-companies eager to digitalize, but lacking knowledge and resources.

⁷ Information provided by the Ministry of Digital Affairs (*Ministerstwo Cyfryzacji*) during a meeting on 26 May 2025.

⁸ Information provided by the Ministry of Digital Affairs (*Ministerstwo Cyfryzacji*) during a meeting on 26 May 2025.

The national target set in the roadmap is consistent with the EU-level target. It is higher than Poland's current position and will require a continuously high growth rate if it is to be achieved by the deadline.

Take up of cloud/AI/data analytics



According to new data collected in 2024, only 5.9% of enterprises in Poland were using AI technology (less than half the EU level average of 13.48%). This indicates a significant increase (60.76%) in AI uptake on 2023 (3.67%) and means that Poland is on track according to its national trajectory, but it also means that Poland was below the EU-level growth rate of 67.2%. The uptake rate among SMEs was 4.92%, but large enterprises showed a higher usage rate of 32.95%. This corresponds to a gap of 28.03 percentage points (pps) between SMEs and large enterprises, which is in line with the EU gap of 28.53 pps.

Adoption of cloud, data analytics and the three technologies together were not measured in 2024.

In 2023, cloud uptake among Polish enterprises was 46.5% – considerably higher than the EU-level uptake of 38.97%. SMEs had a lower adoption rate of 45.44%, while large enterprises had a higher rate of 75.62%. This translates to a 30.18 pps difference in uptake between SMEs and large enterprises in Poland, which is like the EU-level difference (31.68 pps).

Data from 2023 showed that 19.31% of enterprises in Poland were using data analytics – below the EU-level use rate of 33.25%. However, while 17.62% of SMEs engaged in these activities, a substantially higher percentage of large enterprises (65.69%) adopted data analytics. This led to a gap of 48.07 pps between SMEs and large enterprises, which exceeded the EU gap of 39.72 pps.

If all three technologies are together, **over half the enterprises (51.77%) in Poland used either AI, Cloud or data analytics technologies in 2023 (the 2030 national target is 75%) – slightly below the EU average of 54.7%.** SMEs' uptake was slightly lower at 50.43%, while large enterprises had a significantly higher engagement rate of 88.59%. The difference in uptake between SMEs and large enterprises in Poland was 38.16 pps, which was higher than the EU-level gap of 32.97 pps.

In conclusion, Poland's adoption of cloud computing outpaced the EU average, reflecting a strong performance in this area. By contrast, the uptake of data analytics and artificial intelligence lagged behind EU levels. The disparity in uptake between SMEs and large enterprises reflects broader EU trends, with large enterprises consistently leading in technology adoption. These findings highlight the importance of addressing the specific challenges faced by SMEs in order to support broader digital transformation across the whole economy, especially given their weight in Poland's economy.

- [Cloud](#)

The use of the Cloud by enterprises in Poland in 2023 exceeded the EU average, but many enterprises use cloud computing only for basic purposes (e.g. as file storage). A small fraction use more advanced applications (e.g. big data analysis or running their own internal applications) ⁹.

The Polish roadmap contains several measures to support business digitalisation. These may contribute to uptake of the Cloud by the enterprises, but only one of them focuses on this aspect of digitalisation. Loans to SMEs to purchase cloud infrastructure and services have not yet been made (the calls were expected in the second half of 2025), but the initiative had already led to publication of the *Cloud for entrepreneurs* ([Chmura dla przedsiębiorców](#)) manual to assist businesses in digital transformation.

In November 2024, five beneficiaries signed contracts to receive support under IPCEI Next Generation Cloud Infrastructure and Services (IPCEI-CIS) under the investment financed by the Polish RRP. The selected projects will focus on development of a national DataSpace for spatial data; a scalable distributed NoSQL database for real-time IoT applications; a secure execution environment for applications in public Cloud settings; a next-generation operating system for Edge-IoT devices; and a Cloud Artificial Intelligence Service Engineering platform to create universal intelligent services for various applications.

- [Data Analytics](#)

There is no new development relevant for the 2025 Digital Decade to report.

- [Artificial Intelligence](#)

AI is presented in the draft State Digitalisation Strategy ([Strategia Cyfryzacji Państwa](#)) as the first of the breakthrough technologies that will be crucial for Poland's development. The draft document also predicts that 50% of Polish enterprises will be using AI by 2035. This is in stark contrast not only to the 5.9% level of use in 2024 but also to the official national target for 2030 of 10%.

Such a significant change will require the overcoming of several barriers, such as limited investment in research and innovation (particularly from SMEs) as well as a lack of awareness among entrepreneurs of the benefits of using AI. According to the CEO survey *Time of Necessary Changes* ([Czas koniecznych zmian](#)), only 15% of Polish business leaders see AI as a tool to support business development, while the global proportion is 33%. The report *How do Polish companies implement AI?* ([Jak polskie firmy wdrażają AI?](#)) states that 40% of employees of medium and large companies in Poland express misgivings about AI.

Insufficient access to specialised knowledge and computing power is hindering the growth of AI in Poland. The draft Strategy also points to a shortage of specialists and experts in AI, with Poland ranking outside the top 15 in EU in terms of graduates in computer science. Poland needs to establish consistent and harmonised legal frameworks and standards for AI development and deployment. It is necessary to update and implement EU and international regulations on AI (e.g. the AI Act) to ensure a coherent and supportive regulatory environment.

The draft Strategy does not propose specific measures in this area, but the Ministry of Digital Affairs stated during a meeting in February 2025 that it intends to revise its *Policy for development of artificial*

⁹ Information provided by the Ministry for Economic Development and Technology (*Ministerstwo Rozwoju i Technologii*) during a meeting on 20 February 2025.

intelligence in Poland from 2020 ([Polityka dla rozwoju sztucznej inteligencji w Polsce od roku 2020](#)) so that it addresses new challenges and technological changes.

One of the steps already taken in this area was the [signature of letter of intent](#) by the institutions that distribute public funds for the development of AI in Poland¹⁰. At the same time, in November 2024, they committed to sign the Agreement on the establishment of the Council of Artificial Intelligence Funds, which is to be established by the end of June 2025.

The Council's task will include providing opinions on the directions of AI policy, funding and the development of AI research in Poland, as well as developing support strategies for the development and implementation of safe and ethical AI, designing programs to concentrate funds on specific projects, monitoring the AI market in Poland and coordinating these funds.

Poland will host one of the AI Factories. It has joined one of the seven consortia that were selected for that purpose in December 2024 by the European High Performance Computing Joint Undertaking (EuroHPC). In March 2025, the Commission granted EUR 50 million in funding to the Poznań Supercomputing and Networking Centre (PCSS) to build the Piast AI Factory.

2024 recommendation on AI/Cloud/Data Analytics: (i) Review the mix of measures to support the adoption of advanced digital technologies (with a particular attention to AI and data analytics). (ii) Ensure the broad uptake of the next generation of cloud infrastructure and services under development in the IPCEI-CIS by companies of all sizes, including by developing a country specific dissemination strategy (complementing what has already been committed under IPCEI-CIS); contributing to the additional dissemination activities led by the Cloud IPCEI Exploitation Office.

In 2024, Poland continued the implementation of existing measures but did not take any new measure. Poland plans to adjust the roadmap but has not yet submitted relevant documents and, except for the ongoing process to establish the Council of AI Funds, Poland, it has not informed the Commission about the implementation of any new measures (other than initiatives included in the current roadmap).

Unicorns, scale-ups and start-ups

At the beginning of 2025, there were 11 unicorns in Poland (up from 10 in 2024), which represents 3.8% of all such companies in the EU. According to the adopted roadmap, Poland expects to have 20 unicorns by 2030. While this would mean almost doubling the baseline value, it would still represent only a limited contribution to the EU-level target of almost 500 unicorns by 2030.

According to the [Global Start-up Ecosystem Index 2024](#), which examines start-up ecosystems in 100 countries and 1 000 cities, Poland ranked lower than in 2023. It declined by one spot globally, to 34th place, and by two spots in the EU, to 17th place. Among Polish cities, Warsaw is the only Polish start-up ecosystem in the top 100, although at 73rd place in the ranking, it remains below its best historical rankings. Kraków has overtaken Wrocław as the second-ranked city in Poland. The report concludes that while challenges (like reliance on public funding and difficulties with acquiring talent) persist, Poland's strong economic base, announced policy changes, growing AI talent, and strategic collaborations position it well to enhance its start-up ecosystem in the future.

The report *Polish start-ups 2024* ([Polskie Start-upy 2024](#)) identifies the **main barriers to start-ups' development as: (i) difficulties in accessing funding** (56% of respondents mentioned challenges in

¹⁰ The Ministry of Digital Affairs, the Ministry of Science, the Ministry of National Defence, the Polish Development Fund S.A., the National Centre for Research and Development, the National Science Centre and Bank Gospodarstwa Krajowego.

securing the necessary funding); (ii) **high labour costs** (for 50% of start-ups it is a major obstacle; 18% of the start-ups surveyed also report a lack of employees); and (iii) the **need for support** (in various areas, particularly in obtaining financing and working with investors).

However, **the challenges for scale-ups may be somewhat different**. According to the study '[Mapping Poland's Tech Sector](#)', **access to qualified managerial talent** is the key barrier for Poland's tech founders, especially for founders of scaled companies. Other major barriers include difficulties for B2B companies to access customers, the unpredictable taxation system, and a lack of conducive legal frameworks. Access to capital is a more pronounced challenge for smaller companies, but the lack of growth-stage financing could also hamper their further development.

In 2024, Poland did not introduce any new measures in this domain but implemented several existing ones. The roadmap does not include any measures focused specifically on start-ups, but there are targeted initiatives that are funded from cohesion policy. Such initiatives include: (i) [Startup Booster Poland - Smart Up](#), which offers comprehensive support for innovative ventures at an early stage, including mentoring, matchmaking with corporations, and support for global scaling; and (ii) [Starting platforms for new ideas](#), which provides personalised incubation plans for start-ups in Eastern Poland.

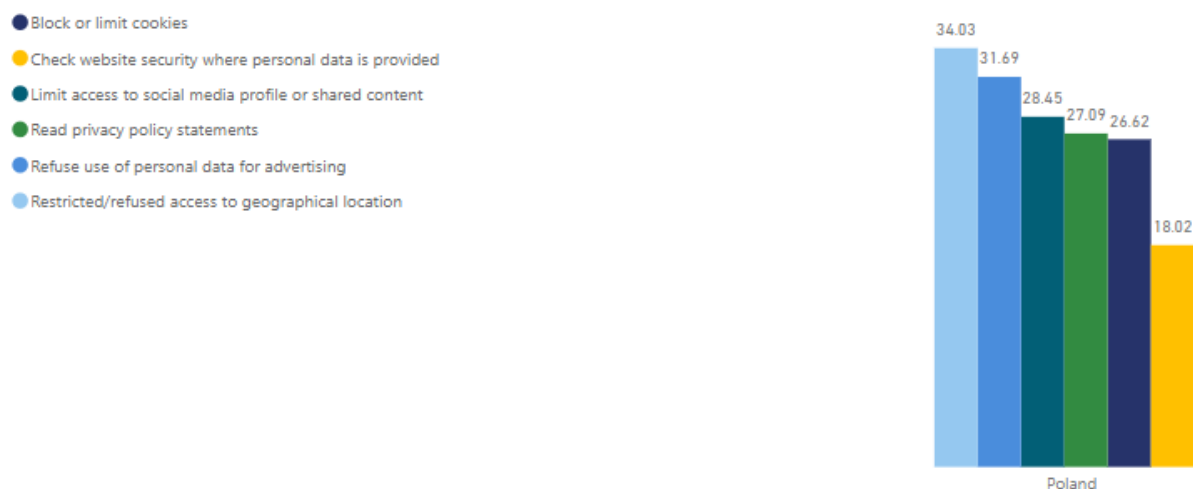
Additionally, institutions like [PFR Ventures](#) invest in venture capital and private equity funds to provide capital to innovative Polish enterprises at various stages of development, while the National Centre for Research and Development (*Narodowe Centrum Badań i Rozwoju - NCBR*) focuses on supporting R&D projects carried out by tech companies in cooperation with large enterprises or universities. In May 2025, the Ministry of Finance, the Polish Development Fund (PFR), and PFR Ventures [launched the PFR Deep Tech programme](#). The programme has a budget of PLN 300 million from PFR's own resources, with an additional minimum of PLN 300 million to be contributed by private and institutional investors. The initiative will operate as a fund-of-funds, channelling capital to venture capital fund managers who will finance the most promising technological projects.

Strengthening Cybersecurity & Resilience

Poland faces growing challenges in cybersecurity and the Polish authorities see the need for improving performance in this area. These challenges are largely due to a more unstable global security situation and a rise in online crime. Because of these threats, the Polish authorities want to improve protection against cyberattacks for important computer systems and networks. This is vital due to Poland's central position at NATO's eastern flank. Hence, cybersecurity is one of the main digital themes for the Polish Presidency of the EU in the first half of 2025 and for the draft State Digitalisation Strategy ([Strategia Cyfryzacji Państwa](#)), which includes cybersecurity in four cross-cutting areas, significantly affecting the activities in other areas.

One of Poland's weaknesses is a low level of digital safety skills, with only slightly above half the population having a basic level of such skills. In 2023, 54.06% of individuals reported taking at least one action (see the six types of digital safety actions in the graph's legend below) to protect their personal data online, which was significantly below the EU average of 69.55%. Moreover, only less than one third (30.55%) of the population could be considered to have above basic digital safety skills (i.e. taking three or more actions). The most common action taken was restricting or refusing access to geographical location (34.03%), while the least common was checking that websites are secure (18.02%).

Type of activities to protect personal data online (% of individuals)



According to the Digital Decade Eurobarometer 2025, **74% of Poles believe that improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies.** While no-negligible, the share of people in Poland seeing this aspect as significant is lower than for the EU (81%) and has decreased by 3 percentage points since last year.

In 2024, various public entities raised awareness of threats and worked to improve the general population's cybersecurity skills. Their activities were often – but not exclusively – addressed to children and adolescents.

- NASK-PIB¹¹ implemented a series of educational and preventive activities - including workshops, lessons, training sessions, and webinars - attended by 36 333 IT professionals and public administration representatives, 286 474 students, 18 507 teachers and professionals working with children and young people, 2 060 parents, and 525 officers responsible for social prevention and minors. The initiative also included conferences and media appearances.
- The Office of Electronic Communications (*Urząd Komunikacji Elektronicznej*) was also active in this area. Its campaign *#KeepCTRL* (*Klikam z głową*) included lessons for school classes (over 6 000 students through 116 in-school lessons) and online webinars for elementary school students (more than 60 000 students through 12 online webinars). These lessons and webinars taught the students how to: (i) use smartphones, computers, games, and online applications responsibly; (ii) protect their personal data; and (iii) defend themselves against cyberbullying.
- The *European Cybersecurity Month* (*Europejski Miesiąc Cyberbezpieczeństwa*) campaign coordinated by NASK-PIB focused on adult users and organisations. The campaign covered topics such as romance scams, fake investments, AI, and deepfakes. It also provided educational materials, including articles, infographics, webinars, posters, and guides, and reached an estimated 1.4 million people.

In 2024, Polish enterprises tended to experience fewer incidents related to cyberattacks than the average number of incidents for the EU. The number of enterprises that experienced ICT security

¹¹ NASK-PIB is a National Research Institute supervised by the Polish Ministry of Digital Affairs, primarily focused on research and development in cybersecurity, ICT, and AI, and on ensuring the security of cyberspace at the national level. It also serves as the national registry for .pl internet domains and runs CERT Polska, which responds to cybersecurity threats.

incidents leading to the unavailability of ICT services due to attack from outside (e.g. ransomware attacks, denial-of-service attacks) increased slightly in Poland (from 2.93% in 2022, to 3.02% in 2024), but remained below the EU average (3.43%).

The increase in the number of incidents is also reflected in the Cybersecurity Barometer ([Barometr cyberbezpieczeństwa](#)), published annually by KPMG Poland **and in the Report on Cybersecurity in Polish companies** ([Raport Cyberbezpieczeństwo w polskich firmach](#)), which is prepared on a yearly basis by Vecto. In 2024, the percentage of companies reporting at least one cyber incident increased by 16 pps to 83% according to the Cybersecurity Barometer, and by 4 pps to 73.9% according to the Report on Cybersecurity.

Notable incidents included a distributed denial-of-service cyberattack on the companies Autostrada Wielkopolska and Gdańsk Transport Company, which manage sections of the A2 and A1 motorways. The attack was carried out by the same pro-Russian group that attacked transport companies in Czechia and public administration websites in France. **The Polish IT company Atende SA became the target of an advanced ransomware cyberattack** that allowed criminals to gain access to the personal data of employees, customers and contractors, and the **Super-Pharm pharmacy chain experienced a cyberattack that led to a leak of customer data**.

Polish enterprises deploy some ICT security measures more often than the EU average, but employees are less aware of their ICT security-related obligations than the EU average. In terms of measures, 94.11% of enterprises deployed some ICT security measures (slightly above the EU average of 92.76%) and 56.84% of enterprises made their employees aware of their obligations regarding ICT security-related issues, which is close to the EU average (59.97%).

In 2024, the difficulty in hiring and retaining qualified specialists was the biggest challenge to ensuring cybersecurity in enterprises. 34% of respondents to the Cybersecurity Barometer mentioned this problem. This represents a decrease of 19 pps compared with 2023, which could suggest that companies are learning how to manage this challenge better. The second most frequently mentioned challenge was insufficient budgets, affecting 33% of respondents. This issue has also become less significant compared with previous years, which could reflect increased awareness of cybersecurity and its prioritisation in corporate budgets. Another challenge, which rose from 17% in 2023 to 26% in 2024, was the lack of support from top management.

In 2024, measures already included in the national roadmap helped enterprises to improve their cybersecurity. The *Fundamentals for Business Cybersecurity programme* ([Program Firma Bezpieczna Cyfrowo](#)) is implemented in partnership by Ministry of Economic Development and Technology together with NASK-PIB and funded from cohesion policy resources (*Fundusze Europejskie na Rozwój Cyfrowy - FERC*). It aims to help SMEs assess their cybersecurity and improve their situation and was in the second phase of its pilot stage. At the same time, the implementation of the [‘SMART path’](#), which [is](#) financed from cohesion policy resources under priority 1 of the FENG programme, continued. Enterprises receiving support in this scheme for their R&D or innovation projects can also receive help to improve their level of cybersecurity.

Poland lags behind the EU in the roll-out of the secure Internet Protocol version 6 (IPv6). This could have negative consequences for future growth and innovation, as well as for security. The rate of IPv6 adoption is 15% for end users in Poland (the EU average is 36%) and 3% on the server side (the EU average is 17%). IPv6 is an important protocol as it ensures the scalability, stability, and security of the internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have long been depleted. Domain Name System Security Extensions (DNSSEC) is also an important

standard to be rolled out, as it introduces security features to DNS. In Poland, the DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology) is 46% (Q3 2024), which is close to the EU average of 47%.

Cybersecurity is also a concern for the public administration in Poland. According to the draft State Digitalisation Strategy ([Strategia Cyfryzacji Państwa](#)), a low awareness of the threats and a lack of skills are weaknesses in this area.

In 2024, NASK-PIB carried out a series of initiatives to improve cybersecurity awareness and build skills in different institutions. These included: (i) the SecureV project, which trained key persons for the security of the state, members of parliament, members of the Council of Ministers, representatives of local government units, primary healthcare entities and representatives of the National Electoral Office; (ii) training for 35 presidents of state-owned enterprises; and (iii) the EDU-EXE project, which trained close to 27 500 police officers in district and city headquarters, teachers, and employees of bailiffs' chambers and local government units. Moreover, 33 230 people working at the entities forming the national cybersecurity system were trained to improve their practical skills to handle crisis situations.

In 2024, Poland launched project *Cybersafe self-government (Cyberbezpieczny Samorząd)* to increase the level of information security in territorial self-government units. 2 495 units (almost 90% of their total number) received grants to improve technical and organisational aspects and skills. Additionally, the Cybersecurity Centre NASK (*Centrum Cyberbezpieczeństwa NASK*) project was launched. It involves the creation of a cybersecurity centre comprising several specialist centres, offices, and laboratories to boost the national cybersecurity system. The project is expected to improve the country's ability to respond to current and future cyberthreats.

In 2025, several new initiatives are expected, including the *Cybersafe government (Cyberbezpieczny Rząd)* project, which aims to improve the cybersecurity of various government institutions, including ministries, central offices, and voivodeship offices. Another initiative is the Local Cybersecurity Centre (*Lokalne Centrum Cyberbezpieczeństwa*) project to create or develop specialised cybersecurity units in various regions of the country to provide services to territorial government units, which is expected to start in the third quarter of 2025.

To improve the coordination of Poland's national cybersecurity system, the draft State Digitalisation Strategy ([Strategia Cyfryzacji Państwa](#)) proposes establishing a central institution responsible for cybersecurity and coordinating the activities of other entities providing cybersecurity at national level. The Strategy did not provide more detail on this subject and at the time of writing it had yet to be adopted by the Polish government. However, the Ministry of Digital Affairs is currently preparing the 2025-2029 National Cybersecurity Strategy, which should be published in mid-2025, possibly alongside the State Digitalization Strategy. The Ministry expects the legal act transposing the provisions of the NIS2 Directive in Polish legal system to be adopted at the same time.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

The digital skills of Poland's population require significant improvement, as their low level hinders participation in public life and increases the risk of falling victim to cybercrime. Moreover, data reveal a marked difference in the level of skills between people living in urban and rural settings and between age groups. All this points to the need for well-targeted activities to improve the levels of digital skills and bring them closer to the EU average.

A lack of ICT specialists is one of the factors slowing down the digitalisation of enterprises and of the public administration. Poland is aiming for ICT specialists to represent 6% of the workforce by 2030, which is markedly lower than the EU target of 10%. Currently deployed or planned measures could be sufficient to reach this lower target, but it does not seem ambitious enough to achieve the targets in the draft State Digitalization Strategy for developing the Polish digital sector.

The country has made progress in digitalising public services for citizens and businesses, although it remains below the EU average in both categories. Therefore, there is still room for improvement if Poland is to reach the score of 100 by 2030. **The use of eID is growing** and Poland is participating in projects to develop the new European digital wallet. **The country's score for online access to medical records makes it one of the leaders in this area,** while several ongoing projects should help it to achieve the target by 2030.

According to the Digital Decade Eurobarometer 2025, **78% of Poles think that accessing public services online will be important for their daily life by 2030.** 76% of them consider that human support to help access and use digital technologies and services would facilitate their daily use of digital technologies, and 83% think public authorities should prioritise ensuring that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services.

Poland saw high levels of disinformation activities due to its geopolitical situation. Since different state actors are working to counter this disinformation, there is a need for improved coordination. It is also important to enhance people's awareness of disinformation and their critical skills to deal with it.

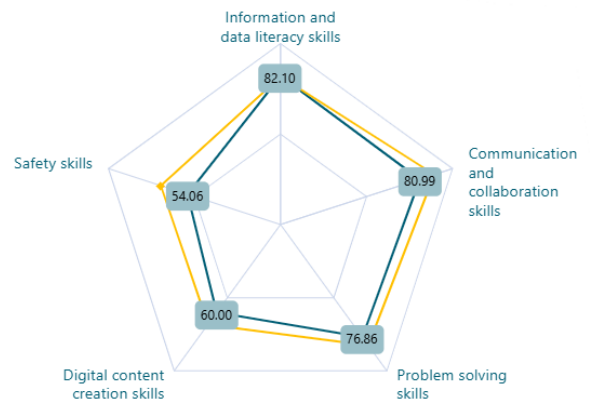
Equipping people with digital skills

Basic Digital Skills

The digital skills of the population is one of the areas in which Poland should improve its performance. According to 2023 data, 44.30% of Poland's population had at least basic digital skills (the 2030 national target is 80%), which represents an increase of 1.5% compared to the previous year, but remains well below the EU average (55.56%). Although the data were not updated in 2024, detailed demographic analyses provide insights into the digital skill disparities.

- **Gender gap:** Poland has a gender gap in digital skills, with 45.68% of men and 42.99% of women equipped with at least basic digital skills. The gap of 2.69 pps is just above the EU average (2.23 pps), indicating a moderate difference in digital proficiency between genders.
- **Education level:** the link between education and digital skills is clear, as 73.37% of Poles with higher education have at least basic digital skills, which is below the EU average (79.83%). Those with the least formal education are further behind, with only 31.60% having at least basic digital skills, but the gap with the national average (12.70 pps) is narrower than the EU average (21.95 pps).
- **Living areas:** In Poland, the lowest proportion of people with digital skills (33.17%) was recorded in rural areas, which falls short of the EU average for rural areas (47.50%). The difference between rural areas and the country's average is 11.13 pps, which is greater than the EU average (8.06 pps), indicating a need for focused digital upskilling in rural areas.
- **Age groups:** 25 to 34-year-olds in Poland are the most digitally skilled, with 66.85% of them being proficient, which is just below the EU average (70.18%). A much lower proportion of 65 to 74-year-olds have digital skills (12.55%), which is well below the EU average (28.19%).
- **The Digital Skills Index** shows that **Poland scores above the EU average only in information and data literacy, at 82.10%.** Safety skills, however, are a weak point, with the country scoring 54.06%, which is considerably below the EU average (69.55%).

Digital Skills Index components
% of individuals



Legend
— MS — EU

Poland has areas that it must address in its pursuit of digital inclusivity and proficiency. Targeted initiatives are essential in view of a significant rural-urban skills divide and low numbers in the older demographic. Improving safety skills and supporting lower-educated groups could help Poland raise its overall digital skills level and move closer to the EU benchmarks.

Poland's target for the basic digital skills of the population remains at 80%, which is in line with the 2030 EU target. The [data collected by the National Statistical Office](#) (*Główny Urząd Statystyczny*) show that the proportion of Poland's population with at least basic digital skills grew in 2024 to 48.80%. This implies a much higher annual growth rate than in previous years. However, the national data still indicate not only a gender gap, but also a low level of digital skills among older people and those with a lower level of education.

In 2024, Poland implemented several measures, which were planned in the national roadmap, to develop digital skills. These included: (i) training to improve individuals' digital skills (focusing in particular on public officials, teachers and those at risk of digital exclusion), funded from the Recovery and Resilience Fund (RRF); (ii) the creation of the Digital Development Clubs (*Kluby Rozwoju Cyfrowego*) in local communities with grants from cohesion policy funds; and (iii) activities of NGOs to improve the digital skills of older people, financed from national funds under the 'Aktywni+' multiannual programme for older people.

Moreover, various activities were undertaken to develop computer science talent in schools in the framework of the 2019-2029 Programme for the Development of IT Talent ([Program Rozwoju Talentów Informatycznych](#)). The programme, which includes two thematic paths (*Championship in Algorithmics and Programming* and *Championship in Computer Game Design*), aims to support the development of mathematical and IT talent, by creating a motivating system for gifted students, as well as organising educational trips, e-learning sessions, team-based problem-solving, and competitions to promote digital skills. Another initiative focusing mainly – but not only – on schools was the *Intergenerational school* ([Szkoła Międzypokoleniowa](#)) pilot project, which brings together students and older people to develop digital skills and promote intergenerational integration.

At the same time, the implementation of the key national policy document – the Digital Competence Development Programme ([Program Rozwoju Kompetencji Cyfrowych - PRKC](#)) as part of the Polish RRP – faced several challenges in 2024, including delays and changes to the scope of its activities. As a result, uneven progress was made in achieving the programme’s objectives for digital skills, with an achievement level of 50% or more for 35% of the indicators (15 out of 43), while 47% of the indicators (20 out of 43) showed no change from their initial values. During the meeting in February 2025, the Ministry of Digital Affairs indicated that the revision of the programme to update its measures and introduce new ones would start in 2025.

In 2024, Poland fulfilled several milestones under its RRP by adopting a set of policy documents that propose: (i) a new digitalisation policy for education; (ii) standards for equipping schools with digital infrastructure; and (iii) procedures for distributing ICT equipment and providing infrastructure to schools. These documents provide the necessary framework for the projects (including those funded by the RRF) to equip schools with the connectivity and tools that they need. However, the adoption of the projects was delayed by almost two years compared with the original timing in the RRP, which had a knock-on effect on the subsequent actions.

2024 recommendation on basic digital skills: Include in the roadmap measures to improve the basic skills of younger population (e.g., actions to improve digital equipment in schools, qualifications of ICT teachers, changes to programmes to increase the attractiveness of STEM disciplines).

In 2024, Poland made some efforts to address the recommendation through new policy actions. The Polish authorities implemented measures listed in the national roadmap, as well as others not included there, such as the 2019-2029 Programme for the Development of IT Talent and the adoption of the policy framework for equipping schools with ICT. However, due to delays in certain fields and the fact that the roadmap has yet to be revised, this recommendation cannot be considered to have been addressed fully.

[ICT specialists](#)

In Poland, the proportion of ICT specialists in total employment is 4.5% (the 2030 national target is 6%) after increasing by +4.7% in 2024, but is below the EU average of 5.0%. The country is on track according to its national trajectory.

The proportion of ICT specialists in total employment in 2023 was 4.3%, and Poland’s growth rate for this indicator in 2024 was higher than the EU’s of +4.2%. This indicates that Poland is making progress, but still has substantial ground to cover.

Poland’s trend for women as a proportion of ICT specialists is very concerning. In 2023, Poland had a higher proportion of female ICT specialists (19.1%) than the EU average of 19.4%. However, by 2024,

this figure had dropped to 17.5%, falling below the EU average of 19.5%. Poland's growth rate for female ICT specialists (-8.4%) was significantly lower than the EU's of +0.5%. As a result, 7 400 fewer female ICT specialists were employed in 2024 than in 2023, while the number of male ICT specialists grew by 33 800. This suggests that despite some efforts in this area, Poland is failing to retain or attract female talent in the ICT sector.

On the other hand, the data on the provision of ICT training by enterprises give reasons for optimism.

In 2022, 24.69% of Polish enterprises with 10 or more employees provided ICT training, surpassing the EU average of 22.37%. This trend continued in 2024, with Poland at 31.39% compared with the EU average of 22.29%. Poland's annual growth rate of 12.8% in this area significantly outpaces the EU's of -0.2%.

According to the [Eurostat experimental statistics](#), which rely on web scraping of online job advertisements for ICT specialists, the most sought-after profile in Poland was 'software and applications developers and analysts', representing 69.0% of online job advertisements for ICT specialists (58.0% at EU level). Two types of profile are more sought-after in Poland than in the EU on average: 'information and communications technology service managers' (7.8% of online job advertisements for ICT specialists) and 'database and network professionals' (10.5%).

Poland is aiming for ICT specialists to represent 6% of employment by 2030. If the current rate of growth is maintained, achieving this target should be possible. However, the EU target for ICT specialists is set at 10% and, given Poland's weighting in overall employment, its lower target could have significant consequences for achieving the Digital Decade Policy Programme's goals. For the moment, the Polish authorities are not considering revising the national target, but do not rule this out after the Digital Competence Development Programme has been amended.

2024 recommendation on ICT specialists: Take measures to increase the number of ICT specialists (e.g., improved visibility and accessibility of training and reskilling options; incentive schemes to attract new / retain current ICT specialists) and promote ICT studies and careers to women and girls.

In 2024, the Poland continued the implementation of existing measures but did not take any new measure. The Polish authorities intend to adjust the roadmap, but have not yet completed this process. Therefore, it is not possible to determine whether the recommended changes have been carried out. At the same time, in 2024, Poland implemented some measures to make ICT studies and careers attractive to women and girls and to train ICT specialists in specific areas (see below). However, no initiatives to improve the visibility and accessibility of training and reskilling options were reported.

In 2024, Poland did not introduce any new measures in this domain but implemented those already ongoing or planned earlier. They included:

- the 'Become a digital expert' ([Zostań cyfrową ekspertką](#)) project to finance training for women in more advanced digital skills;
- *Education for digital accessibility* ([Edukacja DC](#)) to train 2 200 specialists in digital accessibility;
- the 'Training of high-class specialists in the field of HPDA+' (*Kształcenie wysokiej klasy specjalistów w zakresie HPDA+*) programme aimed at training 300 specialists in high-performance data analysis (HPDA) and related fields, including big data, AI, and quantum computing.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

Poland scored 70.69 for digital public services for citizens (the 2030 national target is 100) after an increase of +10.9%. However, this figure is below the EU average of 82.32 and country is lagging behind its national trajectory. In 2023, Poland's total score for digital public services for citizens was 63.73, compared with the EU's score of 79.44, and in 2024, it reached 70.69, which was still below the EU's score of 82.32. However, Poland's growth rate of 10.9% outpaced the EU's of 3.6%. Poland scored 42.38 in 2023 and 49.58 in 2024 for cross-border digital public services for citizens, which were both lower than the EU's scores of 68.37 and 71.28, respectively. Nevertheless, Poland's growth rate of 17.0% was significantly higher than the EU's of 4.3%. The proportion of people using government internet websites or apps in Poland is increasing year after year (from 62.62% in 2022 to 67.94% in 2024), but remains below the EU average of 74.71% in 2024.

Poland scored 85.0 for digital public services for businesses (the 2030 national target is 100) after an increase of +16.6%. While this figure is below the EU average of 86.23, the country is on track according to its national trajectory. Poland's total score was 72.88 in 2023 and 85.0 in 2024, which were both below the EU's scores of 85.42 and 86.23, respectively. However, the country's growth rate of +16.6% was substantially higher than the EU's of 0.9%. For cross-border digital public services for businesses, Poland's scores were 51.39 in 2023 and 70.0 in 2024, which were both below the EU's scores of 73.13 and 73.76, respectively. However, Poland's growth rate of 36.2% was significantly higher than the EU's of 0.9%.

Poland's access to e-Health records shows a different pattern with regard to the growth rate. Poland had a score of 91.82 in 2024 (the 2030 national target is 100), which is above the EU average of 82.7. The country is on track according to its national trajectory. In 2023, Poland's total score was 90.03, which was higher than the EU's of 79.12, and in 2024, it was 91.82, which was higher than the EU's of 82.7. However, Poland's growth rate of 2.0% was lower than the EU's of 4.5%.

eID

Poland has three eID means and it notified two of them – the personal profile (*profil osobisty*) and the trusted profile (*profil zaufany*) – to the European Commission. The 'mCitizen profile' (*profil mObywatel*) – which was made available in July 2023 as a feature of the mObywatel 2.0 public mobile application, will not be notified. This is due to the work on implementing solutions related to the European digital wallet standard. The mCitizen profile should be replaced by new solutions developed under the European Digital Identity Regulation.

The mObywatel public mobile application, which individuals can use to confirm their identity online and access the main public systems and registers (including e-Health) has been widely adopted. By February 2025, it had been downloaded 21.7 m times, which represents a 34% increase compared with the end of 2023 (16.2 m downloads) and is an impressive figure, given that the entire adult population of Poland is almost 30.8 m.

Poland is participating actively in several [Large Scale Pilots \(LSPs\)](#) to test the specifications of EU Digital Identity Wallets in a wide range of use cases, before their roll-out to Member States. Polish stakeholders, both public and private, are taking part in three of the four LSPs' projects, which began in April 2023:

- POTENTIAL, which involves work on identification for e-Government Services, bank account opening, registration of SIM cards, mobile driving licences and health credentials for e-Prescription;

- EWC, which pilots the use cases for digital travel credentials, payments and organisational digital identities;
- DC4EU, which involves education/professional qualifications and social security documents.

Polish stakeholders are also participating in two of the LSPs' projects that were selected in 2025:

- WE BUILD, which pilots the use of EUDI Wallets across 13 use cases in the areas of businesses, supply chain, and payments;
- APTITUDE, which involves work on the use of EUDI Wallets across four use cases: payments and banking, mobile vehicle registration certificates, digital travel credentials, and tickets and travel check-in.

Poland is also a member of the EUROPEUM European Digital Infrastructure Consortium (EDIC), which aims to strengthen and expand the activities of the European Blockchain Partnership, including the use of this technology in relation to eID. Poland plans to develop its blockchain capabilities through the Europeum initiative. The first Polish node in the European Blockchain Services Infrastructure (EBSI) network operates at the NASK PIB, which will also establish a Polish blockchain skills centre to support the development of the country's blockchain ecosystem and promote the growth of the EBSI network. The centre will focus on enhancing cybersecurity for blockchain applications, also by developing algorithms and addressing potential threats and vulnerabilities, such as those related to post-quantum cryptography and quantum technologies.

Digitalisation of public services for citizens and businesses

Poland aims to reach a score of 100 for the digitalisation of public services for citizen and businesses. Its current observed rate of growth is significantly higher than EU average and should be more than sufficient to achieve the target.

In 2024, Poland continued its actions to digitalise public sector. In addition to those listed in the roadmap, like development of the electronic documentation management system (*Elektroniczne Zarządzanie Dokumentami, EZD*), or the advancement of e-health services discussed in the next section of the report, citizens and businesses alike were able to benefit from the improvements of the e-Tax Office (e-Urząd Skarbowy), which included making it possible to export the tax declaration history or launching the e-WIS feature (which enabled electronic handling of requests for binding tariff information).

Furthermore, the 'Your e-PIT' (*Twój e-PIT* - electronic personal income tax) service was extended to include business owners and agricultural producers, facilitating the filing of over 13 million tax returns in 2024, compared with fewer than 11 million in 2023.

Moreover, Poland developed some innovative digital solutions for public administration. In late 2023, a consortium of six Polish institutions leading in the field of AI and linguistics launched a project to develop the first open Polish LLM and an associated smart assistant that can help provide public services. The result of their work - a PLLuM (Polish Large Language Model) – was [presented by the Ministry of Digital Affairs in February 2025](#).

At the same time, the Ministry announced the creation of a new consortium – HIVE – which will continue and strengthen the research in this area, develop Polish large language models and implement them. Among potential applications for the PLLuM is creation of a virtual assistant in

mObywatel or an intelligent assistant for administration officials. The budget allocated for these activities in 2025 will be PLN 19 m (EUR 4.4 m)

Development of digital public services remains an important priority for Poland. The draft State Digitalisation Strategy (*Strategia Cyfryzacji Państwa*) calls for improving the functionality, efficiency, and interoperability of these services, and integration of advanced technologies like AI is identified as a key direction for enhancing the delivery of services.

Furthermore, to better coordinate digitalisation in Poland, and in its public services in particular, the Polish government intends to enhance collaboration across its departments. This will be achieved by appointing Digitalisation Plenipotentiaries within ministries and a strengthened Committee for Digitalisation within the Council of Ministers to oversee the process, define objectives and assess needs.

The Ministry of Digital Affairs is preparing an amendment to the Act on computerisation of activities by bodies performing public tasks (*ustawa o informatyzacji działalności podmiotów realizujących zadania publiczne*), to introduce solutions promoting digital transformation through improved interoperability, public registers, electronic information exchange, IT system inventory, and support for local government. These new provisions are targeted for implementation in 2025.

2024 recommendation on key digital public services: Make efforts to digitalise public services, with particular attention to re-use of information available to public administrations and user support.

In 2024, Poland made some efforts to address the recommendation through new policy action. In addition to measures already included in the roadmap, which expanded the scope and user base of some of the digital services, the country also developed the Polish Large Language Model. This novel solution using AI technology will find application in public administration to improve users' experience.

e-Health

Poland is aiming for a score of 100 on access to medical records, in line with the 2030 EU target. Given the high score it achieved in 2024 the current rate of progress, this is realistic, and more than EUR 1 bn have been allocated to the two measures in the national roadmap, whose goal is to increase to scope of health data available through the Internetowe Konto Pacjenta (IKP).

Currently, over 19 million people in Poland (more than 60% of the adult population) use a free online account for patients in the Polish healthcare system, called the Internetowe Konto Pacjenta (IKP). It is also accessible in its mobile version, mojeIKP and provides secure access to various health-related information and services.

In 2024, IKP and mojeIKP were updated with new functionalities, enabling patients to check their eligibility for treatment under the National Health Fund (NFZ), access detailed information on e-prescriptions for medical devices, and view their individual medical care plans agreed upon with their doctors.

Moreover, a new feature was added in MojeIKP, allowing patients to submit applications for the European Health Insurance Card (EHIC) and track the status of their application. A pilot project for central e-registration for selected healthcare services, including mammography, cytology, and first-time cardiology visits, was also conducted in 2024.

In this period Polish citizens were actively encouraged to use the e-health services. The e-Health Centre ([Centrum e-Zdrowia – CEZ](#)), which develops digital services and solutions for public health, promoted the use of key e-health services in publications explaining the features and benefits of IKP and mojIKP across various platforms like pacjent.gov.pl, ezdrowie.gov.pl, and cez.gov.pl, and through paid advertising campaigns targeting specific demographics, such as parents.

CeZ promoted other digital health services, such as the Central e-Registration pilot and the Top SOR service for checking waiting time at the hospital emergency departments (*Szpitalny Oddział Ratunkowy – SOR*), through articles, printed leaflets, and social media engagement.

The Polish authorities were also actively involved in developing the European Health Data Space (EHDS). In 2024, Poland participated with other Member States in (i) the Xt-EHR project to develop European formats for the electronic exchange of health records, in the TEHDAS2 project to prepare for implementation of the EHDS regulation (in the part concerning secondary use of data), and (ii) the Capacity Building on Primary Use of Health Data project for public administration staff dealing with national digital health services.

Furthermore, in 2024, Poland launched a project to deliver the cross-border patient summary by the end of 2026. This will contain information on major health aspects, such as blood type, allergies, currently taken medications, chronic diseases, surgeries and implanted devices. The patient summary will help doctors develop appropriate treatment, avoid potential risks and overcome language barriers.

In 2024, work on the analysis was underway. The implementation of the Patient Summary, together with other cross-border e-services, such as cross-border e-prescriptions (which now allows data to be shared with 9 countries: Estonia, Finland, Czech Republic, Croatia, Portugal, Greece, Spain, Latvia, and Lithuania) will make people's healthcare-related data more secure, especially those who often travel within the EU and EFTA countries.

2024 recommendation on e-health: (i) make the data types of current problems and medical images available to citizens through the online access service. (ii) Ensure that all data types are made available in a timely manner.

In 2024, Poland made some efforts to address the recommendation through new policy action. The data category 'current problems' is now made available to citizens, but the data on medical images have yet to become available. Of the 12 data categories available to citizens, four are available in a timely manner, which represents an increase of two categories (data on identification and personal information), compared to the previous year.

However, Poland has reached full maturity on the other aspects of the eHealth framework. Beyond the initiatives included in the current roadmap, Polish authorities also worked to promote the use of the online account for patients among the population and implementing the European Health Data Spaces.

Building a safe and human-centric digital environment and preserving our democracy

The 2025 Eurobarometer shows that **79% of Poles think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values.** It represents only a slight decrease (one percentage point) compared to last year in Poland, but in the same period the EU average grew by five percentage points to 83%.

In Poland, online participation in political and civic life is increasing. In 2024, 15.82% of people used the internet to participate in consultations, vote or share opinions online. This share is below the EU average, but is trending upward from 13.93% in 2022, following a slight dip in 2023 (13.43%). This is broadly in line with the trend observed at EU level (17.59% in 2022 and 20.45% in 2024).

Disinformation continued to be a significant concern in Poland. In 2024 the Department of Countering Disinformation at NASK-PIB identified fewer instances of obvious, easily recognisable disinformation than in 2023. However, this may be since the authors of disinformation were increasingly using AI tools and relying more on manipulating context than creating entirely new information, making it more difficult to identify and refute the messages.

According to the 2024 report 'Disinformation through the eyes of Poles', ([Dezinformacja Oczami Polaków. Edycja 2024](#)), 79% of Poles declared that they had encountered disinformation, and that compared to the first survey in 2021 this percentage had not changed significantly (81%).

One particularly notable disinformation incident that occurred last year was publication of a fake dispatch with alleged statements by Prime Minister Donald Tusk announcing the mobilisation of Polish reservists. Because it was planted following a cyber-attack on the systems of a well-known press agency, many services repeated it on their channels, before the false information was denied and removed, causing considerable confusion and widespread public concern.

According to the Digital Decade Eurobarometer 2025, **84% of Poles believes that countering and mitigating the issue of fake news and disinformation online should be a priority for the public authorities.**

Tasks related to counteracting disinformation are carried out by several institutions, and a lack of appropriate coordination and communication between them remains a challenge. The draft State Digitalisation Strategy ([Strategia Cyfryzacji Państwa](#)) lists the following bodies as being active in this area in 2024: NASK-PIB, the Ministry of Foreign Affairs, the National Broadcasting Council (media education), the Government Security Centre (analysis of threats, including those related to disinformation), other relevant services (including the SKW – Military Counterintelligence Service and the ABW – Internal Security Agency) and the commission for investigating Russian and Belarusian influences. So, one of the goals for the draft Strategy is identifying a government body to supervise and integrate the activities of these various bodies, to improve coordination and communication.

Another challenge is the insufficiently critical approach to content that may be disinformation. In 2023, according to data collected by Eurostat,¹² 47.23% of Polish people said they had encountered untrue or doubtful information or content on internet news sites or social media, above the EU average of 49.25%.

Of these, 18.40% checked its truthfulness, representing a modest level of critical evaluation among those who perceived such content as misleading. Young people (16-24) (61.43%) reported more exposure than adults (25-64) (51.20%), which may be linked to different trends in internet usage, but the difference was on par with the EU average (61.66% vs 51.70%).

However, the difference in verification rates - 25.97% of young people verified content compared to 20.19% of adults – was much lower than the EU average (34.68% vs 25.18%). Males (48.17%) and females (46.34%) reported similar exposure rates, with males being slightly more likely to verify content, at 19.0% compared to 17.84% for females.

¹² This employed a different methodology than the 2024 'Disinformation through the eyes of Poles' report, so is not comparable.

In 2024, the Department of Countering Disinformation at NASK-PIB monitored social media platforms and the internet for potential disinformation, and reported suspicious content to the relevant authorities. Moreover, to enhance public awareness of disinformation and encourage a critical approach, especially among young people, NASK-PIB continued to run the [‘Make it clear - educating young people against disinformation online’](#) project, together with partners in Latvia and Romania. This project is funded under Creative Europe programme and aims to develop information skills in young people, as well as a conscious and critical approach to content shared in the media, especially social media.

Another initiative implemented in 2024 was the ‘Security in Cyberspace’ project by the Warsaw Institute of Banking and NASK-PIB. A total of 34 webinars on disinformation and cyberbullying were conducted for primary and secondary schools, covering a total of 23 794 students.

To help adults improve their digital skills, including those necessary to protect themselves online, from October to December 2024 Polish Radio broadcast a campaign called *In the digital world* ([W cyfrowym świecie](#)) across 17 regional stations. The goal was to encourage citizens to constantly improve their digital skills, raise their awareness of the threats and problems occurring in the digital world and build awareness of the need for conscious and safe use of broadly understood technology. The campaign was addressed to all citizens, with an emphasis on people aged 45+.

Almost one third of the Polish population, especially young people, encounters hostile or degrading messages online. In 2023, 29.95% of people encountered such messages, such as those based on religion or racial origin. Although concerning, this figure was below the EU average of 33.5%. Young people (16–24) (41.95%) reported significantly higher exposure than adults (25–64) (31.74%), pointing to a marked age-related gap. Males (30.61%) and females (29.33%) experienced almost identical levels of exposure.

According to the Digital Decade Eurobarometer 2025, **86% of Poles think the public authorities should urgently take action to protect children online and put in place age assurance mechanism to restrict age-inappropriate content.** 85% of them has the same view about the measures to counter the negative impact of social media on the children’s mental health and 84% - to counter the cyberbullying and online harassment.

One of the solutions available to victims of the hostile or degrading messages is reporting them anonymously to [Dyżurnet.pl](#), which is NASK-PIB contact point for reporting potentially illegal online material. [In 2024, Dyżurnet.pl received significantly more reports](#) (28 000) than in 2023 (over 18 000). 19 000 of them concerned CSAM (child sexual abuse content), three times more than the previous year.

Over 11 000 of those reports were confirmed, a six-fold increase compared to previous years. Another worrying trend was the increase in number of incidents related to the creation of child sexual abuse or exploitation content - since 2022 the amount of such content has doubled, from 44 to 103 cases – pointing to an increase in the use of AI tools to produce such material.

Another solution for combating certain forms of abuse in electronic communication - fake SMS messages (smishing) – is the law combating abuse in electronic communications adopted in 2023. Under this legislation, the CSIRT (computer security incident response team) at the NASK-PIB, one of the national-level CSIRTs, analysed text messages containing smishing and sent their patterns to telecoms operators so that they can block text messages that match this pattern. In 2014, 746 such patterns were distributed to limit the spread of SMS messages used by fraudsters.

Leveraging digital transformation for a smart greening

Polish authorities recognise the interrelation between the digital and green transformations. The draft State Digitalisation Strategy ([Strategia Cyfryzacji Państwa](#)), shared for consultation in November 2024, was the first national policy document calling for a more comprehensive approach in this area. It sets out to ensure the availability and reuse of data on energy sector activities, improve monitoring of the environmental impact of digital technologies by public administrations, promote digital technologies that support the green transformation and an environmentally-friendly ICT sector, and raise citizens' awareness of digital ecology. However, the Strategy has yet to be revised after the public consultation and adopted by the government in a finalised form, and neither the precise steps to be taken in this area nor any deadlines have been set.

At the same time the energy consumption of the digital sector is growing rapidly, especially due to data centres' needs. According to the [PMR consultancy](#), in 2023 the capacity allocated to data centres in Poland amounted to 173 MW, almost 43% more than in 2022. In turn, the forecast for 2030 is at least 500 MW, which translates into a cumulative annual growth rate (CAGR) of 25%. This trend may continue well into the future: the [Transmission Network Development Plan \(Plan rozwoju sieci przesyłowej\) for 2025-2034](#), prepared by the PSE (*Polskie Sieci Elektroenergetyczne*), predicts that at the end of this period, data centres will have 1 063 MW of power and their energy consumption will be 9.3 TWh.

The Polish population recycles only a small part of its ICT equipment and the share of the population who regularly recycle these devices decreased between 2022 and 2024. In 2024, for each category of device, Poles recycled them less often than in the whole EU on average: laptops and tablets (7.59% vs. 11.31%), desktop computers (9.57% vs. 14.66%) and mobile/smart phones (10.28% vs. 10.93%). The figures observed last year were also lower than those in 2022, when 9.4% of people in Poland had their laptops or tablets recycled, 12.8% their desktop computers, and 12.4% their mobile/smart phones.

Poles pay more attention than the EU average to energy efficiency when purchasing ICT devices, but less to the eco-design of the device (e.g. durable, upgradeable and repairable designs that require fewer materials; environmentally-friendly materials used for packaging). 21.01% of people in Poland considered energy efficiency as important when purchasing ICT devices (EU: 19.35%) but the eco-design of the device was considered important by only 8.54%, below the EU average (12.04%). However, those two eco-friendly criteria take on less importance for the buyer than the price, performance and design of the device.

In 2024, Poland implemented the following measures from its national roadmap:

- the Agrifood TEF (test and experiment facility) to help technological companies in the agri-food sector develop and validate AI and robotics solutions in real-world conditions, to create and produce more efficient machines and processes,
- participation in the [Destination Earth](#) initiative, aiming to create the earth's digital twin,
- support for transformation of enterprises to contribute to the circular economy, under its RRP (a call to select beneficiaries was completed in late 2024)

- development of national systems analysing satellite data, including to better protect the environment, under the RRP (to be completed by August 2026)

Rural and rural-urban municipalities (gminas), which are a majority of the over 2 500 local government units in Poland, often lack qualified personnel to implement modern technologies.

Hence, the initiatives that integrate modern technologies, sustainable development, and energy savings to create a better urban environment were implemented by several larger cities. For example, **Przemyśl** has implemented a monitoring system to track water levels and weather conditions, allowing for early warnings and better preparedness for potential floods. **Gdańsk** has developed the Tristar system, a comprehensive traffic management platform that optimises traffic flow and improves public transportation. And **Grudziądz** uses a combination of sensors hidden in garbage cans and a SaaS system that collects data on when the containers are full, to optimise routes for municipal rubbish collection vehicles.

The market for Smart Cities solutions in Poland is expected to grow. According to the intelligence platform [Statista](#), by 2025 market revenue is expected to reach close to EUR 456 million. This growth is expected to continue at a compound annual growth rate of 12.74% from 2024 to 2029, with the market value reaching EUR 737.5 million by the end of that period.

2024 recommendation on green ICT: (i) Mainstream considerations for the impact on the environment, including potential synergies, in the strategic reflection on national digital policy and develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs. (ii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing

No information available on measures taken to address the recommendation. Poland plans to take a more comprehensive approach regarding the digital and green transformations, but for the moment specific information on relevant measures is lacking and systems for improved monitoring, to ensure the availability and reuse of data on energy sector activities, have not yet been put in place.

Annex I – National roadmap analysis

Poland's national Digital Decade strategic roadmap

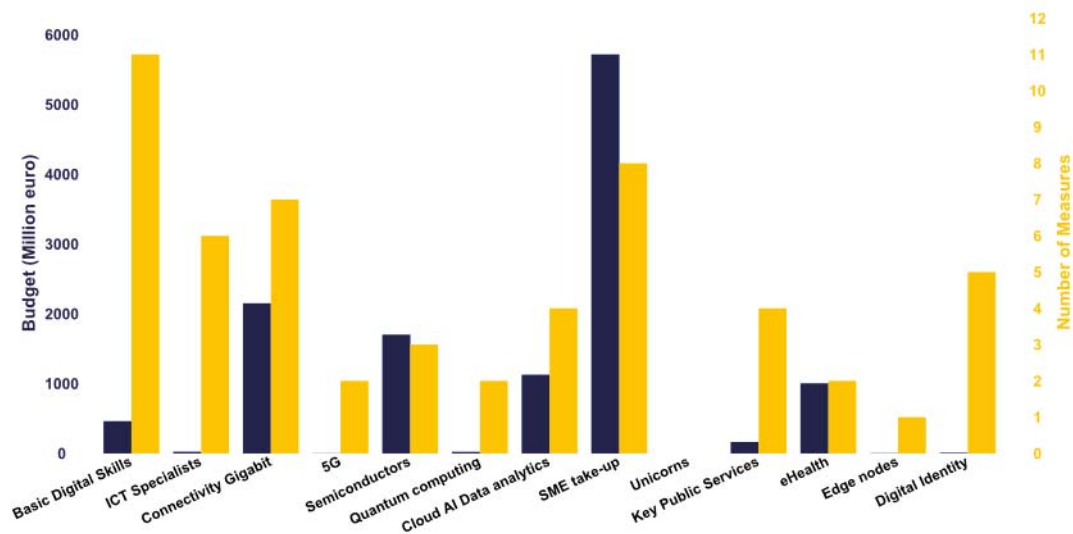
Poland adopted its national Digital Decade roadmap on 22 October 2024. The country report published in July 2024, relied on the draft roadmap, shared on 30 January 2024 by the Polish authorities. The differences between this draft and the formally endorsed document were not substantial and do not alter the relevant findings of the above-mentioned report.

Polish authorities have yet to submit the adjustments to the roadmap. They declared their intention to do so, in line with article 8 (3) of the decision establishing the Digital Decade Policy Programme, but at time of writing neither the formally endorsed document nor its draft has been shared with the Commission.

There is hence **no information available on measures taken to address the following recommendation issued in 2024:**

- **TARGETS:** (i) Consider aligning with EU targets the level of ambition of targets for the number of ICT specialists and for enterprises' take-up of AI and data analytics.
- **MEASURES:** (i) Strengthen measures contributing to the targets that are the most difficult to achieve for digital skills. (ii) Review the description of measures on the digitalisation of businesses and connectivity to clarify their contribution to specific KPI. (iii) Provide information on relevant measures at regional level, including regional operational programmes funded from the cohesion policy. (iv) Provide information about the estimated investment gap, where this was not available (i.e., on digital skills, ICT specialists, semiconductors, edge nodes, implementation of key digital online public services, e-health and e-ID). (v) Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it.

Measures and budget in national roadmap¹³



The roadmap includes 55 measures, with a total value of almost EUR 12.4 billion (about 1.5% of GDP). They cover all Digital Decade targets, but some measures are deemed to contribute to more than one target (e.g. measures related to digitalisation of businesses), making precise attribution difficult. The roadmap also lists measures relating to general objectives, but without providing information about their budget or timing.

¹³ When referring to national roadmaps, the data in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). This data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment was made of the extent to which Member States followed the guidance.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Poland is a member of the Alliance for Language Technologies EDIC and of the EUROPEUM EDIC, and is working towards setting up an EDIC in the area of connected public administration. Poland is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). It is also a participating state in the EuroHPC Joint Undertaking (JU) and the Chips JU.

Poland has not yet presented any projects under the Digital Decade's Best Practice Accelerator.¹⁴

EU funding for digital policies in Poland

Poland allocates 21% of its total recovery and resilience plan to digital (EUR 7.5 billion)¹⁵. In addition, under cohesion policy, EUR 5.7 billion (representing 8% of the country's total cohesion policy funding), is dedicated to advancing Poland's digital transformation¹⁶. According to JRC estimates, EUR 10.10 billion directly contribute to achieving Digital Decade targets (of which EUR 6.17 billion comes from the RRF and EUR 3.93 billion from cohesion policy funding)¹⁷.

The largest amount from the Recovery and Resilience Plan is dedicated to ensuring access to high-speed internet (EUR 1.4 billion), followed by investment in digital infrastructure and equipment for schools, as well as digital skills for teachers (EUR 1.2 billion) and those focused on e-Health (EUR 1 billion).

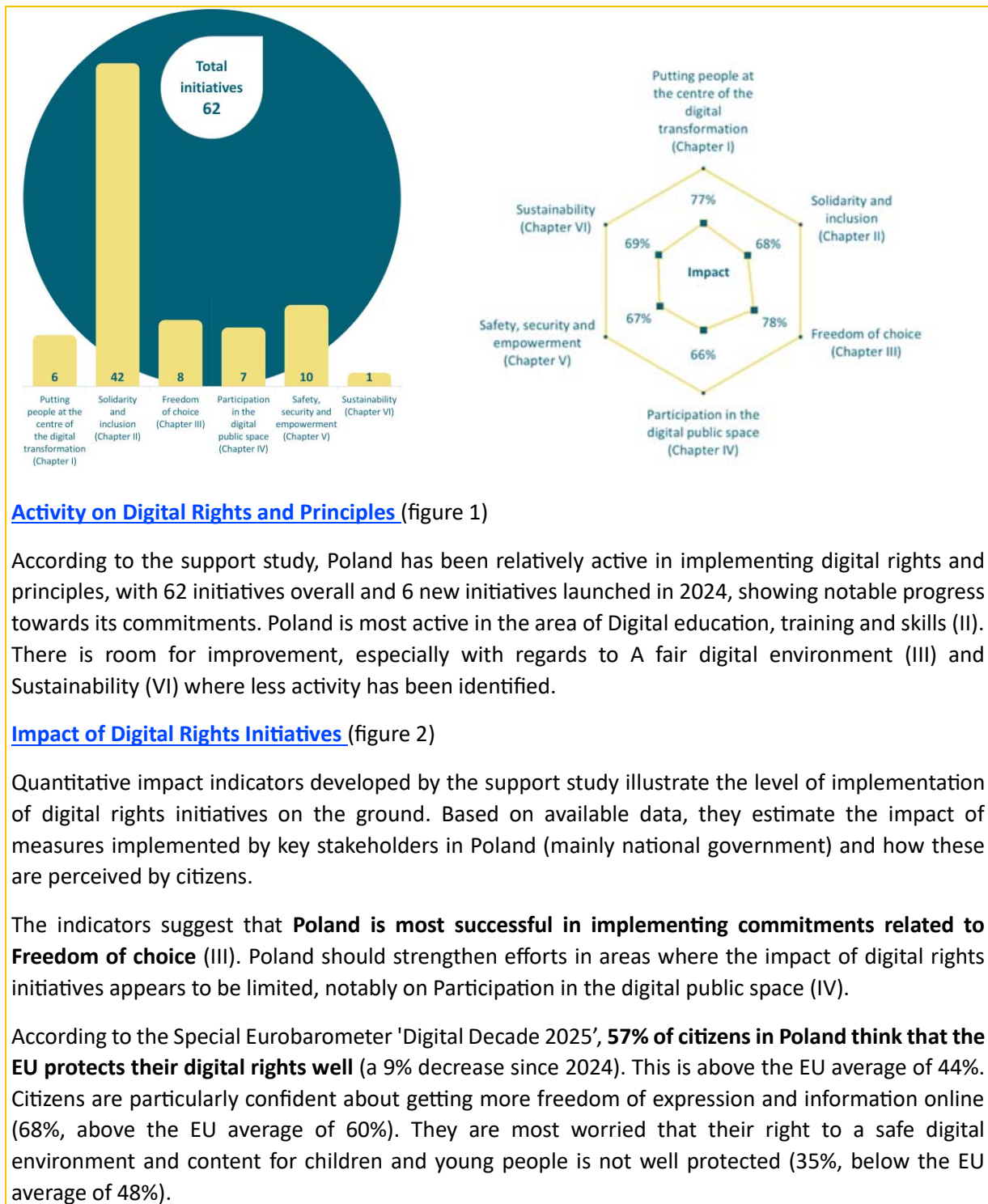
¹⁴ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

¹⁵ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹⁶ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹⁷ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹⁸



Activity on Digital Rights and Principles (figure 1)

According to the support study, Poland has been relatively active in implementing digital rights and principles, with 62 initiatives overall and 6 new initiatives launched in 2024, showing notable progress towards its commitments. Poland is most active in the area of Digital education, training and skills (II). There is room for improvement, especially with regards to A fair digital environment (III) and Sustainability (VI) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators developed by the support study illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Poland (mainly national government) and how these are perceived by citizens.

The indicators suggest that **Poland is most successful in implementing commitments related to Freedom of choice (III)**. Poland should strengthen efforts in areas where the impact of digital rights initiatives appears to be limited, notably on Participation in the digital public space (IV).

According to the Special Eurobarometer 'Digital Decade 2025', **57% of citizens in Poland think that the EU protects their digital rights well** (a 9% decrease since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting more freedom of expression and information online (68%, above the EU average of 60%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (35%, below the EU average of 48%).

¹⁸ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
{SWD(2025) 292 final} - {SWD(2025) 293 final} - {SWD(2025) 295 final}

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Portugal

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Executive summary

Portugal records stable growth in digital public services and performs particularly well on access to e-health records. It faces challenges with artificial intelligence (AI) adoption by enterprises and their capacity to innovate as well as basic digital skills but can rely on solid connectivity networks.

Portugal shows a high level of ambition in its contribution to the Digital Decade having set 12 national targets, 92% of which aligned with the EU 2030 targets. The country is following its trajectories very well with 100% of them being on track (considering 2024 trajectories defined for 7 KPIs out of 8 analysed). Portugal addressed 77% of the 13 recommendations issued by the Commission in 2024 by making some changes through new measures.

In 2024 Portugal noted progress in all measured indicators, with its digital networks almost covering the full territory. The [National Digital Strategy](#) adopted in December 2024 announced ambitious plans regarding AI, data sharing, sovereign cloud and simplification through digital tools. However, while at least basic digital intensity of SMEs is slightly above the EU average, AI adoption by enterprises remains weak, and the scale-up support for start-ups is limited. On the other hand, the growing availability and use of digital public services for citizens and businesses, as well as the significant improvement in access to e-health records create a blueprint to build on. While basic digital skills remain unevenly distributed across society, more people acquired advanced digital skills, including in areas such as cybersecurity. Portugal is also involved in EU-wide cooperation in semiconductors and quantum technologies.

Digital Decade KPI ⁽¹⁾	Portugal				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	PT	EU
Fixed Very High Capacity Network (VHCN) coverage	94.2%	94.6%	0.4%	94.2%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	92.3%	93.2%	0.9%	92.3%	69.2%	8.4%	100.0%	-
Overall 5G coverage	98.1%	98.7%	0.6%	98.1%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	14	27	92.9%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	74.3%	2.7%	-	72.9%	2.8%	90.0%	90%
Cloud	32.3%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	7.9%	8.6%	9.8%	-	13.5%	67.2%	75.0%	75%
Data analytics	38.6%	-	-	-	-	-	-	75%
AI or Cloud or Data analytics	54.4%	-	-	-	-	-	-	75%
Unicorns	1	1	0.0%	-	286	4.4%	2	500
At least basic digital skills	56.0%	-	-	-	-	-	80.0%	80%
ICT specialists	4.6%	5.2%	13.0%	4.5%	5.0%	4.2%	7.0%	~10%
Eid scheme notification		Yes						
Digital public services for citizens	81.5	84.5	3.6%	81.5	82.3	3.6%	100.0	100
Digital public services for businesses	81.9	84.3	2.9%	81.9	86.2	0.9%	100.0	100
Access to e-Health records	86.0	88.1	2.4%	86.0	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special Eurobarometer on ‘the Digital Decade’ 2025, 71% of Portuguese citizens consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 89% consider it important to counter and mitigate the issue of fake news and disinformation online, and on competitiveness, 89% consider it important to ensure that European companies can grow and become ‘European Champions’ capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Portugal enjoys robust connectivity infrastructure, with stable progress across the indicators and almost full 5G coverage. However, broadband and mobile take up are mostly lower than the EU average and so is 5G pioneer bands spectrum assignment. To engage more under the ‘Chips for Europe’ initiative, Portugal has set up a national chips competence centre. The country provides some contribution to European quantum initiatives. SMEs record at least basic digital intensity slightly above the EU average, but the take-up of AI by enterprises remains modest. Ambitious plans regarding sovereign digital solutions, such as AI development and cloud, and boosting the innovation ecosystem are partly supported by funding under the recovery and resilience plan. The country plans to increase the number of start-ups from just over 4 700 in 2024 to 6 000 by 2030 with anticipated spillover on the number of unicorns, as Portugal currently hosts only one such company. For Portuguese start-ups, access to funding at further growth stages remains an issue. The cybersecurity awareness of people and companies is growing, in part thanks to strong efforts by and the collaborative spirit of the authorities. However, NIS2 Directive still awaits transposition and implementation into national law.

Protecting and empowering EU people and society

Basic digital skills remain in the EU average, with significant gaps for people with lower levels of education and older people. However, in 2024 Portugal noted promising progress in the share of ICT specialists, including female ones. Some programmes are starting to promote gender convergence in this area but advanced digital skills are not prominent in Portugal’s roadmap. Robust digital skills are, however, promoted in public administration, notably due to investments from Portugal’s recovery and resilience plan. The country shows good progress on digital government, with visibly more people using such solutions and digital public services for citizens remain at high level. With a single Gov.pt app, digital identity might gain momentum. In addition, access to e-health records progressed rapidly over the last years, making Portugal one of the frontrunners. This might also be linked to the RRF investment in digital health transition. However, some challenges persist as digital services for businesses are below the EU average, in particular in cross-border context. Media literacy and child protection receive growing attention.

Leveraging digital transformation for a smart greening

Green and digital priorities are slowly gaining attention. With RRF support, Portugal is implementing a Digital and Smart Nation agenda, which envisages the creation of Urban Management Platforms and digital twins. These will leverage vast data on territories, as well as connectivity solutions, to respond to territorial challenges, including environmental and climate ones.

National digital decade strategic roadmap

Portugal submitted a fully revised national Digital Decade roadmap in December 2024, (with targeted adjustments until March 2025) containing more than 150 measures, including many new ones, revised targets and, for the first time, more than half of the required trajectories. It is largely based on the

[National Digital Strategy](#) and its action plan, on which stakeholders were consulted. The updates are aligned with the new Commission's priorities on AI, sovereignty and digital skills. The revised roadmap includes reporting on the consultation of stakeholders and addresses a substantial number of roadmap recommendations issued in 2024. Most targets align with the EU level goals for 2030, except for 7% target for ICT specialists (instead of 10%) by 2030. The revised roadmap continues to prioritise digital skills, digital public administration and the digitalisation of businesses. It is composed of 157 measures with a budget of EUR 2.15 billion, equivalent to 0.75% of GDP. The roadmap responds to majority of objectives, such as human-centred digital transformation, simplification, sovereignty and resilience. However, areas such as sustainability and inclusion lack specific focus, while competitiveness is not comprehensively covered.

Funding & projects for digital

Portugal allocates 21% of its total recovery and resilience plan to digital (EUR 4.5 billion)¹. In addition, under cohesion policy, EUR 2.4 billion, representing 11% of the country's total cohesion policy funding, is dedicated to advancing Portugal's digital transformation². Portugal is a member of the Local Digital Twins towards the Citi VERSE EDIC and of the EUROPEUM EDIC. Portuguese entities are indirect and/or associated partners in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Portugal is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Portugal has contributed to the Best Practice Accelerator³ by sharing one best practice in the frame of the Green IT cluster (National Strategy for Smart Territories).

Digital rights and principles

According to a support study, Portugal has been one of the most active Member States in implementing the [European Declaration on Digital Rights and Principles](#), with over 100 initiatives overall and 14 new initiatives launched in 2024. Portugal is most active in the [Declaration](#) area of digital education, training and skills. Less activity has been identified with regards to privacy and individual control over data. Measures in the area of freedom of choice appear to have most impact on the ground, in contrast to those addressing participation in the digital public space.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Recommendations

- **Artificial Intelligence:** Support AI take-up and thus enable innovation by enterprises, including by timely implementation of ongoing and planned measures.
- **Basic digital skills:** Evaluate the take-up of the current measures and identify ways to address the remaining needs, notably to tackle the digital divide in the society.
- **Basic digital intensity of SMEs and advanced technologies:** Support the adoption of advanced digital technologies by businesses by fostering enhanced collaboration between public and private sector and academia and by identifying support measures for the medium-term.
- **Cloud:** Encourage cloud take-up, in particular implement the plans for sovereign cloud infrastructure.
- **ICT specialists:** Identify ways to attract ICT specialists, promote ICT studies, digital upskilling and reskilling options, and continue reinforcing gender balance in the field.
- **Green:** Consider introducing a coherent approach to twinning the digital and green transitions.
- **Scale-ups and unicorns:** Continue improving the business environment and access to finance for digital start-ups to grow into scale-ups, including by targeting business R&D with public support.
- **Semiconductors:** Continue efforts in semiconductors and strive towards leadership at EU level.
- **5G:** Consider assigning remaining 5G pioneer bands and promoting 5G take-up.

A competitive, sovereign and resilient EU based on technological leadership

Portugal's policymakers are paying increasing attention to digital technologies as an enabler for competitiveness. The recent National Digital Strategy stresses the need for innovative companies driven by digital technologies, in particular trustworthy artificial intelligence (AI). In addition, Portugal's national recovery and resilience plan (RRP) gives significant attention to the digitalisation of businesses, the digitalisation of science, and boosting innovation potential.

However, there remain some challenges. Portuguese enterprises have only average levels of digital intensity and uptake of advanced digital technologies, with modest growth in AI in 2024. In 2023, spending on national research and development (R&D) was 1.7% of GDP, up from 1.3% in 2017⁴ but far below Portugal's 2030 goal of 3%⁵. Such level R&D spending results in limited innovation and productivity potential.

The characteristics of Portuguese enterprises may account for some of their challenges in adopting digital technologies. SMEs account for approximately 97.8% of the country's enterprises with more than 10 employees, while large enterprises make up only 2.2% of such enterprises. Portugal's ICT sector accounted for 4.47% of gross value added in 2021 (no newer data)⁶, lower than the EU average of 5.46%. R&D in the ICT sector accounted for 24.21% of total R&D expenditure by Portuguese businesses in 2023, slightly more than in 2022. Also in 2023, 25.7% of total R&D personnel in Portugal worked in the ICT sector, similar to 2022 (25.74%) but down from 27.27% in 2021.

Despite these tendencies, other factors contribute to Portugal's growing digital leadership. The country's digital infrastructures are a solid asset for citizens and businesses, and citizens and businesses could be incentivised to rely on these to build innovative business applications. In addition, Portugal is engaged in some actions and pilot lines under the European Chips Act and European quantum initiatives. Cybersecurity culture is also growing among enterprises, the general public, and the public administration. Finally, the number of Portuguese start-ups has risen, however, the country still has one unicorn, with two potential ones on the horizon⁷.

Building technological leadership: digital infrastructure and technologies

Portugal excels in VHCN, FTTP, and overall 5G coverage, both measured nationally and when looking at households in sparsely populated areas. 5G coverage in the 3.4–3.8 GHz band is higher than the EU average, but the assignment of pioneer bands spectrum is below that average. On take-up, the country leads in fixed broadband subscriptions at speeds of 100 Mbps or more, but remains behind the EU average in 1 Gbps subscriptions and 5G SIM card adoption.

⁴ 2025 European Semester Portugal country report, Innovation, business environment and productivity.

⁵ [2024 European Semester Portugal country report](#), 'Further priorities ahead', p. 15.

⁶ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

⁷ On the date of data extraction in March 2025, see the DESI Methodological Note for details.

Connectivity infrastructure

In 2024 Portugal's VHCN coverage for all households was at 94.59% and increased by 0.4% compared with 2023, significantly higher than the EU average of 82.49% (2030 national target 100%). The country is on track according to its national trajectory. For households in sparsely populated areas, Portugal's VHCN coverage of 73.2% was also higher than the EU average of 61.89%, although Portugal's rate of year-on-year growth for VHCN coverage in sparsely populated areas from 2023 to 2024 of 2.5% was slower than the EU average growth rate of 11.3%.

FTTP coverage stood at 93.18% in 2024 (2030 national target: 100%), after a progression of 0.9%. This was much higher than the EU average of 69.24%. The country is on track according to its national trajectory. For households in sparsely populated areas, Portugal's FTTP coverage was also higher than the EU average, at 70.13% in 2024, compared with the EU's 58.78%. However, here too Portugal's growth rate in FTTP coverage for households in sparsely populated areas was only 2.1% between 2023 and 2024, much lower than the EU's 11.9%.

At 98.72% in 2024 (2030 national target 100%), after a progression of 0.6%, Portugal's 5G coverage was higher than the EU average of 94.35%. The country is on track according to its national trajectory. For households in sparsely populated areas, 5G coverage was also higher than the EU average, at 92.26% in 2024, compared with the EU's 79.57%. Portugal's growth rate for 5G coverage in sparsely populated areas between 2023 and 2024 of 5.5% was lower than the EU's 11.9%. 5G coverage in the 3.4–3.8 GHz band for all Portuguese households was higher than the EU average, at 71.38% in 2024, compared with the EU's 67.72% but grew more slowly between 2023 and 2024 at only 9.5% (compared with the EU growth rate of 32.6%). For households in sparsely populated areas, Portugal's 5G coverage in the 3.4–3.8 GHz band was lower than the EU average, at 21.45% in 2024, compared with the EU's 26.19%, showing similar growth rate (PT: 61.6%, EU: 65.1%). In 2025, the country's assignment of 5G pioneer bands spectrum was at 61.11% (unchanged from 2024), lower than the EU average of 74.63%.

Indicators of broadband and mobile take-up show a mixed performance compared with the EU average. In 2024, 91.62% of fixed broadband subscriptions in Portugal were at speeds of 100 Mbps or more, ahead of the EU's 71.88%. Nevertheless, the growth rate for this indicator between 2023 and 2024 in Portugal was 2.1%, which is lower than the EU's 9.1%. For fixed broadband subscriptions at speeds of 1 Gbps or more, Portugal's take-up in 2024 was at 15.15%, below the EU's 22.25%. Portugal's growth rate of 67.0% in this area outperformed the EU's 20.5%. On the share of 5G SIM cards, these constituted 27.49% of all SIM cards in Portugal in 2024, lower than the EU's 35.56%. Portugal's growth rate of 54.7% on this indicator was also lower than the EU's 63.9%.

VHCN and FTTP

In its adjusted roadmap, Portugal proposed new targets to reach 100% coverage for VHCN and FTTP by 2030, in line with the recommendation set out in the 2024 State of the Digital Decade report. Given the good rate of progress and the measures put in place by Portugal, this target seems achievable.

Portugal's revised roadmap includes some measures on fixed connectivity. As reported last year, to achieve gigabit connectivity for all, in late 2023 the Portuguese government launched a public tender for the installation, management and operation of VHCN providing download speeds of at least 1 Gbps and upload speeds of at least 150 Mbps in white areas. More than 400 000 residences and business establishments should be covered by this investment which seeks to achieve full coverage of these

areas by 2026/2027. Work on the project began in 2025, and the total investment of EUR 425 million is co-financed by public funds.

Portugal's copper switch-off process is underway. It started in 2019 and will end in 2030. According to the most recent data provided by ANACOM, Portugal's regulatory authority for electronic communications, active copper lines account for 2% of total broadband lines in Portugal.

With its Atlantic coastline and two outermost regions (Azores and Madeira), submarine cables are important digital infrastructures to ensure the security and sovereignty of Portugal and the EU. These autonomous regions are served by a domestic system of submarine cables known as CAM Ring, which are becoming obsolete and need to be replaced. To address this structural need, the Atlantic CAM (Global Project) is being planned, comprising a ring system of submarine cables with six fibre-optic pairs, including innovative integrated SMART component for seismic detection, environmental monitoring, underwater nautical activity detection and data transmission for scientific purposes. Its deployment, supported in 2024 with EUR 14.3 million from the Connecting Europe Facility (CEF), will contribute these goals while simultaneously: providing high-speed data-transfer capabilities and secure and reliable communication channels and reducing the dependence of the outermost regions on non-European countries for critical digital infrastructure.

5G

In its adjusted roadmap, Portugal proposed a new target to achieve 100% 5G coverage by 2030, in line with the recommendation set out in the 2024 State of the Digital Decade report. Given the good rate of progress and the measures put in place by Portugal, this target seems achievable.

Recent market dynamics have worked to the benefit of end users. In November 2024, a new operator entered the mobile market, pressuring the three major incumbent operators to provide a similar service by offering subscriptions with larger data volumes and lower prices, adjusting their bundled offers, and shortening their minimum contract periods.

The country is working on unleashing the full potential of 5G, including in rural areas and for specific sectors. In February 2025, ANACOM, , published a public consultation report on future procedures for allocating spectrum band. The report concluded that it may be justified to soon make available the spectrum that remained unallocated in the 5G auction (2x5 MHz), and possibly make it available before other frequency bands. The country is also involved in projects using connectivity for social empowerment. For example, '5G for rural smart communities of tomorrow' ([5G.RURAL](#)) is an ongoing CEF-supported project (with EUR 4 million) to deploy smart 5G-based community services in six municipalities of the Alentejo region, with a focus on healthcare, education, energy efficiency, agriculture, art, culture and tourism. Healthcare connectivity is also being supported through '5G in Healthcare – Northern Region (PT)' ([5G Healthcare \(PT\)](#)), a CEF project to unleash 5G in this sector through actions such as connected emergency vehicles, remote training, and support for diagnosis and the internet of things (IoT) for a health-monitoring environment.

2024 recommendation on connectivity infrastructure: Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

Portugal made some efforts to address the recommendation through new policy actions in 2024. ANACOM is in discussions with operators to identify specific 5G use cases, and the public consultation report referred to above also helped businesses to better understand possible use cases for certain

5G spectra. In 2024, one of Portugal's telecoms operators [launched 5G standalone](#) as part of its offer, while another installed a [5G standalone private mobile network](#) to bring digitalisation to the cement sector.

Semiconductors

Semiconductors are becoming a priority for Portugal. The 2023 [National Strategy for Semiconductors](#) aims to empower Portugal in this sector through involving all interested parties, such as researchers and industry, and identify complementarities and synergies at national level. The country is involved under the European Chips Act. For example, Portuguese stakeholders participate in two of the EU's Chips Joint Undertaking pilot lines (APECS and PIXEurope). In addition, Portugal's national Foundation for Science and Technology (FCT) continues to co-fund the research and innovation (R&I) projects of the Electronic Components and Systems (ECS) component of the Chips Joint Undertaking and will also co-fund the Portuguese Competence Centre in Semiconductors of the Initiative component of the Chips Joint Undertaking.

To build sovereignty, Portugal is setting up a national competence centre in semiconductors under the [Chips for Europe Initiative](#). Following a 2024 call, POEMS, a Portuguese consortium was awarded the contract to coordinate the centre. The consortium is led by the Braga-based International Iberian Nanotechnology Laboratory and is composed of 17 national entities such as universities, research centres and companies. Already operational, the competence centre provides access to technical expertise and experimentation in the area of semiconductors, helping companies to improve design capabilities and develop their skills. It offers or will offer services to semiconductor stakeholders, including start-ups and SMEs, and form part of the European network of competence centres in semiconductors.

2024 recommendation on semiconductors: Continue efforts in the area of semiconductors including by proposing concrete actions and exploring synergies between the national strategy and the EU-level cooperation.

Portugal made some efforts to address the recommendation through new policy actions in 2024. Notably, the country has established the national chips competence centre and participates in calls issued by the Chips Joint Undertaking (see above).

Edge nodes

According to the EU's Edge Node Observatory, Portugal is estimated to have deployed 27 edge nodes by 2024, 92.9% more than in 2023. This is almost twice the amount that Portugal is estimated to have deployed in 2023 (Portugal had originally been estimated to have deployed 14 edge nodes in 2023, although this number was revised since the 2024 State of the Digital Decade report). The country did not propose a 2030 target in this regard, nor did it suggest a strategy for the deployment of edge nodes.

Quantum technologies

Portuguese stakeholders are engaged in projects related to quantum technologies, including at European level. EuroHPC supercomputer Deucalion, based in Guimarães, became fully operational in May 2024 and received approximately 100 projects by and the end of 2024. In addition, the first users are now testing the quantum computing simulator software installed at Deucalion. With the [Portuguese quantum communications project/PTQCI](#), led by the [National Security Office \(GNS\)](#) the

country is active in the European Quantum Communication Infrastructure (EuroQCI) initiative, which aims to implement secure communications networks for EU public administrations.

Portugal's roadmap adjustment refers to the country's participation in EuroQCS-Spain, a new quantum system to complement the existing quantum computer installed in the Barcelona Supercomputing Centre. In addition, Portugal's national Foundation for Science and Technology (FCT) will help Portuguese researchers apply for resources in the EuroHPC Quantum Computers network. FCT also participates in [QuantERA](#), a project dedicated to R&I in quantum technologies.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Businesses in Portugal are making greater use of digital technology, but the acceleration of this process could bring further benefits to the country's economy. The basic digital intensity of SMEs in Portugal has grown steadily in recent years. The adoption of cloud computing, data analytics, and AI technologies in Portugal has been mixed compared with EU averages. For example, the adoption of data analytics in Portugal has exceeded the EU average but AI adoption – trailed behind the EU average and annual growth. There is also a clear disparity in technology adoption between Portuguese SMEs and the country's large enterprises, with large enterprises exhibiting significantly higher adoption rates across all three technologies. With SMEs representing the vast majority of enterprises in Portugal, their comparatively lower uptake rates for digital tools point to a need for targeted initiatives to accelerate digital transformation. The number of start-ups is growing, but innovation funding remains an issue. On a positive note, the 2025 Eurobarometer⁸ showed that 87% of Portuguese people think that public authorities should prioritise shaping the development of AI and other digital technologies to ensure that they respect our rights and values. It represents an increase of 8 percentage points compared to last year, reflecting the growing interest of the citizens at this aspect.

SMEs with at least basic digital intensity

In 2024, 3 out of 4 (74.26%) SMEs in Portugal had at least a basic level of digital intensity (2030 national target 90%), thus outpacing the EU average of 72.91%. This followed an annual growth rate of 2.7% between 2022 and 2024. More specifically, 36.98% of SMEs in Portugal in 2024 had high or very high digital intensity, above the EU average of 32.66%. Overall, this reveals good digital engagement and steady growth in digital intensity among Portuguese SMEs.

Portugal still aims for 90% of its SMEs to reach at-least-basic digital intensity by 2030, in line with the EU target for 2030. The country continues to implement investments under its RRP, in particular under component 16 on the digitalisation of enterprises. Examples of these investments include Digital Commerce Neighbourhoods, Digital Innovation Hubs and digital test beds (mostly in specific business sectors). A noteworthy measure, also highlighted in the roadmap, is 'More Digital Leader', supported with EUR 9 million in EU funding. This project aims to give digital training to managers and senior staff in SMEs, in particular women, and bundle this training with an implementation plan for the digital transformation of companies.

Portugal's revised roadmap gathers existing and upcoming initiatives to encourage enterprises to make greater use of digital technology as part of broader efforts to increase competitiveness while simplifying and reducing administrative burden for companies. For example, [Espaço Empresa](#) is a support service for companies that also involves assistance in digital public services. Portugal plans for it to become a single point of access to information, including on EU funds, that can also promote

⁸ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

simplified online communication between public administrations and businesses. Another measure referred to in the revised roadmap is the [Entrepreneur App](#), a mobile application for entrepreneurs to help them find resources and participate in a community that promotes growth and the sharing of knowledge, contacts and feedback.

In addition, Portugal has 17 digital innovation hubs in place across the country, [16 of which are connected within the European Digital Innovation Hubs network](#). These hubs provide testing, training, funding and incubation support across sectors and technologies, e.g. in mobility, health, AI and cybersecurity.

2024 recommendation on the digitalisation of SMEs: Intensify the existing measures in view of the ambitious target on the basic digital intensity of enterprises and the need to ensure continuity of support until 2030.

Portugal continued to implement existing measures in this area in 2024, but did not take any new measures to address the recommendation. The adjusted roadmap provided a more comprehensive picture of existing support. It also suggested some wider measures to facilitate access to information on digitalisation and enable unbureaucratic, digital interaction between the State and companies (see above). However, the potential effect of these measures on the digitalisation of SMEs remains to be fully evaluated over time and the existing measures were not intensified.

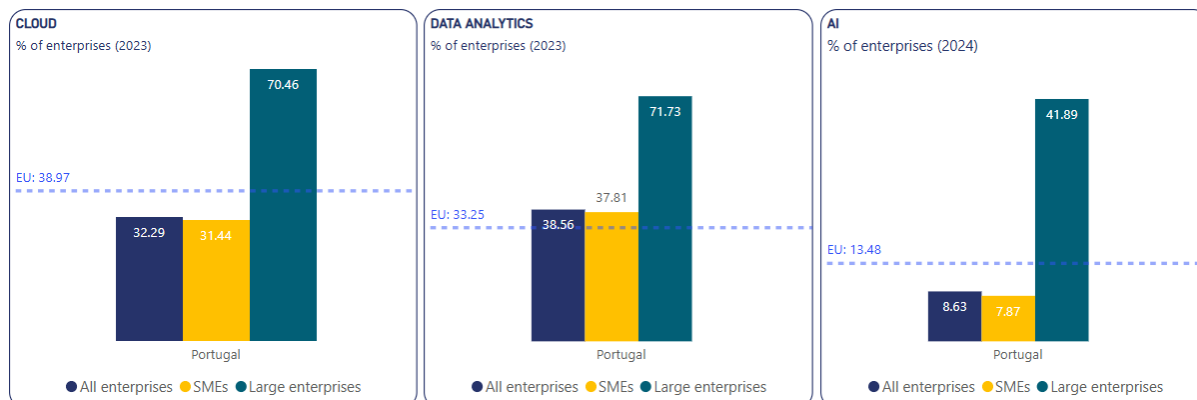
Take-up of cloud/AI/data analytics

According to 2024 data, 8.63% of enterprises in Portugal adopted AI (2030 national target 75%), remaining behind the EU average (13.48%). Portugal saw only modest increase since last year (9.8%), especially in the light of the average EU-level growth rate of 67.2%. The country did not provide a national trajectory point for 2024. While SMEs' uptake of AI in 2024 was 7.87%, large enterprises reported a significantly higher rate of 41.89%. This corresponds to a gap of 34.02 percentage points (pp.) between SMEs and large enterprises, which is higher than the EU gap of 28.53 pp.

Adoption by enterprises of cloud, data analytics, and the three technologies together were not measured in 2024.

In 2023, the uptake of cloud in Portugal reached 32.29% of all businesses (2030 national target 75%), below the EU-level uptake of 38.97%. More specifically, SMEs exhibited an adoption rate of 31.44%, while large enterprises had a higher uptake of 70.46%. This created a gap of 39.02 pp. in uptake between SMEs and large enterprises in Portugal, which exceeded the EU-level gap of 31.68 pp.

Data analytics was performed by 38.56% of enterprises in 2023, surpassing the EU average of 33.25%. Among these, 37.81% SMEs used data analytics, compared with a much higher share of large enterprises (71.73%). This corresponds to a gap of 33.92 pp. in engagement between SMEs and large enterprises, which is lower than the EU gap of 39.72 percentage points.



When taking the three technologies together in 2023, 54.4% of enterprises in Portugal engaged with either AI, cloud, or data analytics, which was roughly in line with the EU average of 54.7%. The uptake among SMEs was slightly lower at 53.68%, while large enterprises had a higher rate of 86.53%. This indicates a difference of 32.85 pp. in uptake between SMEs and large enterprises in Portugal, which is in line with the EU-level gap.

- [Cloud](#)

Following the 2024 recommendation, Portugal has set a target of 75% enterprises adopting cloud solutions by 2030, in line with the EU target. This goal remains ambitious given Portugal's current pace of development in this area.

The revised roadmap included some new measures to support the achievement of this ambitious target. In 2025, the government will prepare a development plan on sovereign cloud infrastructure to provide national cloud services to public administration and businesses. Another important measure planned by Portugal is its 'Collaborative Hub for Digital' platform to facilitate interaction between public clients and innovation suppliers of digital solutions. This RRF-funded platform will build on both Portugal's existing [Innovation Portal](#), where 1 200+ entities from the national innovation ecosystem are already listed; and the Portuguese platform for the [public procurement of innovation](#). Starting from March 2025, the Collaborative Hub for Digital will create the infrastructure to enable comprehensive matchmaking of digital innovation procurement needs in the public sector with technology offerings from the private sector. The Collaborative Hub for Digital should also foster collaborations and synergies with Portugal's collaborative laboratories (CoLABs; see below), technology and innovation centres (CTIs), technological free zones (ZLTs), test beds, sandboxes, and common data spaces.

- [Data Analytics](#)

Portugal has not set a 2030 target for the usage of data analytics. No measures in Portugal's roadmap directly targeted the promotion of data analytics solutions among enterprises. However, because data analytics provide the tools and methodologies necessary to harness the power of data, it will be indispensable for the development, implementation, and refinement of AI systems, actions which are at the heart of Portugal's new digital agenda.

- [Artificial Intelligence](#)

Following the 2024 recommendation, Portugal has set a target of 75% of its enterprises using AI by 2030. Looking at the current rate of progress, this target seems very ambitious.

However, both the roadmap adjustment and the National Digital Strategy give attention to the development and implementation of AI. One new flagship initiative set out in the roadmap

adjustment is the development of a **Portuguese large language model called Amalia**, which will: (i) help preserve national sovereignty; (ii) distinguish the different variants of the Portuguese language; and (iii) recognise aspects of the culture and history of Portugal. Amalia will also make it possible to control the data used for training the AI, and ensure conditions for the storage and use of sensitive data. Another AI project in which Portugal is involved, are AI Factories. In this context, Portuguese stakeholders, including businesses, will be able to access computing capacity on the Mare Nostrum 5 supercomputer in Barcelona. Both actions (the development of Amalia and Portugal's participation in the AI Factory) will be supported through the RRF under the 'More Digital Science' component thanks to the revision of the plan adopted in May 2025.

Some of the initiatives taken in recent years bring opportunities to build up the AI ecosystem in Portugal. Portugal's [Centre for Responsible AI](#) is a consortium of start-ups, R&D centres and industry leaders that seeks to create synergies, benefit from the sharing knowledge on AI and develop products that respond to real market needs. In addition, the RRP investment 'Interface mission' (RE-C05-i02) aims to increase cooperation between academia and companies, in particular through support for the revitalisation of infrastructures that promote the transfer of knowledge and technology. As part of this RRP investment, funding is being directed to three [Collaborative Laboratories](#) focused on data and AI (Data CoLAB, DTx, Vortex) and 17 collaborative laboratories using AI in sectoral applications; and (iii) to 16 Interface Centres using AI in sectoral applications.

2024 recommendation on AI/cloud/data analytics: (i) Envisage specific measures for the take up of cloud, AI and data analytics, such as reinforced collaboration between public and private sector and with academia to better match the potential of these technologies with the business needs.

Portugal made some efforts to address the recommendation through new policy actions in 2024. In addition to implementing its RRP, Portugal has put AI innovation and data infrastructures on its agenda by making use of existing funding possibilities. However, the effects of these actions remain to be seen. Cooperation between businesses and academia remains underexploited⁹, although there are some opportunities in this area, for example the AI Factory and the future collaborative hubs.

Unicorns, scale-ups and start-ups

At the start of 2025, Portugal hosted one unicorn company which is the same number as in previous year. Two companies were identified as potential unicorns. The country has maintained its target to double this number by 2030. As the National Digital Strategy includes a target to have at least 6 000 start-ups by that year, this might also support the emergence of potential unicorns. The number of mapped start-ups in Portugal has increased strongly, rising from 3 700 in 2022 to over 4 700 in 2024.

The revised roadmap introduced a new measure, namely, in November 2024 the Deep2Start programme was announced. This programme aims to promote the development of 'deep tech' projects and start-ups with high potential for disruptive technological innovation in Portugal. The programme consists of two parts, one aimed at early-stage research and the other aimed at commercialising slightly more mature research. The first part is a deep-tech fund with EUR 50 million in public funding, with private investment expected to add another EUR 50 million to reach a total of 100 million through [Banco Português de Fomento](#), the major promoter of financing programmes and co-investment initiatives. This first part seeks to fund early-stage research in technology. The second part is EUR 10.6 million of additional public funding, distributed in conjunction with the [ANI](#), Portugal

⁹ 2025 European Semester Portugal country report, Annex 'Innovation to business'.

Ventures and [Startup Portugal](#). This second part seeks to attract private investment from ‘ignition’ funds which seek to: (i) transfer and increase the flow of technological and scientific knowledge from academia to the business ecosystem; and (ii) support start-ups in the early stages of financing. This second part will also distribute ‘vouchers’ to help deep-tech projects to apply for funding from the European Innovation Council Accelerator. Another measure identified in the revised roadmap is Lisbon City Council’s flagship initiative [Unicorn Factory Lisboa](#), which supports technology start-ups and scale-ups through incubation and acceleration programmes.

Funding for innovation remains an issue. A report looking at [Portugal’s start-up ecosystem](#) from November 2024 showed that Portugal excels in implementing a favourable tax regime for stock options and has solid digital public services. However, it has struggled with updating its regulatory framework to foster innovation and ensure sufficient funding for start-ups. Nevertheless, most of the available funding for innovation in Portugal is directed to start-ups, with only a small portion allocated to later development stages (9.4% of funding for innovation in Portugal is directed to later-stage innovative start-ups, compared with an EU average of 48.7%). Significant financial instruments have been put in place, both within the RRP and elsewhere, to support equity investments in Portuguese venture firms. Nevertheless, most of these investments are anticipated to occur in 2025 and 2026¹⁰.

2024 recommendation on unicorns: Continue reinforcing the country’s start-up and scale-up ecosystem, in particular by ensuring availability and effectiveness of adopted measures.

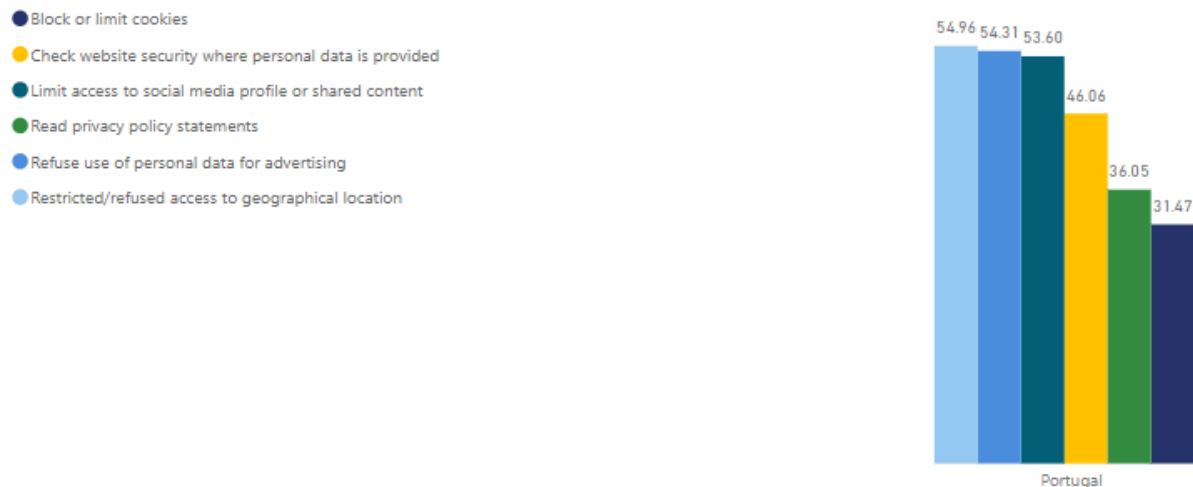
Portugal made efforts to address the recommendation through new policy actions in 2024. Work is ongoing to recognise start-ups (see above) and raise awareness of the benefits of investing in them, such as tax incentives introduced by the [Start-ups Law](#). Beyond this, tech and start-ups, visas are in place, and Portugal continues to implement the RRP, in part by implementing [start-up vouchers](#). The Deep2Start programme has set out a vision to strengthen Portugal’s start-up sector, although its effects remain to be seen.

Strengthening Cybersecurity & Resilience

In Portugal, 73.07% of individuals reported engaging in at least one action to protect their data online, slightly above the EU average of 69.55%. More specifically, at national level, 56.11% of people took three or more actions to protect their data (see the six types of digital safety actions in the graph’s legend), and therefore could be considered as having above-basic digital safety skills. Restricting or refusing access to the user’s geographical location was the action most commonly taken (54.96%), while the least commonly taken action was changing browser settings to block or limit cookies (31.5%).

¹⁰ 2025 European Semester Portugal country report, Innovation, business environment and productivity.

Type of activities to protect personal data online (% of individuals)



Portuguese enterprises tend to experience fewer incidents related to cyberattacks, and Portuguese employees are more aware of their obligations related to ICT security than the EU average. The number of enterprises in Portugal that experienced ICT security incidents leading to the unavailability of ICT services due to attack from outside (e.g. Ransomware attacks, Denial of Service attacks) has increased slightly, rising from 2.46% in 2022 to 3.12% in 2024, slightly below the EU average of 3.43%. Portuguese enterprises are also much less prone to incidents related to hardware or software failures (10.31%) than their EU peers (17.97%). In terms of measures, the vast majority (95.62%) of enterprises in Portugal deployed some ICT security measures in 2024 (against the EU average of 92.76%). In addition, two thirds of Portuguese enterprises (65.63%) made their employees aware of their obligations related to ICT security, above the EU average for this measure (59.97%).

Portugal shows a mixed performance in the roll out of the secure Internet Protocol version 6 (IPv6) protocol for end users. On the deployment of [secure internet standards](#), Portugal is performing above the EU average in IPv6 for end users (40% of users vs EU average of 36%), but is significantly below the EU average on the server side (2%, against 17% for the EU). IPv6 is an important protocol as it ensures the scalability, stability, and security of the Internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have been long depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out as it introduces security features to DNS. In Portugal, the DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology) is 11% (Q3 2024), below the EU average of 47% and significantly lower than two years ago (34.8% in Q3 2022).

Intense work is ongoing to transpose the NIS 2 Directive into the Portuguese legal system, after which the national cybersecurity strategy will be adopted. Following the adoption of the national cybersecurity strategy, Portugal is expected to announce a plan to increase the cybersecurity of its 5G networks.

Public and private stakeholders recognise the value of raising both general cybersecurity awareness and specialised cybersecurity skills. Portugal's National Cybersecurity Centre (CNCS; the national cybersecurity authority and national cybersecurity certification authority) is responsible for multiple initiatives in the field funded under the RRP. Many of these initiatives began full operations in 2024 and early 2025. For example, the [C-Academy](#) provides training in cybersecurity skills in public administration and private sector, while the [Cybersecurity Competence Centres Network](#) (C-Network)

gathers 'one stop shops' spread across regions, which are designed to provide local guidance and services to the public administration, SMEs and other entities. The [Cybersecurity Digital Innovation Hub](#) (C-Hub) fosters R&D and introduces cybersecurity innovation in the country. Large Portuguese tech companies continue cooperating under the [Cybersecurity Alliance](#), and the general public can stay informed about cybersecurity thanks to the [Cybersecurity Observatory](#). Portugal is now planning to launch a 'Safer Digital' campaign to raise awareness about cybersecurity among young people.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

The share of the Portuguese population with at least basic digital skills is roughly the same as the EU average, although digital skills are less common among people with lower levels of education, older people, people living in rural areas, and women. However, the annual growth rate in the number of enterprises providing ICT training; and the increase in the share of ICT specialists, including women indicate a positive trend. In addition, some programmes are starting to promote gender convergence in the area of ICT skills. Robust digital skills are also being promoted through investments in Portugal's RRP, including in public administration.

Equipping people with digital skills

Basic Digital Skills

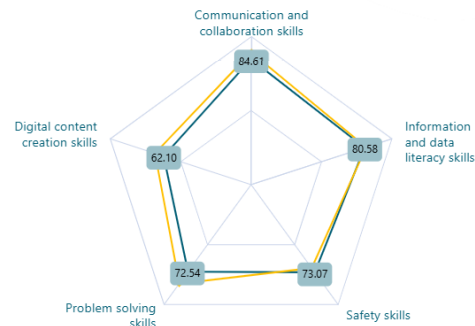
In 2023, 55.97% (2030 national target 80%) of Portugal's population had at least basic digital skills, close to the EU average (55.56%). Although these data were not updated in 2024, examining specific demographics provides a clearer picture of the digital skills landscape. The points below give some insight into these specific demographics.

- **Gender Gap:** Portugal's gender gap in digital skills was similar to the EU average in 2023, with 57.21% of men and 54.84% of women proficient in digital skills, resulting in a gap of 2.37 pp. (this gap is 2.23 pp. for the EU on average).
- **Education Level:** Educational attainment is significantly correlated with digital proficiency. Of those with higher education in Portugal, 88.72% had at least basic digital skills, well above the EU average (79.83%). However, there was a steep drop for those with lower education, only 23.16% of whom had at least basic digital skills, leading to a gap of 32.81 pp. from the national average. This was considerably larger than the EU average disparity between the digital skills of those with higher education and the digital skills of those with lower levels of education (21.95 pp.).
- **Living Areas:** In rural Portugal, 43.70% of people have at least basic level of digital skills, which is below the EU average for rural areas (47.50%). The gap between rural areas and the national average is 12.27 pp., indicating that Portugal has a more pronounced digital divide compared to the EU (8.06 pp.).
- **Age Groups:** Young people aged 16-24 years in Portugal are highly skilled digitally, with an 82.64% proficiency rate, significantly above the EU average (69.98%). In stark contrast, the 65-

to 74-year-old demographic has a low proficiency rate of 18.52%, well below the EU average for that age group (28.19%).

- **Digital Skills Index components:** Portugal's performance in the Digital Skills Index is mixed, with safety skills being the only category where, with a score of 73.07, it is above the EU average (69.72%). The country's weakest area is digital-content-creation skills, with a score of 62.10%, below the EU average (68.28%).

Digital Skills Index components
% of individuals



Portugal shows strengths in digital safety skills and among younger individuals, but faces significant challenges, particularly in supporting older adults and those with less formal education.

Addressing these gaps, especially in rural areas and in digital-content creation, could improve overall digital proficiency and further bridge the digital divide in Portugal.

The revised roadmap sets out multiple existing and planned measures to increase the digital skills of the population. Among the new measures, the Digital Skills Curriculum is a plan to develop both micro credentials in digital skills and ways to certify these micro credentials. The aim of this measure is to respond to labour market needs by giving the population reliable digital training and a tool to prove they have reached a certain level of proficiency. Another planned measure is the Digital Skills Index for use in primary and secondary education. Implementation of a pilot version of this index in 10 representative public schools will start in September 2025, with the index being applied to the last academic year of each cycle. Expansion of the project to 200 schools is planned to start in September 2026. This pilot will identify five critical areas of intervention to mitigate gaps in students' digital skills. In addition, an important part of the country's approach to digital skills is the continuous training of public administration on digital skills. This training is receiving support from the RRF.

Portugal's adjusted roadmap retained its earlier target of 80% of its population having at least basic digital skills by 2030. This target remains ambitious but seems achievable with concerted effort across the society.

2024 recommendation on basic digital skills: Intensify efforts including by evaluating the take-up of the current measures and the remaining needs.

Portugal made efforts to address the recommendation through new policy actions in 2024. New actions targeting children and the population in general are planned, with results to be evaluated at a later stage. In addition, many measures reported last year appear to remain in place. However, it is difficult to assess the take-up of these measures. Moreover, there remains a need to improve digital skills – especially given age-related, educational and territorial disparities.

ICT specialists

Portugal shows promising trends in its share of ICT specialists. ICT specialists as a percentage of total employment in Portugal increased to 5.2% in 2024 (2030 national target 7%), exceeding the EU's 5.0%. The country is now on track according to its national trajectory. As the value in 2023 was 4.6% (number revised from last year), the yearly growth rate of 13.0% for Portugal in this category was substantially higher than the EU's growth rate of 4.2%.

Portugal also shows a positive trend in its share of female ICT specialists. This figure increased from 20.2% of ICT specialists in 2023 to 22.7% in 2024, remaining above the EU's 19.5% in 2024. Portugal's growth rate of 12.4% in this area is far higher than the EU's 0.5%. In 2022, 23.66% of enterprises with 10 or more employees in Portugal provided ICT training, slightly surpassing the EU average of 22.37%. By 2024, this figure rose to 27.79%, while the EU average decreased slightly to 22.29%. Portugal's annual growth rate of 8.4% in this area significantly outpaces the EU's -0.2%.

On demand in the labour market, [Eurostat experimental statistics](#) based on web scraping show that 'software and applications developers and analysts' are the most sought after IT profile in Portugal, representing 51.5% of online job advertisements for ICT specialists (against 58.0% at EU level). In addition, 29.5% of online job advertisements for ICT specialists in the country are for 'information and communications technology operations and user support technicians', making this role in more demand in Portugal than in the EU on average (10.4%).

The 2030 target set by Portugal for ICT specialists as a share of total employment is 7%, which is lower than the 10% target value for the EU. However, given the good rate of progress this national target seems achievable, and the authorities expressed initial openness to an upward revision of the target in the future.

The revised roadmap included some existing measures to address the 2024 recommendation. One example of this is the + Digital Trainer programme (*Formador + Digital*), which started in late 2023 and plans to train 4 000 professional digital trainers by the end of Q3 2025. Part of the RRF investment on the digital empowerment of enterprises, Employment + Digital (*Emprego + Digital*), this RRF initiative aims to attract technology-sector professionals and specialists to help them improve their pedagogical skills, enabling them to obtain certification to work as trainers in their areas of expertise. It also focuses on reorienting professionals who already hold certification in teaching skills and wish to develop specialised skills in specific digital technologies.

Tackling gender balance in the field of ICT specialists and in science, technology engineering and mathematics (STEM) has become more visible in the Portuguese political agenda. The recently launched 'Girls in STEM' National Programme encompasses, first, an 'Ambassadors Network', through which women working in STEM fields meet female high school and university students to mentor and inspire them by sharing academic and professional experiences. The second, future strand of this programme will be governmental support for projects by all stakeholders (e.g. academia, private sector, NGOs) which will promote the interest, attraction and retention of girls and women in STEM fields throughout education and on the labour market.

Other initiatives are still underway. One example is the requalification programme UpSkill, which involves intense theoretical courses and hands-on training in companies and aims to train 7 500 people by 2030. Importantly, increasing the number of students graduating from tertiary education courses in STEAM fields is also one of the targets under the RRF (RE-C06-i04), with 10 000 additional graduates in the school year 2023/2024, compared to the school year 2019/2020.

2024 recommendation on ICT specialists: Adopt additional measures for ICT specialists, including cybersecurity talent and promoting ICT studies and gender balance in the field.

Portugal made some efforts to address the recommendation through new policy actions in 2024. Specific action was taken to promote gender balance in ICT and STEM, for example through Girls in STEM. In addition, earlier launched initiatives, such as the + Digital Trainer programme were added to the revised roadmap (see above).

Key digital public services and solutions – trusted, user-friendly, and accessible to all

On digital public services for citizens, Portugal scored 84.48 (2030 national target: 100), after a progression of 3.6%, putting the country above the EU average for 2024 of 82.32. The country is now on track according to its national trajectory, and its year-on-year growth rate of 3.6% between 2023 and 2024 mirrored the EU's growth rate. For cross-border digital public services for citizens, the country scored 71.67, exceeding the EU's 71.28. Portugal's growth rate of 9.0% the EU's 4.3%. The share of Portuguese people using government internet websites or apps has increased significantly, rising from 80.61% in 2023 to 85.25% in 2024, well above the 2024 EU average of 74.71% in 2024.

On digital public services for businesses, Portugal's score was 84.31 in 2024 (2030 national target 100), after a progression of 2.9%, but this means Portugal was still below the EU's score of 86.23 for that year. The country is on track according to its national trajectory. On cross-border digital public services for businesses, Portugal lagged behind the EU's score of 73.76 with a score of 68.61. Nevertheless, Portugal's year-on-year growth rate between 2023 and 2024 of 7.4% was significantly higher than the EU's of 0.9%.

Access to e-Health records in Portugal is continuously improving, and with a score of 88.07 in 2024 (2030 national target: 100), exceeding the EU average of 82.7. The country is on track according to its national trajectory. However, Portugal's growth rate of 2.4% between 2023 and 2024 on this measure was slightly lower than the EU's 4.5%.

eID

In its adjusted roadmap, Portugal made reference to GOV.PT app, a new measure to build a single public-services app. In December 2024, GOV.PT app replaced the two public-services apps that had been in use. Further plans for this app include implementation of push notifications to proactively inform citizens about the services available and design changes to gradually integrate more proactive services.

National stakeholders remain active in piloting the usage of EUDI Wallets through four large-scale pilots before EUDIW becomes fully operational by the end of 2026. One of the most recent pilots is the Advanced Project for Trusted Identity Technologies and Unified Digital Ecosystem (APTITUDE). The participants in the APTITUDE consortium, of which Portugal is one, focus on advancing the use of wallets for travel and payment purposes across four use cases: payments, mobile vehicle-registration certificates, digital travel credentials, and tickets and travel check-in. Another new project is also being implemented in Portugal by the consortium Wallet Ecosystem for Business & Payment Use cases, Identification, Legal person representation and Data sharing (WE BUILD), jointly led by Sweden and the Netherlands. WE BUILD aims to pilot the usage of EUDI Wallets across 13 use cases in the areas of business, supply chain, and payments, and will become operational in autumn 2025.

Digitalisation of public services for citizens and businesses

Following the 2024 recommendations, Portugal has set national targets for digital public services for citizens and businesses by 2030. These targets are to reach scores of 100 by 2030, and are accompanied by trajectories to reach these values. Given Portugal's overall progress rate so far, and if roadmap measures are implemented, this target seems achievable.

The adjusted roadmap includes new measures to support the digitalisation of public services and the digital transformation of the national administration. For example, Portugal plans to make available authentication processes in autenticação.gov.pt (a citizen card and digital mobile key) the

exclusive means of authentication for all digital public services. Additionally, a guide with recommendations for drafting digital-ready legislation will be prepared in 2025. The 2025-2026 action plan for the National Digital Strategy contains plans to create a national digital agency to harmonise the implementation of public policies related to digital public services and make it more efficient.

GOV.PT, the Portuguese single digital gateway (formerly known as ePortugal) has been undergoing changes since the 2024 State of the Digital Decade report. The new version of the generative AI virtual assistant, launched in December 2024, uses the most advanced generative AI technology, based on OpenAI's ChatGPT model, and has a knowledge base specifically developed to offer information on more than 2 300 public services. The interface for GOV.PT, available in text and voice, facilitates direct and personalised interaction and offers support in 12 languages. An AI virtual assistant is also integrated into more than 5 000 GOV.PT pages, with plans to expand its capabilities. The project foresees new transactional functionalities from 2025, including the monitoring of processes and services such as scheduling appointments. The development of the national large-language model Amalia can support this process.

2024 recommendation on digital public services/e-ID: Continue developing user-friendly e-Government solutions and intensify efforts to promote their take-up, with particular attention to the e-ID.

Portugal made efforts to address the recommendation through new policy actions in 2024. The country is expanding its network of RRF-funded 'citizen spots' (dedicated desks, for example in hospitals and parish councils, city councils and other public facilities) which advertise e-ID and increasingly provide training on digital public services, within the scope of the National Digital Strategy. A single app (see above) will contribute to this goal. Currently, a public procurement procedure is being carried out to promote the dissemination and activation of e-ID at several summer events, thereby achieving a higher rate of usage among younger people.

e-Health

Following the 2024 recommendation, Portugal has set a target for access to e-health records with a score of 100 by 2030. Given the continuous progress in recent years, this target seems achievable. The country did not add any new measures on e-health in its adjusted roadmap, but it continues implementing the large RRF investment on the digital health transition, which is also included in its roadmap, and might explain Portugal's remarkable progress in this area in recent years.

The country continues to collaborate on e-health solutions in a cross-border context. In 2024, it expanded participation in the [MyHealth@EU](#) initiative by sharing health data with Latvia, Lithuania, and Ireland, raising the number of countries with which health data can be exchanged to 13, one of the highest in Europe. This expansion strengthens the initiative's goal of improving healthcare collaboration and access across Europe.

2024 recommendation on e-health: Make the data types of medical images and hospital discharge reports available to citizens through the online access service and, building on existing legal provisions, implement technical functionality for legal guardians and authorised persons to access electronic health data on behalf of others.

Portugal made significant efforts to address the recommendation through new policy actions in 2024. The country has worked to provide citizens with access to hospital discharge reports, which are now available through the National Health System portal (SNS24) for several public hospitals. As part

of the actions under its RRP, Portugal has drawn up plans to implement the remaining recommendations. These include plans to: (i) make medical images available in various formats through the 'Exames Sem Papel' (paperless medical exams) initiative; and (ii) develop technical solutions that will enable legal representatives and guardians to access health data, in line with existing legal provisions. In this regard, Portugal is developing a dedicated platform to provide citizens with access to medical images. The final draft of the platform's legal framework has been completed, and technical developments are currently being decided on and implemented.

Building a safe and human centric digital environment and preserving our democracy

Online participation in political and civic life is slowly growing. In 2024, 22.12% of people in Portugal used the internet to participate in consultations, for voting or sharing opinions online. This share is slightly above the EU average and trending upward (20.58% in 2022), in line with the trend observed at EU level (17.59% in 2022 and 20.45% in 2024).

Portugal's revised roadmap includes a measure to increase digital civic participation. As planned by the National Digital Strategy, the [Participa.gov.pt](https://participa.gov.pt) platform, which is used for participatory processes, will gain new functionalities and capabilities to make it simpler to use and more interactive. In addition, awareness-raising actions are planned to promote this democratic activity online.

Less than 1 in 4 of those who encounter doubtful information online check its accuracy. In 2023, 51.73% of individuals in Portugal reported having encountered untrue or doubtful information or content on internet news sites or social media, slightly above the EU average of 49.25%. Of those exposed, according to the survey, 23.45% checked the truthfulness of the information or content, reflecting a modest effort to verify the reliability of the information. Young people (those aged 16-24) reported more exposure to this doubtful information (64.5% said they had been exposed) than adults (those aged 25-64) (55.58% of whom said they had been exposed), with verification rates being substantially higher for young people (37.71% checked the information they encountered) than was among adults (only 24.68%). Men (53.75%) reported slightly more exposure than women (49.87%), and also showed a slightly higher verification rate (24.94% for men and 22.09% for women).

A high share of Portugal's population, especially young people, encounters hostile and degrading messages online. In 2023, 35.48% of individuals encountered online messages considered hostile or degrading towards groups of people, such as those based on LGBTIQ identities or religion. This was slightly above the EU average of 33.5%. Young people (aged 16-24) reported significantly higher exposure (52.69% said they had been exposed) than adults (aged 25-64) (37.5% of whom said they had been exposed), indicating a marked age-related gap. Women (36.16%) and men (34.74%) experienced very similar rates, with no significant gender differences.

Digital and media literacy is receiving growing attention from the authorities. Following the publication of the 2023 Guidelines for a National Plan on Media Literacy the government presented in October 2024 a comprehensive Media Action Plan that sets out 30 measures to combat disinformation (e.g. through a strengthened role for publicly funded media) and promote media literacy, responsible media consumption and informed citizenship. The measures, which are in the early stages of implementation, include discounts and free access to news-media digital subscriptions in specific age groups, as well as pilot projects on media literacy in schools. A wider strategy the National Plan on Media Literacy for 2025-2029 is under preparation.

Portugal is also giving increasing attention to the protection of minors. The revised roadmap proposes a future 'Safer Digital' campaign. This campaign will involve pinpointing key areas for intervention to: (i) increase awareness among young people about the safe use of digital technologies, including online services and social networks; and (ii) adapt the message by using communication channels most favoured by youth.

In addition, according to the Digital Decade Eurobarometer 2025, Portuguese people consider it urgent that public authorities act to protect children online regarding the negative impact of social media on children's mental health (95% of Portuguese respondents), cyberbullying and online harassment (94%) and to put in place age assurance mechanisms to restrict age-inappropriate content (96%).

Leveraging digital transformation for a smart greening

Sustainability is becoming more important for Portuguese authorities. Examples can be found in Portugal's drive to build territorial cohesion and smart cities through digital tools and the digitalisation of administrative procedures. However, a comprehensive approach to addressing both the digital and green transitions is missing. According to the Digital Decade Eurobarometer 2025, 75% of Portuguese people consider digital technologies important to help fight climate change (increase by 18 pp. since last year), while 83% of Portuguese respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities.

Portugal's population recycles only a small part of its ICT equipment, but makes sustainable choices when buying this equipment. In 2024, the country's inhabitants recycled their laptop and desktop devices less (9.26% for laptops and tablets, 10.49% for desktops) than the EU average (11.31% and 14.66%, respectively). This lower rate of recycling in Portugal was also the case for mobile phones (9.74% against 10.93% for the EU). However, in another 2024 survey, 38.27% of people in Portugal said that they considered energy efficiency as an important factor when purchasing ICT devices, the highest number in the EU (EU average: 19.35%) and 24.6% said they considered the eco-design of the device to be important, which is also well above the EU average (12.04%). However, those two eco-friendly criteria were less important for Portuguese consumers than the price, performance, and design of the ICT device.

Significant actions to unleash the potential of digital technologies for a greener future are covered by Portugal's [National Strategy for Smart Territories](#) (ENTI) launched in late 2023. The strategy focuses on transforming data into actionable insights to enable efficient, sustainable, and transparent management of territories. The goal is for this strategy to improve decision-making and services for citizens and businesses. It is supported by RRF investment on intelligent territories (TD-C19-i08) and covered under the 'Digital and Smart Nation' initiative of the National Digital Strategy. Specific measures under those initiatives seek to interconnect territories and share data and good practices on the country's future Smart Territories Portal, National Data Management System for Smart Territories, Public Policies Dashboard and the Local Government Observatory. The strategy will rely on high-speed connectivity and interoperable digital services. Other actions under the strategy, the Urban Management Platforms can serve sustainability through: (i) integrated data management; (ii) digitalised procedures; and (iii) the promotion of smart energy grids, efficient mobility solutions, and environmental monitoring through the internet of things and AI, taking into account local challenges. Five 'Digital Twins' (computer-based virtual representations of real-world systems such as water or transport systems) will be created to tackle the issues most prioritised by Portugal, such as climate resilience, water, mobility and civil protection.

The revised roadmap also includes measures linking digital tools with environmental objectives. However, they do not explore the full potential of digital technologies in this regard. [One example of these tools is iFAMA](#), a centralised online portal for reporting environmental violations. This tool makes it possible to promptly submit evidence and ensure transparency in tracking complaints. It also empowers citizens to report environmental violations and promotes administrative efficiency.

2024 recommendation on green ICT: (i) Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs. (ii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

In 2024, Portugal continued to implement existing measures, but did not take any new measures. The relationship between sustainability and digital solutions is receiving some attention but has not been approached in a comprehensive way. Some work is ongoing as indicated in the roadmap, for example through the publicly supported industry initiative [Agenda for Ecoceramics and Crystal of Portugal](#), which aims to improve the competitiveness of this sector through more sustainable and digitally enabled production and value chains. However, a comprehensive approach is missing.

Annex I – National roadmap analysis

Portugal's national Digital Decade strategic roadmap

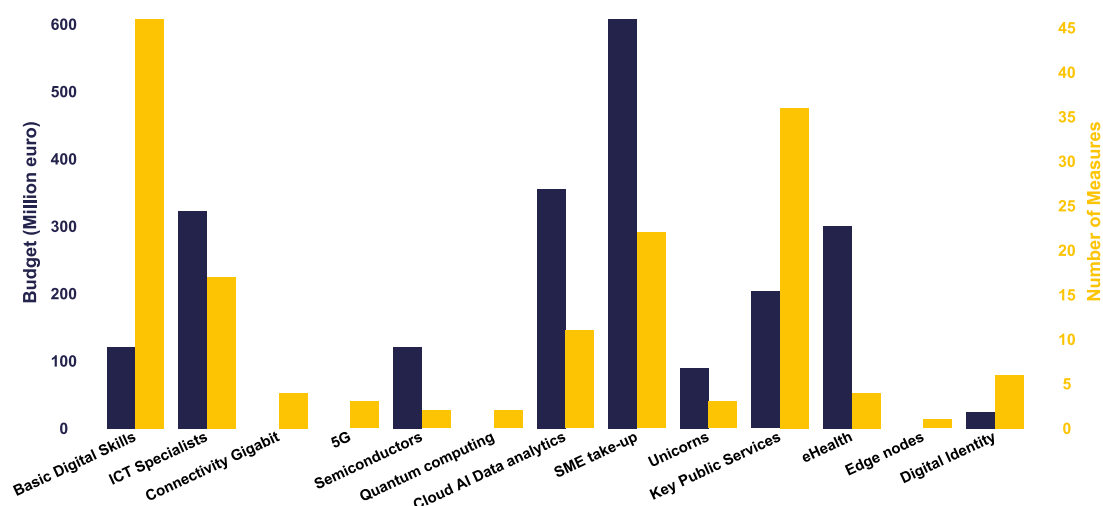
Portugal submitted a fully revised national Digital Decade roadmap in December 2024 (with targeted adjustments until March 2025), containing 157 measures, 12 targets (up from 5 reported last year) and 8 trajectories (compared to none in the previous roadmap). The roadmap is largely based on Portugal's [National Digital Strategy](#) also from December 2024 and its action plan, which were both put out for consultation with stakeholders as reported in the roadmap. The updates are aligned with the new Commission's priorities on AI, sovereignty, simplification and digital skills, as well as addresses a substantial number of roadmap recommendations issued in 2024, as listed below.

- *Propose targets and trajectories concerning VHCN, FTTP, 5G coverage, edge nodes, cloud, AI and data analytics separately, accessibility of key public services for citizens and businesses, access to e-health records and set trajectories for basic digital skills, ICT specialists, digital intensity of SMEs, unicorns using correct baseline values.* Portugal largely addressed this recommendation. Targets for edge nodes and data analytics are missing, as are target trajectories related to the digitalisation of businesses.
- *Align the level of ambition of the target for ICT specialists with the EU target:* The 7% target was not raised, and no explanation was provided.
- *Consider establishing national ambitions for technological leadership, competitiveness, and resilience to support EU-wide targets regarding semiconductors and quantum:* No new ambitions were introduced, but reporting was expanded.
- *Supplement the roadmap with measures related to connectivity:* information was added related to 5G and VHCN tenders, as well as submarine cable investments.
- *Review the measures contributing to targets on skills and digitalisation of enterprises, consider setting up additional measures for ICT specialists and basic digital intensity of enterprises:* National measures were listed and described more extensively, but both the attribution of these measures to concrete targets – and the novelty of these measures – is unclear.
- *Review the budget description of all presented measures, highlighting both national and EU sources:* A more comprehensive overview was added.
- *Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it:* Portugal provided a comprehensive mapping in this regard.
- *Incorporate, where appropriate, measures reported through other channels in the roadmap:* Portugal addressed this recommendation, except for some areas (e.g. cybersecurity).
- *Consult key stakeholders, as outlined in the DDPP, before proposing the adjustment to the national roadmap:* Stakeholder consultations were conducted in the context of National Digital Strategy.

Overall, Portugal presented a non-exhaustive selected set of the main policies and measures contributing to the achievement of most of the Digital Decade targets. The measures presented also cover several types of objectives: technological leadership, sovereignty, competitiveness and human-centred digital transformation. The roadmap responds to most of the objectives, such as human-centred digital transformation, simplification, sovereignty and resilience. However, areas such as sustainability and inclusion lack specific focus, while competitiveness is not comprehensively

articulated. The revised roadmap continues to prioritise digital skills (but not across all demographics), digital public administration and the digitalisation of businesses, in particular through information sharing and improving the skills of employees. In total, the measures presented amount to EUR 2.15 billion, or 0.75% of GDP, with a significant share of the funding for this coming from the Recovery and Resilience Facility.

Measures and budget in national roadmap¹¹



¹¹ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Portugal is a member of the Local Digital Twins towards the CitiVERSE EDIC and of the EUROPEUM EDIC. It is also an observer to the Alliance for Language Technologies EDIC, and is leading efforts to set up an EDIC in the area of startups. Portuguese entities are indirect and/or associated partners in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Portugal is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Portugal has contributed to the Best Practice Accelerator¹² by sharing one best practice in the frame of the Green IT cluster (National Strategy for Smart Territories).

EU funding for digital policies in Portugal

Portugal allocates 21% of its total recovery and resilience plan to digital (EUR 4.5 billion)¹³. In addition, under cohesion policy, EUR 2.4 billion (representing 11% of the country's total cohesion policy funding), is dedicated to advancing Portugal's digital transformation¹⁴. According to JRC estimates, EUR 6.09 billion directly contribute to achieving Digital Decade targets (of which EUR 4.42 billion comes from the RRF and EUR 1.67 billion from cohesion policy funding)¹⁵.

The biggest digital measures of the plan are investments in the 'Digital transition of education' (EUR 614 million) and 'Modernisation of supply and vocational education and training institutions – Equipment for digital skills' (EUR 521 million), followed by the 'Digital Transition of Enterprises' (EUR 399 million), 'Digital Health Transition' (EUR 300 million) and several measures related to digitalisation of the national administration.

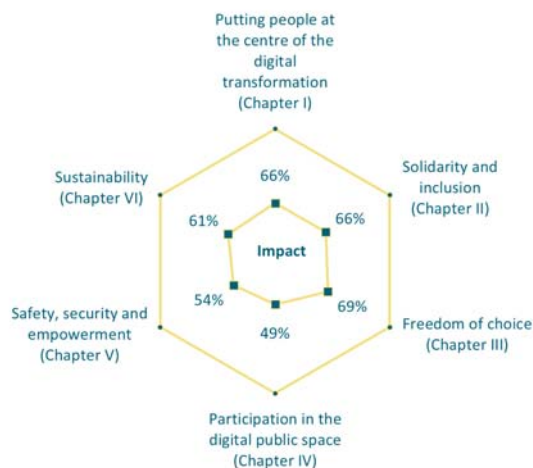
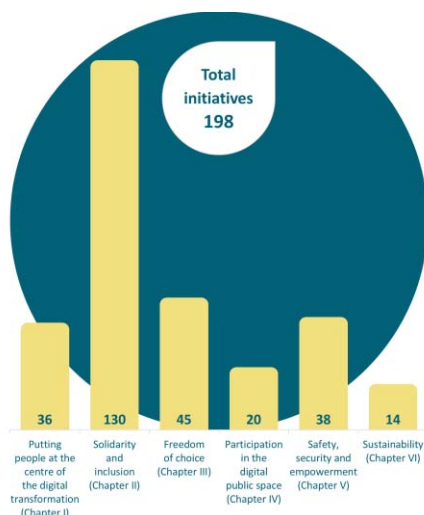
¹² Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

¹³ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹⁴ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹⁵ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital rights and principles¹⁶



Activity on digital rights and principles (figure 1)

Portugal has been one of the most active Member States in implementing digital rights and principles, with over 100 initiatives overall and 14 new initiatives launched in 2024, showing notable progress towards its commitments. Portugal is most active in the area of Digital education, training and skills (II). There is room for improvement, especially with regards to Privacy and individual control over data (V) where less activity has been identified.

Impact of digital rights initiatives (figure 2)

Quantitative impact indicators developed by the support study illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Portugal (mainly national government) and how these are perceived by citizens.

The indicators suggest that Portugal is most successful in implementing commitments related to Freedom of choice (III). Portugal could review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Participation in the digital public space (IV).

According to the Special Eurobarometer 'Digital Decade 2025', 45% of citizens in Portugal think that the EU protects their digital rights well (a 2% increase since 2024). This is slightly above the EU average of 44%. Citizens are particularly confident about getting more freedom of expression and information online (56%, below the EU average of 60%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (49%, above the EU average of 48%).

¹⁶ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

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DIGITAL DECADE 2025 COUNTRY REPORTS

Romania

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Executive summary

Romania can rely on a well-developed fixed connectivity infrastructure and is strengthening its role in critical technologies like semiconductors, but persistent R&D gaps, weak SME and start-up innovation and slow emerging tech uptake limit its competitiveness. While the country is advancing in digital public services, challenges remain in digital skills, inclusion, and integrating sustainability into its digital infrastructure. Romania shows a low level of ambition in its contribution to the Digital Decade having set 11 national targets, 36% of which are aligned with the EU 2030 targets. The country is fully following its trajectories (on the basis of the 2024 trajectories defined for 1 KPI out of 8 analysed). Romania addressed 40% of the 15 recommendations issued by the Commission in 2024 by making some changes through new measures.

Romania remains an EU leader when it comes to fixed connectivity, but more efforts are needed on 5G. Despite recent efforts, Romanians have very low levels of digital skills. Efforts have been made to strengthen Romania's position regarding semiconductor manufacturing. The country is also taking major steps to improve the digitalisation of public services, including a new Governmental cloud and the notification of an eID scheme. Romania struggles with integrating digital technology into business activities. AI and data analytics are not used to their full potential. Lack of access to capital both for start-ups and scale-ups remains an important issue hampering digital innovation.

Digital Decade KPI ⁽¹⁾	Romania				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	RO	EU
Fixed Very High Capacity Network (VHCN) coverage	95.0%	95.9%	0.9%	-	82.5%	4.9%	99.0%	100%
Fibre to the Premises (FTTP) coverage	95.0%	95.7%	0.8%	-	69.2%	8.4%	99.0%	-
Overall 5G coverage	32.8%	46.8%	42.7%	33.0%	94.3%	5.9%	62.0%	100%
Edge Nodes (estimate)	5	11	120.0%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	69.1%	14.7%	-	72.9%	2.8%	75.0%	90%
Cloud	15.5%	-	-	-	-	-	40.0%	75%
Artificial Intelligence	1.5%	3.1%	103.3%	-	13.5%	67.2%	10.0%	75%
Data analytics	21.9%	-	-	-	-	-	15.0%	75%
AI or Cloud or Data analytics	28.7%	-	-	-	-	-	-	75%
Unicorns	0	0		-	286	4.4%	-	500
At least basic digital skills	27.7%	-	-	-	-	-	50.0%	80%
ICT specialists	2.6%	2.8%	7.7%	-	5.0%	4.2%	4.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	52.2	62.7	20.2%	-	82.3	3.6%	100.0	100
Digital public services for businesses	50.0	55.1	10.2%	-	86.2	0.9%	100.0	100
Access to e-Health records	58.6	75.1	28.2%	-	82.7	4.5%	-	100

(1) See the methodological note for the description of the indicators and other metrics
(2) DESI 2025 reports the version 4 of the Digital Intensity Index, which is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory, which is based on version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024).

According to the 2025 special Eurobarometer on ‘the Digital Decade’, 62% of Romanians consider that the digitalisation of daily public and private services is making their lives easier. 77% consider the action of the public authorities important to counter and mitigate the issue of fake news and disinformation online. 77% consider competitiveness important to ensure that European companies can grow and become ‘European Champions’ capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Romania remains an EU leader in connectivity, including in sparsely populated areas, has the highest take-up of high-speed Internet in the EU for >100 Mbps and ranks 3rd in the EU for >1 Gbps connections. However, despite strong year-on-year growth, Romania continues to underperform on 5G, both in terms of coverage and spectrum assignment. Significant growth potential exists here and a lot more could be done to promote the benefits of 5G connectivity, particularly how it could support the country’s manufacturing and B2B sectors.

Romania is slowly strengthening its position in critical technologies. Recently, it has adopted its national quantum technology strategy and announced an initiative that will lead to an investment of EUR 420 million (NRRP) for auto industry semiconductor R&D and manufacturing. The approach, which involves European companies, universities and SMEs, has the potential to build a strong semiconductor ecosystem in the medium and long term.

Romania does not have unicorn companies in ICT and digital. Its start-up ecosystem would benefit from better conditions for access to capital, in particular risk, in order to develop further. Regarding cybersecurity, Romanians take fewer steps than the EU average to protect their data online. Romania has transposed the NIS2 Directive in its national legislation via an Emergency Ordinance.

Protecting and empowering EU people and society

Romania is investing significantly in digitalising its public services and raising the overall level of digital skills. This is a long-term process that needs strong political will, a clear agenda and renewed commitment in terms of efforts and resources in order to achieve success.

Romania continues to rank last in basic digital skills, but it is taking significant steps to address this, with a higher budget for education and schemes in place to train teachers and optimise the education process. It is important that the concept of acquiring the necessary digital skills is integrated throughout the curricula and represents a key KPIs for investments throughout the entire learning cycle.

Regarding ICT specialists, Romania has a high number of graduates but is not able to retain this talent in the country. The number of ICT specialists appears to be stagnating, which could put the country’s 2030 target at risk.

Romania demonstrates a consistent pattern of robust growth for the digitalisation of public services, but the absolute scores for Romania remain below the EU average. Major projects are currently being announced or implemented and should transform how public services are delivered but will require the appropriate degree of development and maintenance over time. The public entities running these projects should be given the necessary resources (finance, project management, ICT specialists) to continue them after the original contract is finalised. Streamlining of the multiple existing projects that have been promoted as ‘single point of contact’ could also be envisaged.

For eHealth, Romania has gradually improved its performance, but not all data types are available and less than 50% of the healthcare providers are connected and supplying data. A new strategy for the digitalisation of the health system is being prepared. A new health insurance platform, which should replace the current one, is expected for 2026.

Leveraging digital transformation for a smart greening

Regarding progress in its twin transition, Romania is slowly advancing on an integrated approach to making digital infrastructure greener and tracking emission reductions.

National Digital Decade strategic roadmap

Romania has not submitted an update to its national Digital Decade roadmap. Taking into account Romania's starting point, the roadmap puts forward ambitious objectives, particularly for the use of digital services and the number of ICT specialists.

Overall, the roadmap is a key document in ensuring ownership and oversight of the necessary steps to meet the national targets. It was formally adopted by the Romanian Government in October 2024.

The roadmap consists of 98 measures with a budget of EUR 3.6 billion (equivalent to 1.01% of GDP) of which a substantial share stems from the National Recovery and Reform Plan. The main focus is on the digitalisation of public services and increasing digital skills. A lower priority seems to be given to the digitalisation of businesses and advanced technologies (semiconductors, quantum, edge nodes). Similarly to 2023, Romania has not indicated targets for eHealth, quantum, edge nodes and semiconductors. None of the existing targets were revised.

Funding & projects for digital

Romania allocates 22% of its total recovery and resilience plan to digital (EUR 5.8 billion)¹. In addition, under cohesion policy, EUR 2.7 billion, representing 9% of the country's total cohesion policy funding, is dedicated to advancing Romania's digital transformation². Romania is a member of the EUROPEUM EDIC. Romania is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Romania is also a participating state in the EuroHPC Joint Undertaking (JU) and in the Chips JU.

Romania has contributed to the Best Practice Accelerator³ by sharing one best practice in the frame of the Digital Skills cluster (Skills in Advanced Technologies for SMEs).

Digital Rights and Principles

According to a support study, Romania has been relatively active in implementing the [European Declaration on Digital Rights and Principles](#), with 62 initiatives overall and 2 new initiatives launched in 2024. Romania is most active in the area of putting people at the centre of the digital

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

transformation. Less activity has been identified with regards to a fair digital environment and sustainability. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing freedom of choice.

Recommendations

- **Digital public services:** Continue to dedicate the necessary resources (finance, project management, ICT specialists) for the digitalisation of public services, including after the initial set-up (maintenance and support). Streamlining of the multiple existing projects that have been promoted as 'single point of contact' could also be envisaged.
- **Basic digital skills:** Continue to integrate basic digital skills as a core component of the education process, both for teachers and students. Make upskilling, particularly of employees in the private sector and older population, a priority.
- **eHealth:** Continue to expand the data sources available online. Adopt and implement the new strategy on the digitalisation of health system, taking into account user needs and ease of use.
- **ICT specialists and advanced skills:** boost SME digital skills by simplifying support measures and engaging stakeholders to identify market needs. Identify ways to attract and retain ICT talent.
- **Unicorns:** Building on existing programmes, Romania should identify ways to support company scale-up and diversify funding opportunities for innovative companies.
- **Advance technologies take-up** Continue efforts, including via EDIHs, to increase the uptake of cloud and AI services by companies of all sizes. Continue to increase the number of edge nodes deployed and ensure links with work done on semiconductors, quantum and the internet of things.
- **5G:** increase overall 5G coverage, including in the 3.4–3.8 GHz band, and spectrum assignment.
- **Twin digital-green transition:** Develop a comprehensive strategy to align digitalisation with environmental goals.

A competitive, sovereign and resilient EU based on technological leadership

Romania has struggled to maintain its competitiveness, although it is currently implementing reforms and initiatives aimed at strengthening its economic and digital infrastructure. Over the past three years, Romania has registered constant, albeit slowing, GDP growth, with around 0.8% real GDP growth in 2024 compared to 2023. This growth trajectory reflects both the challenges and opportunities faced by the country, particularly as it seeks to leverage EU funds for ambitious reform plans. However, delays in project implementation across multiple sectors remain a significant hurdle.

In terms of digital competitiveness, Romania offers a landscape of contrasts. The country boasts some of the fastest internet connectivity in the world and a strong pipeline of ICT specialists trained at its universities. Despite these strengths, Romania struggles with low digital skills among the general population, a low, albeit growing level of available digital public services and faces difficulties in retaining ICT talent within its borders. In 2022, the ICT sector contributed 4.44% to the gross value added⁴, mirroring the figures from 2021 but below the EU average of 5.46%. Nonetheless, Romania is making strides to bridge this gap. ICT personnel make up 3.26% of total employment, which is close to the EU average.

In 2022, R&D spending on ICT constituted 23.86% of total R&D business expenditures, one of the lowest in the EU. Moreover, the proportion of R&D personnel in the ICT sector was 23.4% of the total R&D workforce, down 5.6 percentage points compared to the previous year. These figures highlight the need for enhanced R&D investment and personnel retention strategies.

Efforts to digitalize Romania's public sector are ongoing, with initiatives such as transitioning public activity to the cloud, ensuring interoperability between the databases of different authorities, implementing the national eID scheme, and setting up a new single point of contact at the forefront. Successful projects like ghiseul.ro demonstrate the potential for digital transformation, as well as the appetite of Romanians to use digital technology to simplify their interaction with public administration. At the same time, some of the systems built previously have not been updated and maintained properly, for example for health insurance, and now require complete overhauls. Ensuring the success of this digitalisation effort requires effective coordination between institutions, backed by sufficient political commitment and resources allocated.

The start-up ecosystem is hampered by issues that affect entrepreneurship in Romania more broadly. Access to capital remains a major issue. Start-up funds are available, but scaling up remains very difficult and, as a consequence, no unicorn-level companies exist. At the same time, Romanian businesses are slow to take up cloud, AI and data analytics in their activities.

With the help of EU funding, Romania has taken steps to revitalise its semiconductors industry and is trying to become a key supplier of semiconductors for the country's car manufacturing production. However, overall R&D spending was only 0.52% of GDP in 2023, with stakeholders pointing to limited strategic vision and fragmentation of efforts as factors that further weaken efficiency of funding.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025

According to the 2025 Eurobarometer⁵, 78% of Romanians think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

Building technological leadership: digital infrastructure and technologies

Romania continues to have one of the highest levels of connectivity infrastructure in the EU for both very high-capacity networks (VHCN) and fibre to the premises (FTTP). It leads the EU in high-speed internet. The country, however, is slow in taking up 5G technology, which could hamper the future competitiveness of the country's strong manufacturing sector. Romania is taking steps to strengthen its semiconductor capacity and quantum communication capabilities.

Connectivity infrastructure

Romania's VHCN coverage is 95.9% (2030 national target: 99%), an increase of +0.9% in 2024 and a figure significantly higher than the EU average of 82.5%. The country did not provide a national trajectory point for 2024. The growth rate for 2024 is lower than the EU's, 0.9% compared to 4.9%, but that is to be expected given the very high starting point. For households in sparsely populated areas, Romania's coverage is also notably higher, at 93.6% in 2024, against the EU's 61.9%. The growth rate of 1.3% is lower than the EU's 11.3%. The country also has the highest take up of high-speed internet in the EU: 96.85% of internet connections are at speeds of 100Mbps or above, with 34.17% of broadband subscriptions being over 1 Gbps.

Romania FTTP coverage is 95.7% of (2030 national target: 99%), an increase of +0.8% in 2024 and far above the EU average of 69.24%. The country did not provide a national trajectory point for 2024. Similarly to the VHCN indicator, Romania's year-on-year growth rate was lower than the EU's (8.4%), again explained by the high starting point. For households in sparsely populated areas, Romania's coverage is also notably higher, at 93.5% in 2024, against the EU's 58.9%.

Romania 5G coverage is 46.8% (2030 national target: 62%), an increase of +42.7% in 2024, well below the EU average of 94.35%. The country is on track with its national trajectory. For households in sparsely populated areas, Romania's coverage is also notably lower, at 14.5% in 2024, against the EU's 79.57%. The growth rate of 128.4% is significantly higher than the EU's 11.9%. Romania's 5G coverage in the 3.4–3.8 GHz band is lower than the EU average, with 32.8% in 2024, compared to the EU's 67.7%. Romania's 5G spectrum assignment for pioneer bands is lower than the EU average, with 38.33% in 2025, compared to the EU's 74.6%.

Romania's performance in broadband take-up indicators is mixed compared to the EU average. In 2023, Romania's share of fixed broadband subscriptions at 100 Mbps or higher was 94.04%, above the EU's figure of 65.9%. This figure increased to 96.85% in 2024, still significantly above the EU's 71.88%. The growth rate for this indicator in Romania was 3.0%, which is lower than the EU's 9.1%. Romania's share of fixed broadband subscriptions at 1 Gbps or higher was 30.45% in 2023, exceeding the EU's 18.47%. In 2024, this figure rose to 34.17%, well above the EU's figure of 22.25%. The growth rate for this indicator in Romania was 12.2%, which is lower than the EU's 20.5%. Romania's share of the population with 5G SIM cards was 7.91% in 2023, below the EU average of 21.7%. This figure increased to 15.0% in 2024, still well below the EU's 35.56%. The growth rate for this indicator in Romania was 89.6%, which is higher than the EU's 63.9%.

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

VHCN and FTTP

Even though the growth rate is slow, progress for both VHCN and FTTP coverage is sufficient to indicate that the 99% coverage target will be met by 2030 provided that the current growth rate remains stable.

To further facilitate network deployment, **Romania has adopted the indicative tariffs for access to road physical infrastructures** via Decision No. 58/2025. The indicative (nonbinding) tariffs set by the Romanian telecom regulator ANCOM are more than 90% lower than the actual tariffs set in the Order of the Ministry of Transport No. 1836/2018. While it is too early to observe positive effects attributable to this decision, it is expected to contribute to further network deployment. ANCOM has also gathered geolocated data to obtain a clearer view of the level of development of high-speed networks and services across the country's various regions and communities, with a study and a map made public.

5G

Overall, analysis suggests that Romania is generally performing well on digital infrastructure, with one of the highest levels of high-speed Internet connectivity in the EU. However, there are some areas, such as overall 5G coverage, 5G coverage in the 3.4-3.8 GHz band and 5G SIM card adoption, where Romania has significant potential to improve its performance to further enhance its digital infrastructure and support its manufacturing and B2B sectors.

In 2025, the Romanian National Authority for Management and Regulation in Communications intends to consult the market again on the potential interest in the 26 GHz band, and in other millimetric bands (such as the 40.5 - 43.5 GHz frequency band). No specific requests or enquiries involving these bands have been received by Romanian authorities to date, which indicates a low level of interest for industrial use cases.

Additionally, to further gauge market needs, ANCOM intends to carry out measurements along main railway lines and will perform measurements on the data transfer rate across Romania (5 sampling counties from each relevant region), with a specific focus on less populated areas.

A list of authorised equipment manufacturers under the 5G Networks Security Law (Law 163/2021) was adopted and published during 2023. According to a draft law submitted to the Romanian Parliament by the Government amending Law 163/2021, the software programmes, technologies and equipment from non-authorised producers for core networks can be used until 30 June 2028 at the latest.

2024 recommendation on connectivity infrastructure: (i) Undertake additional efforts to support a higher level of ambition for the 5G target, including possible support for use cases and pilots, in view of the importance for the EU and Romania's future competitiveness and building on the current positive trend; (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

Romania made some efforts to address the recommendation through new policy actions in 2024. There is limited demand for 5G currently in the country. The national regulator plans to further gauge market interest for the 26GHz band and map 5G connectivity needs on the country's main railway lines.

Semiconductors

Romania does not currently have any semiconductor production capacity, a situation acknowledged in its roadmap. The Romanian Government has been taking steps to remedy the situation. In 2023 three companies had already been selected to benefit from RRP funding and in 2024 a contract was signed with the companies to build a national ecosystem of semiconductors. The total National Recovery and Resilience Plan (NRRP) funding is EUR 400 million, from which the three companies are receiving EUR 195 million, while indirect participants will receive EUR 205 million. This project, combined with the recently announced BMW TechWorks Centre in Romania has the potential to make Romania an important ICT ecosystem for the European car industry.

Furthermore, a National Platform of Technologies and Semiconductors was launched in December 2024 and is expected to revitalise the national semiconductor industry. A partnership of 6 Romanian research organisations and 21 SMEs, the project benefits from EUR 130 million funding, EUR 65 million of which from the ERDF. The project aims to create three production lines for manufacturing and testing semiconductors, as well as new tech services and semiconductor systems that could be integrated by existing industry.

Edge nodes

According to the Edge Node Observatory, Romania is among the Member States adopting edge technology at a slower pace: it counted 11 of the estimated 2257 edge nodes deployed in the EU at the end of 2024, or 6 additional units compared to the end of the previous reporting period. According to the roadmap, the number of edge nodes is expected to reach 113 by 2030. However, very limited measures are in place to support this objective, so the target does not seem to have adequate support.

The Romanian authorities plan to set up a working group with various ministries, regional development agencies, and the national regulatory authority to assess the current situation and identify and adopt a policy and concrete measures that could support this national target. Nevertheless, recent institutional developments have made this difficult.

Quantum technologies

Romania's interest in quantum technology continues to grow, both in terms of quantum computing and quantum communication infrastructure. The roadmap does not set a specific target for quantum but describes the ongoing work to develop a policy in this area.

The Romanian Government adopted its quantum technology strategy in August 2024. The Strategy includes key objectives such as ensuring the necessary resources, stimulate R&D, create an essential quantum infrastructure, develop a quantum industry in Romania and consolidate Romania's position in the broader international quantum architecture.

The *Politehnica* University of Bucharest launched the RoNaQCI (Romanian National Quantum Communication Infrastructure) project in 2023. With EUR 10 million of funding under the Digital Europe Programme, the project aims to develop a quantum communication infrastructure in Romania by deploying a 1500+km QCI network that would include 6 Romanian metropolitan networks. Implementation of the project is ongoing.

2024 recommendation on quantum/semiconductors/edge nodes: Develop a policy and further measures to support the semiconductors, quantum, and edge nodes targets, building on the growing

national interest and existing assets, as well as multi-country cooperation. Consider edge node deployment when creating investment programmes and strategies in these areas of AI, future network deployment, and the Internet of Things, as edge computing is an important component of those.

Romania made efforts to address the recommendation through new policy actions in 2024. It plans to build a national ecosystem of semiconductors, in a partnership between large manufacturers, SMEs and universities. Interest in quantum is growing, with the RoNaQCI project an important driver to raise awareness of the potential of quantum communications. Low demand and limited public authority involvement impacts the development of edge nodes in the country.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Romanian SMEs have closed the gap with the EU average in terms of basic level of digital intensity. This could positively impact the country's competitiveness in the medium and long term. However, Romanian companies are still reluctant to integrate new technologies, such as AI, cloud and data analytics in their activities. The start-up ecosystem is hampered by issues that affect entrepreneurship in Romania more broadly, with access to finance and risk capital remaining major issues to be tackled, particularly for scaling up.

SMEs with at least basic digital intensity

In Romania, 69.1% of SMEs reached at least a basic level of digital intensity (2030 national target 75%), with growth of +14.7% per year, from 52.49% in 2022. This brought Romania closer to the EU average of 72.91%. However, looking at SMEs with high or very high digital intensity, only 21.69% achieved that level, falling short of the EU average of 32.66%. Overall, Romania has shown progress, but there is still room for improvement in the digital intensity of its SMEs, particularly in terms of advanced digital intensity.

The Romanian Authority for Digitalisation is running a training scheme for nine emerging and advanced technologies targeting interested Romanian SMEs. The total financing available is EUR 36 million (NRRP funds), with an additional EUR 6.8 million as ineligible VAT. The training is available via a *de minimis* aid funding of a maximum EUR 17.000 per eligible SME. At the end of 2024, 15% of the SMEs that registered for the scheme had been approved and the evaluation process is ongoing. Some SMEs may be reluctant to fully engage with the current application process, possibly due to perceptions that the resources required for participating may not match the benefits gained. Streamlining the procedure further (the Government clearly indicates the documentation needed and steps required) and promoting the benefits and high quality of the training could potentially encourage greater participation and maximize the scheme's impact. One way forward could be an enhanced cooperation between public authorities and European Digital Innovation Hubs (EDIHs), as key players at regional and local level that have a very good understanding of SME needs and capacities.

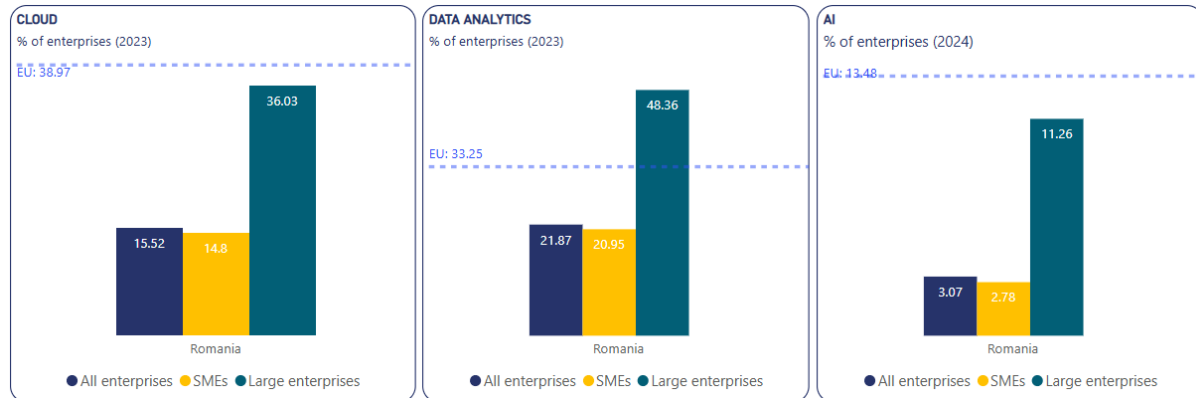
Overall, SMEs in Romania seem eager to adopt digital solutions and technology in their activities, but they often face constraints such as access to finance or procedures they deem too bureaucratic. Room for improvement persists in terms of advanced digital engagement.

2024 recommendation on digitalisation of SMEs: Intensify action on digitalisation of business, starting with providing a comprehensive overview of the available support measures and identifying potential gaps in terms of meeting existing needs, as well as with ensuring the good functioning of the EDIHs.

Romania made some efforts to address the recommendation through new policy actions in 2024. The training scheme for nine emerging and advanced technologies is promising, but some SMEs

continue to flag cumbersome procedures. A stronger cooperation with EDIHs could improve the situation further, as well as linking support measures to improved access to finance.

Take up of cloud/AI/data analytics



In 2024, only 3.1% of enterprises in Romania were using AI technology, after growth of 103.3%, significantly below the EU average of 13.48%. The country did not provide a national trajectory point for 2024. However, large enterprises demonstrated a relatively higher rate of AI use (11.26%) compared to SMEs (2.78%). This corresponds to a gap of 8.48 percentage points between SMEs and large enterprises, which is much lower than the average EU gap of 28.53 percentage points. While the national target set in the roadmap of 10% is very low compared to the EU level target of 75%, it could prove difficult to reach at the current pace.

Adoption of cloud, data analytics, and the three technologies together were not measured in 2024.

In 2023, only 15.52% of Romanian firms adopted cloud technologies, significantly below the EU average of 38.97%. More specifically, SMEs had a lower adoption rate of 14.8%, while 36.03% of large enterprises utilised cloud services. This resulted in a 21.23 percentage point difference in uptake between SMEs and large enterprises in Romania, which was lower than the EU level gap of 31.68. Nevertheless, cloud adoption by large enterprises in Romania ranked last in the EU 2023.

The 2023 data indicates that 21.87% of Romanian enterprises adopted data analytics technologies, below the EU average of 33.25%. Of these, uptake reached 20.95% among SMEs (approximately 1 in 5), while the uptake among large enterprises was significantly higher at 48.36% (but still the lowest in the EU). This reflects a gap of 27.41 percentage points between SMEs and large enterprises, which is lower than the EU gap of 39.72 percentage points.

When taking the three technologies together in 2023, 28.74% of enterprises in Romania engaged with either AI, cloud, or data analytics technologies (no 2030 target was presented), a figure which is significantly lower than the EU average of 54.7%. More specifically, uptake among SMEs was slightly lower at 27.63%, while large enterprises demonstrated a notably higher rate of 60.42%. This indicates a percentage point difference of 32.79 in uptake between SMEs and large enterprises in Romania, which is in line with the EU level gap.

AI

The Romanian Government adopted the National Artificial Intelligence Strategy in July 2024. The Strategy should support the Romanian Government with standardising, operationalising and regulating AI development in Romania and manage the risks that the technology can bring.

In September 2024, Romania announced the launch of the Romanian AI Hub (HRIA). The five-year, EUR 65.25 million project, coordinated by the National University for Science and Technology (*Politehnica*) Bucharest, along with six other universities and eight private companies, will develop advanced research infrastructures, will attract researchers and will train AI specialists and facilitate technological transfer from research to market.

Cloud

No new development relevant to the 2025 Digital Decade report.

Data analytics

No new development relevant to the 2025 Digital Decade report.

2024 recommendation on cloud: Stimulate the adoption of next generation cloud infrastructure and services by companies of all sizes, including by liaising with the Cloud IPCEI Exploitation office and/or the Member States participating in the IPCEI-CIS;

Romania did not make progress in addressing the recommendation in 2024.

Unicorns, scale-ups and start-ups

Romania is among the 6 EU Member States without a unicorn type company in the digital sector. However, in recent years, Romania has seen the emergence of several successful start-ups in areas such as robotics and process automation, cybersecurity, fintech and e-commerce.

The country has significant potential in the ICT field, with the start-up ecosystem in Bucharest valued at EUR 35 billion in 2023, making it one of the top 10 emerging cities for entrepreneurship value creation, according to a Startup Genome [report](#). More generally, the Romanian ICT sector is one of the most important sectors in the economy in terms of employment, accounting for 7.1% of GDP in 2023. According to the Romanian roadmap, the ICT sector is increasingly specialised in areas such as cybersecurity and process automation, and more and more considered as an engine of business growth in Romania.

The other key factor that could negatively impact the Romanian ICT industry in the medium term is the elimination of fiscal incentives for the sector. This measure has direct implications on the ICT employee salaries and the profitability of ICT companies in Romania. Based on data from the ANIS 2024 Report on the impact of the ICT Industry on Romania's economy indicates a potential negative impact of over 26% on company profitability for 2024 and 2025.

Among key barriers to innovation, stakeholders mentioned a lack of fiscal incentives for R&D activities, a lack of innovation centres and incubators in the country and lack of knowledge and support for registering intellectual property. Key support measures here could include dedicated public/EU funding, increased industry/academia cooperation and stronger involvement of public authorities, including at local level, to stimulate innovation.

Most of the ICT activity in Romania is outsourcing for international companies, which can put the sector at risk both in the short term, based on how international demand fluctuates, and the long-term, if salaries increase and low labour cost is no longer a key competitive advantage.

Yet the sector still has significant untapped potential in terms of R&D intensity, which remains lower than EU averages. While the Start-up Nation programme (EUR 446 000 000 via the European Social Fund) aims to stimulate digital entrepreneurship, access to capital, and in particular to risk capital, also

remains difficult and below the EU average. Romanian companies still predominantly rely on internal financing to support their investments and operations (73% of total investment finance), with external financing representing only 26%. This heavy reliance on internal funds raises major challenges for companies, especially SMEs which account for over 99% of the companies in the country. Most external financing comes from bank loans, with companies reluctant to explore non-traditional financing options. In addition to recent measures promoted by the state for a more dynamic investment environment, greater participation from institutional investors as well as improving the promotion of available financing schemes and increasing financial literacy overall could also help bridge the financing gap.

The 2030 targets set in the Romanian roadmap in relation to unicorns, scale-ups and start-ups include 5 000 innovative digital SMEs, a 2% contribution to GDP of all innovations realised in Romania and four unicorns founded in Romania and active globally, with either headquarters or secondary offices in Romania. Achieving these targets will be challenging and will require an intensification of the measures to support the Romanian business environment as a whole, with a focus on start-ups, simplification and access to capital.

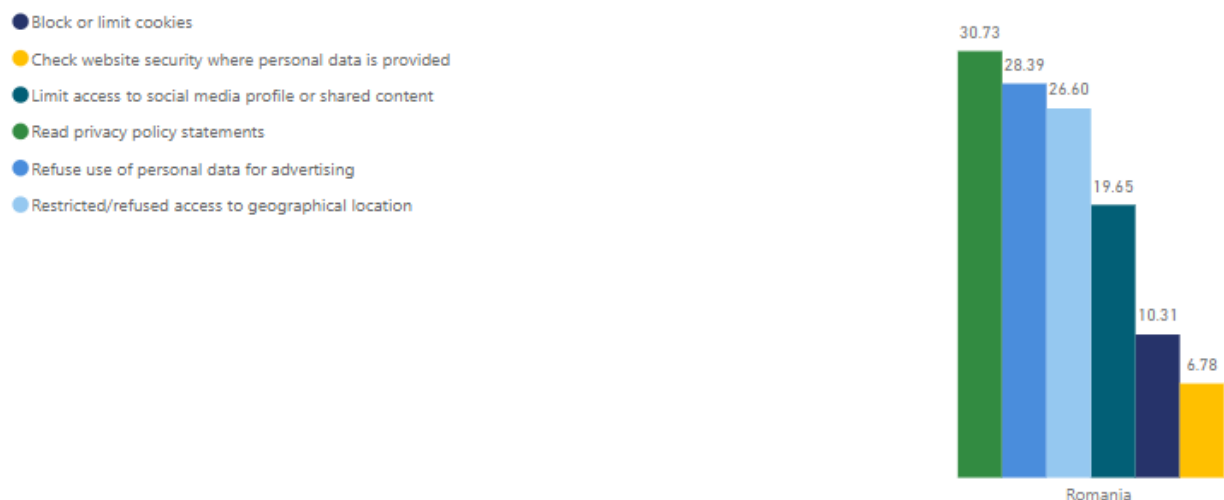
2024 recommendation on unicorns: Extend the measures to support an innovative, R&D driven ICT sector, as part of the competitiveness and technological leadership objectives in the roadmap.

Romania made limited progress in addressing the recommendation in 2024. The Start-up Nation programme is well known and has continuously increased the available funds (100% EU funding in 2024). Nevertheless, problems persist, particularly in the scale-up phase, essential for achieving unicorn status. Romanian companies continue to rely on own resources to invest, which hampers growth. Because of the lack of funding, the ICT market remains outsource driven and averse to risk.

Strengthening Cybersecurity & Resilience

In Romania, 46.81% of individuals undertook at least one measure to protect their data online, considerably below the EU average of 69.55%. In addition, only 21.72% of Romanians took three or more actions (and therefore could be considered as having above basic digital safety skills). Reading privacy policy statements was the most common action (30.73%), while checking if websites where personal data was provided were secure was the least common (6.78%).

Type of activities to protect personal data online (% of individuals)



The number of enterprises that experienced ICT security incidents leading to unavailability of ICT services due to an external attack (e.g. ransomware attacks, denial of service attacks) slightly decreased in Romania, from 3.64% in 2022 to 3.41% in 2024, virtually the same as the EU average (3.43%). However, Romanian enterprises are more prone to incidents leading to the destruction or corruption of data due to hardware or software failures (12.09%) than their EU peers (3.87%), indicating that attacks on Romanian entities tend to be data-driven and likely financially motivated.

91.67% of Romanian enterprises deployed some ICT security measures (near the EU average of 92.76%), with 67.51% of enterprises making their employees aware of their obligations in ICT security related issues, well above the EU average (59.97%).

Romania is below the EU average for deploying of secure internet standards, such as the roll-out of Internet Protocol version 6 (IPv6) for the end users (28%, EU average: 36%), actually decreasing compared to 2023. On the server side, Romania is well below the EU average (6%, against 17% for the EU). IPv6 is an important protocol as it ensures the scalability, stability, and security of the internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have been long depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out as it introduces security features to DNS. In Romania, the DNSSEC validation rate is 4% (Q3 2024), significantly below the EU average of 47% and last in the EU.

Overall, Romania performs near the EU average in certain cybersecurity indicators, but gaps persist in getting individual users to protect their data online and the use of DNSSEC validation.

According to the Digital Decade Eurobarometer 2025, 71% of Romanian citizens think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies. An increase of five percentage points compared to last year, reflects the growing concern of Romanians about this subject.

A study from Mordor intelligence estimates the size of the Romanian cybersecurity market at EUR 175 million and an estimated growth to EUR 293 million by 2030. This increase could be the result of a higher demand for cybersecurity solutions, changes in legislation (see below) and increased pace of digitalisation in both the public and private sectors. The biggest gaps faced by Romania's cyber industry are access to trained cybersecurity professionals and the hesitance of small companies to invest in adequate cybersecurity solutions, mainly due to cost reasons.

Romania has transposed the NIS2 Directive in its national legislation in December 2024, via an Emergency Government Ordinance no. 155/2024. Transposing NIS2 is a key step in improving Romania's cyber preparedness, taking into account the increased level of digitalisation and the intensification of cyber incidents that the country faces (for example in the first quarter of 2024, 26 Romanian hospitals nationwide were affected by an attack on a managed service provider, with a direct impact on hospital operations. Most of the hospitals were able to resume normal operations within a few days).

Romania has a National Cybersecurity Strategy in place, as well as an accompanying Action Plan covering the 2022-2027 period. The strategy mainly aims to strengthen the security and resilience of ICT networks and systems, to strengthen the regulatory and institutional framework for cybersecurity, including international cooperation, and to build public-private partnerships. The strategy is coordinated and implemented by various governmental bodies including the Romanian National Cyber Security Directorate, set up in 2021 under the responsibility of the Prime Minister, and ANCOM. Preparations are underway for a new national cyber security strategy.

Both the Romanian National Cyber Security Directorate (DNSC) and the National Coordination Centre (NCC RO) applied to multiple projects funded by the European Cybersecurity Competence Centre, including an EUR 7.2 million project dedicated to strengthening the administrative capacity of the NCC RO. The two institutions are also active in projects that aim to improve the preparedness and cyber resilience of SMEs (Cybersecurity Deployment Preparedness Support, Capacity and Capabilities – CYSSDE and SECURE - Strengthening EU SMEs Cyber Resilience). NCC RO also supports the registration of the Romanian cyber community, in line with the European Cybersecurity Competence Centre decision on community guidelines. This is expected to build a stronger community of cyber experts, including SMEs, academia and NGOs.

Other notable activities concern awareness raising campaigns and support measures for cybersecurity skills: the National Cyber Security Olympiad, started in 2024, is continuing in 2025, leading to a bootcamp that prepares the national team for the European Cybersecurity Challenge; the first batch of authorized cybersecurity trainers has been published; several new university programmes on cyber skills; an annual cyber security conference; participation in several cybersecurity related projects under Horizon Europe and Digital Europe Programme.

2024 recommendation on cybersecurity: (i) Extend the roadmap to better reflect the growing interest in and activities related to cybersecurity, setting clear objectives in this respect; (ii) Continue the implementation of the 5G Cybersecurity Toolbox to ensure secure and resilient 5G networks.

Romania made significant progress in addressing the recommendation in 2024. Romania transposed the NIS2 Directive in the national legislation, which should foster a higher level of cybersecurity overall for the country. It has continued to implement the 5G Toolbox and improved the cybersecurity posture of its 5G networks.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Romania continues to struggle with basic and advanced digital skills. Significant resources have been allocated to remedy the issue, including by promoting digital skills throughout the education process, but this is a systemic problem that can only be addressed in the long term. Fewer resources are allocated to training those already employed, although there is now a comprehensive strategy in place to enhance the digital capabilities of civil servants. At the same time, Romania performs well in educating ICT specialists but struggles with retaining talent in the country.

A large share of NRRP resources have been allocated to the digitalisation of the public sector. New initiatives such as the Governmental cloud, ROeID and the Single Digital Portal have the potential to radically change the current low performance levels. Considerable scope for simplification, interoperability and improving user centricity remains.

According to the 2025 Eurobarometer, 67% of Romanians think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 67% consider it would improve their daily use of digital technologies, and 79% think public authorities should consider it important to ensure that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services.

Equipping people with digital skills

Basic Digital Skills

Romania continues to underperform on basic digital skills. According to data from 2023, 27.7% of Romania's population had basic digital skills (2030 national target of 50%), significantly below the EU average of 55.56%.

While there is no data for 2024, a breakdown by demographic factors provides for the following insights:

- **Gender gap:** Romania's gender gap in digital skills is average, with a 2.59 percentage point difference between men at 29.06% and women at 26.47%. This gap is just over the EU average (2.23pp), suggesting some discrepancy in digital skills between genders.
- **Education level:** Educational attainment in Romania correlates with digital skill levels. Among those with higher education, 63.93% have at least basic digital skills, notably less than the EU average (79.83%). The situation is more pronounced for those with the least formal education, only 12.58% of whom have at least basic digital skills (33.61% for the EU).
- **Living areas:** Rural residents in Romania have the lowest levels of at least basic digital skills at 20.99%, far below the EU average for rural areas (47.50%).
- **Age groups:** The 16 to 24-year-old age group in Romania is the most digitally skilled, yet their proficiency rate of 47.19% is still far below the EU average (69.98%). The 65 to 74-year-old

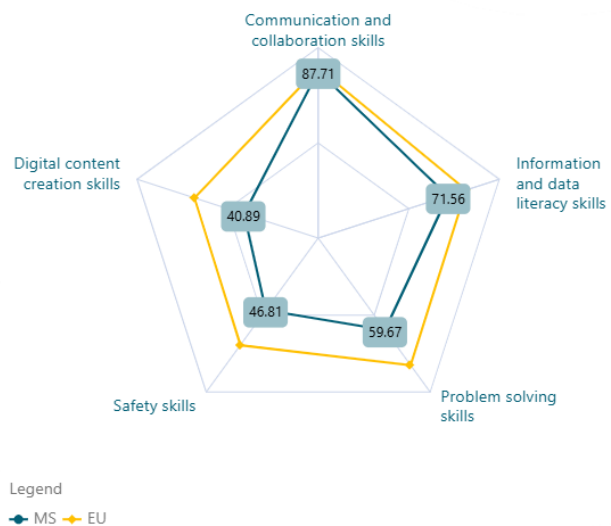
group demonstrate very few digital skills at 6.17%, considerably lower than the EU average for their age group (28.19%).

Overall, there are clear indications of a digital skills gap that preponderantly affects people living in rural areas and the elder population.

Romania underperforms in the Digital Skills Index competencies, lagging behind the EU average in all categories. Its best performance is in communication and collaboration skills at 87.71%, just shy of the EU average. The area most in need of improvement is digital content creation, with a low score of 40.89%, substantially below the EU average (68.28%).

Extensive efforts are ongoing to address the issue, part of the broader education reform in the country. Some positive developments indicate that the importance of integrating digital technology in the education system is widely acknowledged and a key feature in improving formal education at all levels.

Digital Skills Index components
% of individuals



In 2025, the Ministry of Education and Research's budget has been increased by 9.58% compared to 2024, with education as a whole now receiving an estimated 4.5% of GDP. Part of this increase is directly correlated with NRRP investments, including early school leave prevention, endowing schools with necessary materials and dual learning. It is important that the concept of acquiring the necessary digital skills is integrated continuously in the curriculum and represents a key KPIs for investments throughout the entire learning cycle. This needs to be accompanied by clear training programmes for teachers, so that they have the necessary competences to teach the necessary digital skills to their students. To this end, a recent announcement from the Romanian Ministry of Education intending to train over 100 000 educators and give them the necessary skills they need is a positive development. Another recently announced pilot-project between the Ministry of Education and Microsoft will aim to integrate AI in educational institutions, aiming to streamline teacher's work and optimise the students' learning process.

Legislative measures have also been adopted, including the National Framework for Digital Competence of Education Professionals (DigCompEdu) and the National Framework for Digital Competence of Students. These frameworks provide a structured approach to developing digital skills and offer clear guidelines for teachers to integrate technology into their teaching practices.

Furthermore, **Romania's accession process to the OECD** has reached a significant milestone, with the country receiving the formal opinion in December 2024. This step confirms the completion of the evaluation process and the alignment of Romania's policies with OECD standards in education and skills and demonstrates the country's commitment to improving its education system and aligning it with international best practices.

The Romanian workforce continues to have low digital skills, with important consequences for the labour market and the country's digital transition objectives. With a shrinking working population,

projected to decline by 23.7% by 2050, there are strong indications that skills gaps will lead to growing labour shortages, potentially threatening competitiveness.

While there appears to be increasing support for education and active labour market policies (integrating the unemployed, training them to acquire digital skills), **training activities for the active workforce largely seem to be left in the hands of the private sector.** At the same time, Romania's roadmap outlines a comprehensive strategy to enhance the digital capabilities of its public sector workforce, supporting both the digital skills and public service digitalisation objectives. Three authorities have a dedicated role in building a digital competence framework for civil servants – the Authority for Digitalisation of Romania, the National Authority for Civil Servants and the National Institute for Administration. The Project, which benefits from financial assistance from the EU under the Technical Support Instrument, will map what digital competencies are needed by the Romanian civil service; develop a general digital competency framework and issue recommendations for its operationalisation.

The section of the roadmap dedicated to digital skills is notably detailed, comprising 14 distinct measures that primarily focus on educational reforms and investments. Although specific budget allocations are not provided, it is clear that this objective receives substantial funding, with the Recovery and Resilience Facility being the primary contributor, followed by cohesion policy funds.

In summary, Romania's digital skills profile has significant room for improvement and is well below the EU average, with glaring societal divides based on age, education level and living areas.

2024 recommendation on basic digital skills: (i) Intensify the measures related to upskilling and reskilling of the workforce; (ii) Continue to improve the quality and the relevance of courses, teaching digital skills not only as a separate subject but also integrating digital skills and digital education into all levels, while taking a cross curricular approach.

Romania made good progress in addressing the recommendation in 2024. Multiple programmes to stimulate basic digital skills acquisition are in place and will likely lead to an increase of basic digital skills. The measures to support education could have a major impact in the medium and long term, but sufficient political will and careful implementation will be required. The digital gaps affecting rural areas as well as the older population needs to be addressed, as it could hamper efforts to digitalise public service (primarily limited uptake).

Romania still needs to do more to support the upskilling and reskilling of workers. Key potential measures could include integrating life-long learning policies in upskilling and reskilling schemes and constant dialogue between the education and private sectors to understand the market needs and adapt the school curricula accordingly.

ICT specialists

ICT specialists represent 2.8% of total employment in Romania (2030 national target of 4%), with a growth rate per year of 7.7%, above the EU rate of 4.2%. The country did not provide a national trajectory point for 2024. While this number suggest the sector is growing at a faster rate than the EU, the percentage has remained stagnant (2.8% in 2022, 2.6% in 2023).

When examining the gender breakdown of ICT specialists, Romania shows a higher percentage of female ICT specialists compared to the EU average. In 2023, 26.0% of ICT specialists in Romania were female, compared to the EU's 19.4%. This figure rose to 27.3% in 2024, while the EU's percentage

increased marginally to 19.5%. Romania's growth rate of 5.0% in female ICT specialists outpaces the EU's 0.5%, indicating a positive trend in gender diversity within the ICT sector.

Overall, however, there is considerable scope and reason to improve the situation. 6.9% of all post-secondary education graduates are ICT specialists, putting Romania among the EU's leaders. The discrepancy between the share of ICT graduates and employed specialists is explained to a large extent by the difficulty in retaining talent in Romania, but also by other aspects of the wider context, such as the low rate of post-secondary education graduates across the entire population.

Nevertheless, the ICT sector is a growth engine for the Romanian economy, with the sector's turnover increasing by double digits every year (Romania's ICT sector turnover passed EUR 15.5 billion in 2023, with a 12,16% growth compared to 2022). At the same time, **Romania's ICT sector is primarily based on outsourcing,** which makes it vulnerable to demand shifts globally. A slowing down of the ICT market worldwide is one of the factors that led to a lower growth rate in Romania, as well as the decrease in the number of ICT employees.

In terms of labour market demand, Eurostat experimental statistics based on web scraping show that in Romania, the profiles of 'software and applications developers and analysts' are the most sought after, representing 57.2% of online job advertisements for ICT specialists (58.0% at EU level). Two types of profiles are more actively sought in Romania than in the EU in average: 'information and communications technology service managers' (6.4% of online job advertisements for ICT specialists), and 'telecommunications and broadcasting technicians' (2.3%).

2024 recommendation on ICT specialists: Consider additional measures targeting to retain ICT specialists in the country.

Romania made no progress in addressing the recommendation in 2024. Romania has eliminated all fiscal benefits previously offered to ICT employees. This, combined with broader uncertainty in the Romanian ICT market and fluctuating trends on international markets, could impact a key growth driver of the Romanian economy.

[Key digital public services and solutions – trusted, user-friendly, and accessible to all](#)

For digital public services, Romania scored 62.75 (2030 national target of 100), with a growth rate of 20.2% compared to 2023, well above the EU average of 3.6%. The country did not provide a national trajectory point for 2024. For cross-border digital public services for individuals, Romania's score was 35.04 in 2023 and 50.85 in 2024, compared to the EU's 68.37 and 71.28, respectively. Romania's growth rate of 45.1% significantly exceeded the EU's 4.3%. The share of people using government internet websites or apps is increasing year after year in Romania, from 23.55% in 2022 to 26.91% in 2024. This remains far below the EU average of 74.71% in 2024, however.

For digital public services for businesses, Romania's total score was 55.14 (2030 national target of 100), with a growth of +10.2% compared to 2023 but well below the EU's score of 86.2. The country did not provide a national trajectory point for 2024. For cross-border digital public services for businesses, Romania's score was 17.5 in 2024, significantly below the EU's 73.76, respectively. Romania's growth rate of 26.0% was substantially higher than the EU's 0.9%.

Romania's total score for access to e-health records was 75.1 in 2024 (no target for 2030), below the EU's score of 82.7. The country did not provide a national trajectory point for 2024. Romania's growth rate of 28.2% compared to 2023 in this category was notably higher than the EU's 4.5%.

Romania's digital public services landscape shows clear improvement, with significant growth rates across various sectors and a clear catching-up trend, although the absolute scores remain below the EU average.

In the national roadmap, the Romanian authorities committed themselves to target scores of 100 for both digital services for individuals and for businesses, aligning the national targets to the EU level of ambition. **While these targets are ambitious given Romania's starting point, if the current level of progress is maintained, they could be reached by 2030.** A significant number of reforms and measures have been carried out in recent years and are still ongoing. The roadmap estimates that these will start showing impact on the ground, and implicitly on the KPI performance of Romania, as of 2026.

eID

In 2024, the European Commission recognized ROeID as the eID system used by the Romanian Government, after testing on the system's conformity according to the eIDAS Regulation. Following this approval, the ROeID system can be used cross-border in all relevant EU IT systems via the eIDAS nodes. The official application, also entitled ROeID, is now out of beta testing and fully available on mobile application stores. According to the latest data, the app already has over 110 000 active users.

The Romanian NRRP includes a EUR 150 000 000 investment supporting the eID target. The project aims to provide 5 million citizens with electronic identity cards and digital signatures by 2026. The issuing of the new electronic identity cards was formally approved in March 2025 and a pilot project started in the County of Cluj, with the national distribution of the new cards already underway. Additionally, the new cards will also be available for children under 14 years old (not currently the case), for whom the new identity cards could also be used as travel documents.

Digitalisation of public services for citizens and businesses

April 2025 saw the start of the National Interoperability Platform's implementation. This is a key element in the success of the digitalisation process, as the platform will enable public and private entities to exchange data in a secure and standardised environment, allowing for the implementation of the 'once-only principle'. A sound operationalisation of the Platform could lead to significant simplification of existing procedures, reduce fragmentation between existing eGovernment solutions and increase interinstitutional cooperation and data exchange.

A key development in 2024 was the physical installation of the dedicated cloud government infrastructure in December. The system has been built in partnership between the Romanian Digitalisation Authority, the Special Telecommunications Service and the Romanian Intelligence Service. Financed via the NRRP (EUR 100 million), this is deemed by the Romanian Government as a foundational step to digitising public services nationally, with 30 public institutions connected to the dedicated cloud component. The infrastructure is also believed to offer sufficient security, scalability and data processing power to meet the growing digital services demands of both users and public entities. The procurement process for the migration of public authorities' applications has been launched in February 2025, supported by an EUR 170 million budget (NRRP resources), with technical and procurement support from the World Bank and the European Investment Bank. Because of the transition to the governmental cloud, Romanian authorities expect that over 30 public services will be available online by the end of 2025.

The NRRP also envisages the creation of a Single Digital Portal (PDURo) aiming to help individuals and businesses access information on administrative procedures online, with the important administrative procedures for cross-border users being available online. The contract for implementing

the project was signed in March 2024. The portal will replace the current Single electronic contact point and will be compatible with the Single Digital Gateway requirements. The new platform should be available starting from September 2025.

One of the most advanced public platforms is ghiseul.ro, where taxpayers can pay their fiscal obligations online. An important measure to stimulate uptake of this means of payment is the 10% tax reduction that is offered by the Romanian state for those using the platform. According to the Romanian authorities, ghiseul.ro has over 2.6 million active users, with 1600 public institutions and 400 payment procedures available, including payments for ID, passports and driving licenses.

Another notable project, **‘Digitalisation of Employment Services’**, has received EUR 17.4 million in funding to develop a new system that enables the online submission of documents, registration for benefits, and access to professional training programmes. The PULS project allows Romanian employers to access the Romanian National Employment Agency’s services digitally and declare job vacancies, request subsidies and submit documents.

These major projects should considerably transform how public services are delivered in Romania. This is essential moving forward, as digitalisation can be a significant factor in how the public and the business environment perceive the interactions with the state. If implemented correctly, digital technology can demonstrably simplify existing procedures and lead to win-win situations, particularly if they are not used to simply mirror what exists in the real world, but rather lead to streamlining existing procedures, taking into account users’ needs.

2024 recommendation on digital public services: Maintain the efforts needed to implement the ambitious ongoing agenda for the digitalisation of public services, including by ensuring sufficient levels of funding, project management capacity and ICT specialists, and extensive/strong coordination across the various relevant authorities.

Romania made significant progress in addressing the recommendation in 2024. Overall, it is essential that the announced and ongoing projects become reality and are maintained and developed over time. The public entities running these projects should have the necessary resources (finance, project management, ICT specialists) to continue them after the original contract is finalised. Streamlining of the multiple existing projects that have been announced as the ‘single point of contact’ could also be envisaged.

e-Health

Romania improved its e-health performance in 2024. More data has been made available digitally and more people gained the technical ability of access their electronic health records in 2024. Nevertheless, less than 50% of the categories of healthcare providers are connected and supplying data.

While individuals can access their electronic health records via an online portal, a mobile application does not seem to be available. Individuals can authenticate themselves with the national eID scheme, based on two factor authentication. Online access services do not seem to follow the guidelines on web accessibility.

The current Health Insurance Information Platform (PIAS) is outdated (set up in 2002) and frequently prone to ICT system failures (in February 2025, the platform encountered difficulties for extended periods of time due to technical issues, which led to multiple delays in patient treatment and difficulties in purchasing prescription medicine). The Romanian NRRP includes a project for the

introduction and operationalisation of a new health insurance IT platform. The current platform will have to be kept functional until then.

A new Strategy for the digitalisation of the health system was presented for public consultation in November 2024. The Strategy, which supports the broader National health strategy 2023-2030, is meant to use digital technology to ensure better integrated care for people. The digitalisation Strategy is built on four pillars – public policy, digital skills, infrastructure and stimulating industry and innovation. The NRRP is a core component of the strategy, financing the new PIAS, the digitalisation of public health entities, public hospitals and the development of remote medicine solutions.

According to the 2025 Eurobarometer, 71% of Romanians think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) during their daily life by 2030. This is a 9 percentage points increase compared to 2024, reflecting the growing importance of this issue for Romanians.

2024 recommendation on e-health: Expand the coverage of the online access service, make the data regarding medical devices/implants, laboratory tests, and medical images available to citizens through this online access service and onboard more categories of healthcare providers to it.

Romania made good progress in addressing the recommendation in 2024. This momentum needs to be maintained. Furthermore, when implementing the new strategy for the digitalisation of the health system and the relevant projects, it is essential to take into account the main issues that are flagged by the platform users. On the citizens' side, ease of use and extending coverage as much as possible are key priorities, particularly driven by the low level of digital skills and broad reluctance on taking up public digital solutions. On the health practitioners' side, priorities should include interoperability, standardisation, availability of multiple data types. On the platform operator's side, sufficient computing and data storage power, maintenance and continuous platform upgrade should be key features going forward.

Building a safe and human centric digital environment and preserving our democracy

Romania's political landscape in 2024 rendered it an attractive target for disinformation campaigns, particularly in the context of the country's parliamentary and presidential elections in the second half of the year. Romania experienced a surge in political messages and advertisements on social media platforms, a phenomenon exacerbated by the high usage of social media among the population.

To mitigate the risks associated with disinformation and ensure the integrity of democratic processes, **Romanian authorities have been taking steps to ensure a better coordination between the Romanian digital service coordinator (the National Authority for Management and Regulation in Communications) and all relevant institutions.**

Maintaining a constant dialogue with online platforms, taking into account the measures and tools provided by the Digital Services Act, needs to remain a priority. Such efforts are crucial in preserving the integrity of democratic processes in the face of increasing online political participation and opinion expression, which saw a significant spike in 2024 due to the electoral context. While under the EU average for all categories, Romanians were more active online in online consultations (8.82%), expressing their opinions on social media (15.89%) and using the Internet for political participation in general (18.59%) (EU averages of 10.05%, 16.48% and 20.45% respectively).

The 2025 Eurobarometer shows that 78% of Romanians think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values.

Regarding online safety, Romania reported the lowest share of the population in the EU encountering hostile or degrading online messages (20.81%), well below the EU average (33.5%). Young people aged 16-24 reported higher exposure (26.64%) to such messages than adults (21.94%). Women reported the lowest figure in the EU, at 19.66%, which may indicate different trends in internet usage, but also possible underreporting.

In spite of the positive measures adopted in 2023, including the National Strategy for the protection and promotion of children's rights, **cyber bullying remains an issue**, with a recent [survey](#) from Save the Children Romania showing that 42% of children (6-17 years) experienced being offended or humiliated on social media, with 47% indicating that this happens at least once a month. The survey also indicates that 6 out of 10 children indicate that they have felt personally affected by negative experiences online. Such findings illustrate the need to strengthen media literacy training at all levels of education.

According to the Digital Decade Eurobarometer 2025, 83% of Romanians think public authorities should take urgent action to protect children online regarding the negative impact of social media on children's mental health.

Leveraging digital transformation for a smart greening

Romania adopted its national strategy on education and climate change in 2023. A positive development has been the development of the Action Plan to implement the strategy, which structures implementation activities on four objectives: a national education programme for the environment and climate, investing in sustainable school infrastructure, identifying the necessary educational resources and training education personnel in climate change and environmental concepts. Financing for the Action plan are planned to be obtained from the Ministry of Environment, Water and Forestry, NRRP projects, MFF projects, other financing mechanisms (public-private partnerships, etc.).

Romania recently adopted a Sustainability Code, which comes with a dedicated platform to facilitate sustainability reporting that should improve how outcomes of measures taken are measured.

The Romanian roadmap underlines that the major digitalisation efforts in the areas of public services, including the digitalisation of environmental services, have strong synergies with climate action. For example, the Start-up Nation Romania programme for 2024 covers the purchase of digital equipment/solutions with impact on resource savings and sustainability, including technology for waste collecting, recycle and reuse.

The concept of energy efficiency is important for 19.43% of Romanians when purchasing electronic devices by the wider population, a percentage slightly higher than the EU average (19,35%). Similarly, the possibility of extending the lifespan of the product is also deemed more important by Romanians (14.59%) than the EU average (9.53%). However, both of these criteria are far less important than the device price (73.41%), performance (43.85%) and design (51.8%).

Romanians tend to recycle their mobile, laptop and desktop devices at about the same rate as the EU average. Romania scores higher than the EU for selling old devices, particularly mobile phones (25.67% sold or given away by Romanians compared to the EU average of 18.05%) and laptops (18.47% sold or given away by Romanians compared to the EU average of 11.78%).

According to the Digital Decade Eurobarometer 2025, 69% of Romanians consider digital technologies important to help fight climate change (below the EU average of 74%, but with an increase of 9 percentage points compared to last year), while 68% of Romanian respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities.

2024 recommendation on leveraging digital transformation for smart greening: Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs. Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

Romania made limited progress in addressing the recommendation in 2024. More has been done to promote green objectives in funding programmes, such as Start-up Nation. The national strategy on education and climate change should lead to results long term, as well. Nevertheless, there is considerable scope to improve the situation. More can be done by studying and implementing appropriate existing best practices in terms of using digital technology to reduce carbon footprint, such as digital twins for buildings or smart farming techniques for agriculture.

Annex I – National roadmap analysis

Romania's national Digital Decade strategic roadmap

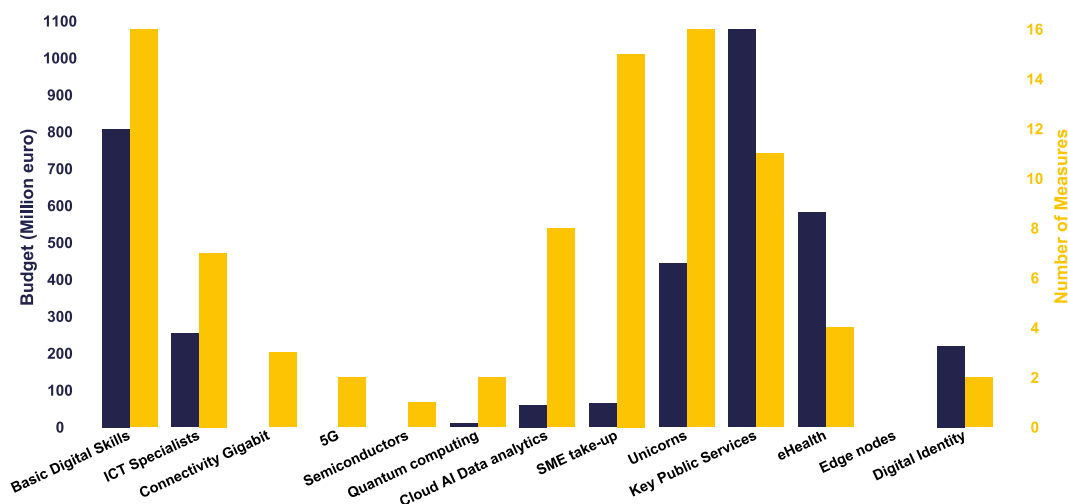
Romania adopted its national Digital Decade roadmap on 14 October 2024. The country report published in July 2024, relied on the draft roadmap, shared in December 2023 by the Romanian authorities. The difference between this draft and the formally endorsed document were not substantial and do not alter the relevant findings of the above-mentioned report.

Romanian authorities have not submitted an adjustment to the roadmap. They declared their intention to do so in line with article 8 (3) of the decision establishing the Digital Decade Policy Programme, but at the time of writing, neither a formally endorsed document, nor its draft, has been shared with the Commission.

There is hence no information available on measures taken to address the following recommendation issued in 2024:

- **TARGETS:** (i) propose targets and trajectories for edge nodes and e-health; (ii) revise the unicorns target in line with the current KPI definition; (ii) Raise the level of ambition for 5G, basic digital skills, ICT specialists, digitalisation of SMEs and the take up of advanced digital technologies.
- **MEASURES:** (i) review the measures supporting the targets for the digitalisation of business and take up of advanced digital technologies, to ensure a more comprehensive overview, as well as the objectives of the programme; (ii) continue the institutional process to develop policies in the areas of semiconductors, edge, and quantum; (iii) review the budget description of the measures funded by national budget and cohesion policy; (iv) classify the measures according to the target and/or objective that they contribute to; (v) Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including on contributing measures.

Measures and budget in national roadmap⁶



⁶ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Romania

The roadmap includes 97 measures, with a total value of almost EUR 3.59 billion (about 1.01% of GDP). They cover all Digital Decade targets, but some measures are deemed to contribute to more than one target (e.g. measures related to digitalisation of businesses), making precise attribution difficult.

Annex II – Multi-country projects and best practices

MCP and EDICs

Romania is a member of the EUROPEUM EDIC. Romania is also an observer to the Alliance for Language Technologies EDIC and is working towards setting up an EDIC on agri-food. Romania is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Romania is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Romania has contributed to the Best Practice Accelerator⁷ by sharing one case of best practice in the Digital Skills cluster (Skills in Advanced Technologies for SMEs).

EU funding for digital policies in Romania

Romania allocates 22% of its total recovery and resilience plan to digital (EUR 5.8 billion)⁸. In addition, under cohesion policy, EUR 2.7 billion (representing 9% of the country's total cohesion policy funding), is dedicated to advancing Romania's digital transformation⁹. According to JRC estimates, EUR 6.5 billion directly contribute to achieving Digital Decade targets (of which EUR 4.8 billion comes from the RRF and EUR 1.7 billion from cohesion policy funding)¹⁰.

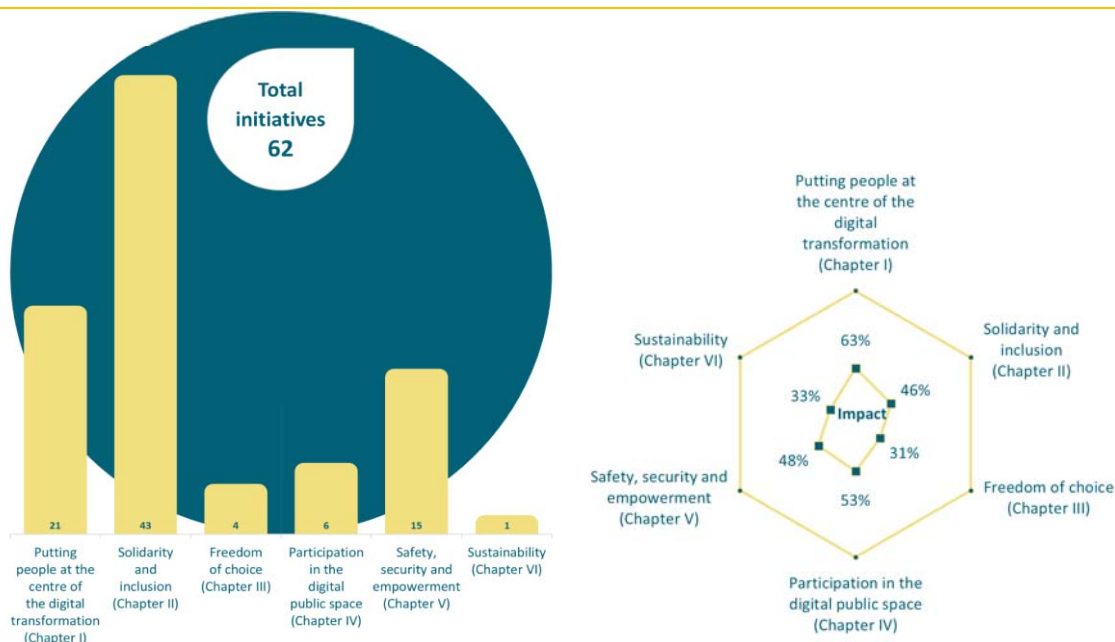
⁷ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

⁸ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

⁹ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹⁰ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹¹



Activity on Digital Rights and Principles (figure 1)

Romania has been relatively active in implementing digital rights and principles, with 62 initiatives overall and 2 new initiatives launched in 2024, showing limited progress towards its commitments. **Romania is most active in the area of Putting people at the centre of the digital transformation (I).** There is room for improvement, especially with regards to A fair digital environment (III) and Sustainability (VI) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators developed by the support study illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Romania (mainly national government) and how these are perceived by citizens.

The indicators suggest that **Romania is most successful in implementing commitments related to Putting people at the centre of the digital transformation (I).** Romania should strengthen efforts in areas where the impact of digital rights initiatives appears to be limited, notably on Freedom of choice (III).

According to the Special Eurobarometer 'Digital Decade 2025', **46% of citizens in Romania think that the EU protects their digital rights well** (a 1% increase since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting an affordable high-speed internet connection for everyone in the EU (65%, above the EU average of 57%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (44%, below the EU average of 48%).

¹¹ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
{SWD(2025) 292 final} - {SWD(2025) 293 final} - {SWD(2025) 295 final}

DIGITAL DECADE 2025 COUNTRY REPORTS

Slovakia

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Executive summary

Slovakia made some improvement in digital infrastructure deployment and take-up of broadband connectivity and 5G network services, but it still lags behind in overall rollout of digital infrastructure and in business digitalisation. Good progress was achieved in the share of ICT specialists and a promising trend emerges among the youth, with digital skills levels in line with the EU average.

Slovakia shows a substantial level of ambition in its contribution to the Digital Decade, having set 12 national targets, 83% of which aligned with the EU 2030 targets. The country is following its trajectories well with 86% of them being on track (considering 2024 trajectories defined for 7 KPIs out of 8 analysed). Slovakia addressed 27% of the 15 recommendations issued by the Commission in 2024 by making some changes through new measures.

Slovakia falls short of EU standards in most of the Digital Decade key performance indicators. Efforts are underway to bridge these gaps, but their results will require time and additional resources to fully materialise. The country is taking steps to create an environment that supports the digitalisation of SMEs and the development of digital skills, with new measures introduced in 2024. At the same time, public sector investments aim to further enhance connectivity infrastructure, with a particular focus on FTTP, and comprehensive initiatives are supporting the development of a high-performance computing ecosystem. While digital public services are below EU average levels, a comprehensive investment plan was adopted to strengthen their digitalisation. Increasing attention is being dedicated to ensuring cybersecurity.

Digital Decade KPI ⁽¹⁾	Slovakia				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	SK	EU
Fixed Very High Capacity Network (VHCN) coverage	69.1%	73.0%	5.6%	49.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	64.2%	67.8%	5.6%	-	69.2%	8.4%	-	-
Overall 5G coverage	79.0%	87.9%	11.3%	80.0%	94.3%	5.9%	98.5%	100%
Edge Nodes (estimate)	5	10	100.0%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	62.9%	2.2%	-	72.9%	2.8%	90.0%	90%
Cloud	30.2%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	7.0%	10.8%	53.1%	9.0%	13.5%	67.2%	75.0%	75%
Data analytics	30.2%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	45.8%	-	-	-	-	-	-	75%
Unicorns	0	0		0	286	4.4%	3	500
At least basic digital skills	51.3%	-	-	-	-	-	70.0%	80%
ICT specialists	4.2%	4.6%	9.5%	4.0%	5.0%	4.2%	6.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	72.1	72.6	0.7%	70.0	82.3	3.6%	100.0	100
Digital public services for businesses	79.2	73.4	-7.3%	84.0	86.2	0.9%	100.0	100
Access to e-Health records	66.3	72.0	8.6%	50.0	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the special Eurobarometer on ‘the Digital Decade’ 2025, 82% of Slovak citizens consider that the digitalisation of daily public and private services is making their lives easier. Concerning the action of the public authorities, 93% consider it important to counter and mitigate the issue of fake news and disinformation online, and regarding competitiveness, 88% consider it important to ensure that European companies can grow and become ‘European Champions’ able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

Despite some progress in deploying fixed and mobile networks, with Slovakia's VHCN and 5G deployment rate outpacing the EU average, the country still lags behind EU average levels in overall broadband coverage and uptake. This is particularly notable in rural areas, where access to these networks remains limited. Support instruments are being prepared to fund connectivity infrastructure – notably for gigabit infrastructure deployment in underserved areas and in schools, as well as social vouchers to promote digital inclusion for pupils – but an investment gap remains. Recent and ongoing changes in the regulatory landscape are also expected to impact the deployment of digital infrastructure (use of aerial infrastructure for fibre deployment, new construction law, Gigabit Infrastructure Act). Slovakia's 5G spectrum allocation currently spans the 700 MHz and 3.6 GHz frequency bands, and all telecom operators have increased their coverage over the past year, with 5G stand-alone networks expected to become available soon.

Slovak businesses show a low level of adoption of advanced technologies, with many SMEs having low digital intensity. Efforts to promote the digitalisation of businesses are ongoing, including support for SMEs through initiatives such as European Digital Innovation Hubs, the Digitrans project, digital and innovation vouchers. However, room for improvement exists in the pace of implementation, ensuring streamlined administrative procedures and expanding the pool of beneficiaries, especially among SMEs. Targeted efforts to promote AI adoption are underway, although challenges associated with informational and managerial barriers exist. Slovakia's ecosystem of innovative start-ups is small. The government has introduced a number of measures to support the growth of scale-ups and start-ups, including the establishment of a European Institute of Innovation & Technology Digital Regional Office, but limited funding remains a barrier.

Cybersecurity is a political priority, backed by various measures, such as training, monitoring and vulnerability assessment. The country is working to improve its cybersecurity with a new strategy being adopted for the 2026-2030 period.

Protecting and empowering EU people and society

While Slovakia's overall digital skills levels are lower than the EU average, a positive trend emerges among younger generations, who have digital skills comparable to their EU counterparts. To promote digital competencies, Slovakia is implementing a comprehensive and inclusive national digital skills strategy. New measures have been introduced to ensure the appropriate pre-conditions for students and teachers to develop their digital skills, with the provision of digital equipment to students from disadvantaged backgrounds and the integration of AI into teaching. Progress, however, will take time to materialise and will require structural barriers to be addressed, including the shortage of mathematics and informatics teachers, social and financial vulnerabilities and a fragmented management of digital skills policies. A promising uptrend was observed in the share of ICT specialists

within the workforce. At the same time, action is being taken to increase the number of ICT specialists and provide appropriate education and training offers, with a specific focus on women's participation in ICT, though it remains at a relatively low scale.

Improvements are needed in the digitalisation of public services, especially in terms of availability for cross-border users. Relevant measures are being implemented, including the recently adopted roadmap for digitalising administrative procedures for 16 priority life situations. These initiatives are expected to improve the availability of digital services for citizens and businesses and reduce administrative burden. At the same time, the share of e-Government users and the uptake of eID continue to be low compared to the availability of these services, and weaknesses associated with the transparency of service processes and design remain.

Slovakia has made good progress in increasing access to electronic health records and is on track to achieve 100% accessibility by 2030. However, the country still faces challenges in fully utilising its e-Health system, due to issues such as low use of e-ID and technical difficulties faced by healthcare professionals, as well as gaps in the availability of medical images to citizens and access opportunities for legal guardians, authorised individuals, and disadvantaged groups.

Leveraging digital transformation for a smart greening

Digitalisation is being explored as a means to support Slovakia's green transition, but current efforts remain limited. The 'Digital Skills for the Green Future of Slovakia' project is a flagship initiative, aiming to address the skills needs associated with the green and digital transitions, raising awareness among key stakeholders and developing reference frameworks that identify necessary green and digital skills across professions.

National Digital Decade strategic roadmap

Slovakia submitted an addendum to its national Digital Decade roadmap on 27 November 2024, containing 11 additional measures and 2 revised trajectories. While not all the new measures directly address the SDD24 recommendations, they are relevant to the reality and needs of Slovakia's digital landscape, focusing in particular on the digitalisation of businesses and development of digital skills. However, no additional public funding could be allocated to their implementation, which might negatively affect their implementation and sustainability.

The adjusted roadmap addresses a limited number of roadmap recommendations issued in 2024. All targets align with the EU level goals for 2030, except for the development of digital skills, where the country has a 70% target (instead of 80% for the EU) and ICT specialists, where the country has a goal of 6% of the workforce (instead of 10%). The revised roadmap continues to prioritise the digitalisation of businesses and development of digital skills. It is composed of 127 measures with a budget of EUR 2.26 billion, equivalent to 1.74% of GDP. It still covers all objectives of the Digital Decade, such as a human-centred digital space and bridging the digital divide, but certain aspects would require more attention, such as promoting leadership and sovereignty, and contributing to the green transformation.

Funding & projects for digital

Slovakia allocates 21% of its total recovery and resilience plan to digital (EUR 1.2 billion)¹. In addition, under cohesion policy, EUR 886 million, representing 7% of the country's total cohesion policy funding, is dedicated to advancing Slovakia's digital transformation².

Slovakia is a member of the Local Digital Twins towards the CitiVERSE EDIC. Slovakia is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Slovakia is also a participating state in the EuroHPC Joint Undertaking (JU) and in the Chips JU.

Slovakia has not yet presented any project in the framework of Digital Decade's Best Practice Accelerator³.

Digital Rights and Principles

According to a support study, Slovakia has shown rather limited activity in implementing the [European Declaration on Digital Rights and Principles](#), with 27 initiatives overall but no new initiatives launched in 2024. Slovakia is most active in the area of putting people at the centre of the digital transformation. Less activity has been identified with regards to a protected, safe and secure digital environment. Measures in the area of solidarity and inclusion and freedom of choice appear to have most impact on the ground, in contrast to those addressing safety, security and empowerment and sustainability.

Recommendations

- **VHCN/FTTP:** Facilitate infrastructure deployment by lifting administrative barriers and supporting collaboration between stakeholders, especially for the deployment of fibre optic networks.
- **SMEs:** Continue building on existing measures targeted at SMEs (e.g. EDIHs, Digitrans), expanding their scope and pool of beneficiaries, while ensuring continued support in the medium-long term.
- **AI, Cloud and Data analytics:** Accelerate the implementation of planned measures, prioritising solutions that limit administrative burden and ensure transparency. In particular, continue supporting the uptake of AI across businesses and in the public administration, addressing existing informational and managerial barriers.
- **Basic digital skills:** Continue implementing existing measures to enhance the level of digital skills across all population groups, while ensuring that all educators possess adequate training, especially IT and mathematics teachers.
- **Cybersecurity:** Continue ongoing efforts to strengthen cybersecurity, while also allowing the appropriate authorities to enforce prompt and necessary actions to mitigate identified threats or weaknesses.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

- **Digital public services:** Increase the transparency and availability of digital public services, particularly for cross-border users, including by enhancing the user-friendliness, functionalities and uptake of the e-ID mobile app and *Slovensko v Mobile app*.
- **Unicorns:** Expand existing measures aimed at supporting the growth of scale-ups and start-ups that drive innovation and invest in emerging technologies.
- **ICT specialists:** Ensure ICT studies are sufficiently offered and promoted, in line with labour market needs, as well as provide opportunities for workers to access lifelong learning and reskilling/upskilling programmes in this area.
- **Green ICT:** Develop a coherent approach to twinning the digital and green transitions.

A competitive, sovereign and resilient EU based on technological leadership

Despite ongoing efforts, Slovakia's digitalisation and innovation landscape is relatively weak compared to the EU average. Actions are underway to boost digitalisation and improve the country's digital infrastructure. The 2030 Digital Transformation Strategy of Slovakia and the National Broadband Plan are a key part of these efforts, focused on increasing economic and societal digitalisation, developing digital infrastructure, and promoting the adoption of advanced digital technologies. In this respect, EU funding, primarily from the [recovery and resilience plan](#) (RRP) and [Programme Slovakia](#), is essential. As measures seek to address the underlying structural weaknesses to digitalisation, however, results will require time to fully materialise. Simultaneously, challenges remain, such as budget constraints on the expansion of existing measures or introduction of new ones. In some cases, insufficient institutional support and lack of coordination on digital matters also hinder progress.

On digital infrastructure, Slovakia's performance was mixed compared to the EU average. While the country still lags behind in Fixed Very High Capacity Networks (VHCN), Fibre to the Premises (FTTP), and 5G networks coverage – especially in rural areas– it has experienced growth in the deployment of connectivity infrastructure, as well as in take-up of broadband connectivity and 5G network services, and is planning public investments to further support progress. However, an investment gap persists. Notably, building efficient and secure digital infrastructure is considered to be a priority, as confirmed by the 2025 Digital Decade Eurobarometer⁴ results, which reveal that by 93% of Slovak citizens find it important. This share is above the EU average of 86% and shows an increase by 6 percentage points since 2024.

The degree of digitalisation of businesses remains below expectations. To bridge the gap, the government is supporting initiatives such as the European Digital Innovation Hubs (EDIHs), the Digitrans project, a new financial instrument offering state-backed guarantees for enterprises to invest in technological tools, and support measures for the adoption of advanced digital technologies. However, ensuring that digital advances reach, in particular, small and medium sized enterprises (SMEs) represents a challenge. The country is also implementing a comprehensive approach to the development of quantum communication networks and a high-performance computing (HPC) ecosystem, seeking to build on its existing strengths.

Overall, while efforts are in place to promote the digitalisation of the economy and public administration, stakeholders have lamented the slow implementation of measures to address existing gaps and the limited digital expertise within the Slovak administration. Moreover, they highlight the need for long-term financial support and solutions powered by more up-to-date technologies. existing Moreover, they highlight

The ICT sector's contribution to the country's gross value added was 4.47% in 2022, slightly below the EU average of 5.46%.⁵ While it experienced a slight decline compared 2021 (4.62%), it has remained relatively stable since 2020 (4.61%). R&D spending in the ICT sector also underwent a slight

⁴ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

⁵ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

decline, reaching 26.90% in 2022 (from 27.58% in 2021). R&D personnel in the ICT sector represented 30.68% of total R&D personnel in 2022, almost unchanged from 30.41% in 2021.

Cybersecurity is a priority, with a new Cybersecurity strategy underway for 2026-2030. The cybersecurity attack suffered by the information system of the Office of Geodesy, Cartography and Cadastre of the Slovak Republic in January 2025 has drawn increased attention to the pressing need for robust cybersecurity measures, and actions are being taken to address existing weaknesses.

Building technological leadership: digital infrastructure and technologies

Slovakia has made progress in the rollout of its connectivity infrastructure, but still lags behind the EU average, particularly in the deployment of VHCN and FTTP networks, with rural areas remaining considerably underserved.

Connectivity infrastructure

In 2024, VHCN coverage in Slovakia reached 72.97% (2030 national target 100%), after an increase of +5.6% from 69.12% in 2023, but stood below the EU average of 82.49%. While Slovakia's VHCN growth rate exceeded the EU's 4.9% increase, the country continues to lag behind EU average level by 9.52 percentage points, as in 2023. Nonetheless, the country is well-ahead of its national trajectory. A significantly lower coverage was achieved for households in sparsely populated areas, which reached 35% in 2023 and 39.62% in 2024, both significantly below the EU's 55.59% and 61.89% respectively. Although Slovakia's growth rate of 13.2% again outperformed the EU's 11.3%, the gap between rural areas coverage at EU and national level slightly increased, reaching 22.27 percentage points.

Slovakia achieved 67.76% FTTP coverage, after a growth of +5.6%, thus standing only slightly below the EU average of 69.24% in 2024. While in 2023, Slovakia's total FTTP coverage was 64.19%, slightly above the EU's 63.87%, it exhibited a lower growth rate compared to the EU's 8.4%. Similar to VHCN coverage, for sparsely populated areas, Slovakia's FTTP coverage was significantly lower than the EU average, at 34.96% in 2023 and 39.57% in 2024, compared to the EU's 52.55% and 58.78% respectively. However, Slovakia experienced a growth rate of 13.2% between 2023 and 2024, higher than the EU's 11.9%, even though the difference with respect to the rural areas coverage at EU level slightly increased to 19.21 percentage points. **Slovakia did not provide a national trajectory for 2024 but in the deployment of VHCN, it prioritises FTTP.**

In 2024, Slovakia's 5G coverage was at 87.94% (2030 national target 98.5%), after an increase of +11.3% compared to 2023, behind the EU average of 94.35%. Nonetheless, the country is on track according to its national trajectory and experienced a stronger growth rate of 11.3% (from 79.03% in 2023) compared to the EU's growth rate of 6.0% (from 89.05% in 2023). As a result, the gap between the EU and Slovakia's level of 5G coverage decreased to 6.41 percentage points compared to the previous year (10.02). For sparsely populated areas, Slovakia's 5G coverage sharply increased by 57.2% in 2024, reaching 72.51% from 46.14% in 2023. While rural 5G coverage remained below the EU's 71.10% in 2023 and 79.57% in 2024, the country's remarkable growth rate was higher than the EU's 11.9% and allowed to decrease the distance from the EU average coverage in rural areas.

Slovakia's 5G coverage in the 3.4–3.8 GHz band also increased. Achieving a 70.57% coverage in 2024, it surpassed the EU's 67.72%, with a substantial growth rate of 48.5%, exceeding the EU's 32.6%. For households in sparsely populated areas, Slovakia's coverage was 46.69% in 2024, significantly higher than the EU's 26.19%. On the other hand, Slovakia's assignment of harmonised spectrum for 5G pioneer bands remained 66.67% in 2025, still below the EU average of 74.63%. No increase was

registered compared to 2024, but this reflects a general trend at EU level, where the level of coverage increased only minimally from the 73.4% recorded in 2024.

On the demand side, Slovakia has been making strides in increasing its 5G SIM card adoption and high-speed broadband subscriptions, but it remains behind the EU average. For subscriptions to fixed broadband with speeds of at least 1 Gbps, Slovakia was significantly below the EU level, having reached 1.76% in 2023 and 2.74% in 2024, both lower than the EU's 18.47% and 22.25%, respectively. However, Slovakia's growth rate of 55.7% significantly exceeded the EU's 20.5%. For subscriptions with speeds of at least 100 Mbps, uptake was also lower than EU level, reaching 45.15% in 2023 and 48.84% in 2024, compared to the EU's 65.90% and 71.88%, respectively. In this case, Slovakia's growth rate of 8.2% was slightly lower than the EU's 9.1%. In turn, the share of 5G SIM cards in Slovakia was 26.54% in 2024, below the EU's 35.56%. However, it grew by an impressive 81.8% from 2023, when it stood at 14.6%. As such, it outpaced the EU's increase of 63.9%.

VHCN and FTTP

Slovakia is still working towards achieving 100% coverage of households with VHCN. In doing so, it focuses on the deployment of FTTP, which is close to the EU average, despite a slowdown in 2024 associated with an increase in the number of households, having outpaced the increase in FTTP connections in absolute value.

Investments and operations in FTTP are primarily driven by one of Slovakia's main telecom operators, which has prioritised underground fibre deployment where feasible. At this stage, further expansion of fibre networks often relies on accessing aerial poles, which are partly managed by energy distribution companies. A 2020 update to the country's construction law has enabled telecom operators to access these poles, accelerating fibre deployment. However, since telecom operators need to negotiate with energy distribution companies to secure access, differing terms and approaches can slow down fibre deployment in certain areas; often, energy distribution companies prefer telecom operators to use their own fibre optic lines rather than granting direct access to the poles.

If the growth trends experienced in the deployment of fixed broadband networks over recent years were to persist, and taking into account geographical impediments and feasibility, the Slovak National Regulatory Authority (NRA) would expect to achieve a coverage rate of approximately 98% of households by 2030. However, this might be challenging due to existing investment needs. Despite planned investments, a preliminary estimate - calculated by the Slovak authorities based on the [geographical survey](#) conducted by the NRA in 2024 – indicates an **investment gap of approximately EUR 525 million to meet the country's connectivity target by 2030.**

In parallel, the evolving regulatory landscape is poised to significantly impact the deployment of digital infrastructure. The new construction law, which took effect in April 2025, aims to streamline construction procedures, but its full impact remains uncertain. Stakeholders have expressed concerns about the potential for increased administrative burdens and fees associated with deploying digital infrastructure in municipalities, associated with new reporting obligations for network providers. Specifically, the law is expected to complicate the provisioning of VHCN customer connections, and in some cases co-laying, modernisation and approval processes for new underground lines. On the other hand, the integration of the Gigabit Infrastructure Act is expected to introduce further simplifications, facilitating the rollout of fast broadband networks.

Since the adoption of Slovakia's National Broadband Plan (NBP) in 2021, followed by a feasibility study in 2023, **the country has set up two measures to improve broadband connectivity.** Programme

Slovakia provides an important contribution to these measures, allocating EUR 112 million to broadband connectivity through the European structural and investment funds (ESIF). While telecom operators welcomed these initiatives as a positive step forward, they noted the lengthy delay and process behind the adoption of these measures.

- **Gigabit infrastructure deployment in underserved areas:** this measure aims to bring high-speed internet to uncovered areas, in line with the NBP's goal of covering every household with high-speed broadband networks.
- **Social vouchers:** The social vouchers are intended to target primary and secondary school pupils from disadvantaged economic backgrounds or who have special educational needs, covering Internet connection for a period of 24 months, thus promoting digital inclusion.

Besides the above-mentioned initiatives, in 2025, the Slovak Ministry of Education is set to implement a public procurement project with a value of up to EUR 230 million to **upgrade school infrastructure and connectivity across the country**. Financed through the European Social Fund (ESF) and the Recovery and Resilience Facility (RRF), the project aims to bring every school in Slovakia up to a basic level of digital infrastructure.

Connectivity infrastructure rollout is also supported by EU level projects. Slovakia participates in the CEF Digital project [International optical connectivity between Čadca \(SVK\) and Zwardoń \(PL\)](#). The project's objective is to diversify international backbone routes by constructing a new optical path between Slovakia and Poland, which will provide connectivity infrastructure to remote territories.

Given that copper networks in Slovakia are relatively modern, there is no official copper switch-off plan. As reported by the NRA, approximately 17% of customers still use ADSL or VDSL, with a 2.5% annual decline over the past five years.

5G

Slovakia aims to achieve 98.5% 5G coverage, a target that remains unchanged since the 2023 roadmap. This decision reflects the technical and economic challenges to achieving 100% coverage, as highlighted by Slovak authorities. However, the strong growth rate experienced by Slovakia since 2023 in 5G coverage led it to increase the intermediate coverage levels expected between 2025 and 2028. Given this promising trend, the 2030 target appears achievable.

Slovakia's 5G spectrum allocation currently spans the 700 MHz, 3.6 GHz, and 26 GHz frequency bands. The 26 GHz band remains unallocated due to a lack of interest from operators, but it is technically ready for allocation, except for a 400 MHz segment reserved for the military. Ongoing talks with the military aim to address this issue and clear the way for the band's allocation. At the same time, it should be noted that the 700 MHz band is experiencing interference from Ukraine's use of the same frequency band, affecting 5G operations in eastern Slovakia. Negotiations are currently ongoing within the [Radio Spectrum Policy Group](#), but a solution is yet to be found.

All telecom operators have increased their coverage over the past year, working in different frequency bands. Four telecom operators are active in the market, each offering both fixed and mobile network services, out of which two offer 5G connectivity.

An auction is planned to assign the rights to use available frequencies (specifically, 800 MHz, 900 MHz, 1 500 MHz, 2 100 MHz, and 2 600 MHz) to network operators, as the current licences are set to expire between 2026 and 2028. Ahead of the auction, an [assessment of the competitive, technical and economic situation in the mobile telecommunications market](#) was conducted. This

allowed the Broadband Competence Office to identify potential measures to foster effective competition (e.g. limiting the maximum range of frequencies allocated to individual undertakings) as part of the issuance of individual permits for frequency use.

There are currently no publicly available 5G stand-alone networks in Slovakia, but such networks are expected to become available soon. Three mobile operators have been granted individual licenses for the 700 MHz band and are required to ensure the operation of the 5G stand-alone core network by the end of 2025. One operator has announced its plans to launch the 5G stand-alone core network in the second quarter of 2025, while another has made progress in this area, with two stand-alone 5G networks on university campuses and a private one currently operational.

CEF Digital is also seen as a valuable source of funding and support in 5G network deployment. One of Slovakia's biggest telecom operators is involved in the CEF Digital funded project [TUKÉ 5G Infrastructure for Smart Communities](#), which will deploy private 5G network elements at the Košice university. Slovakia was also involved in the CEF Digital project [Study of 5G/FRMCS implementation on the railway corridor Brno \(CZ\) – Bratislava \(SK\)](#), which ended in May 2024. The study sought to improve 5G coverage along railway corridors, to offer better voice and data services for passengers. A workshop took place in March to discuss the findings and determine the project's continuation, in collaboration with the Czech ministry.

2024 recommendations on connectivity infrastructure: i) Develop targeted initiatives to fill the investment gap and secure public and private funding in broadband coverage and uptake to address the identified gigabit and 5G connectivity challenges, especially in rural areas. (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

In 2024, Slovakia continued the implementation of existing measures but did not take any new measure. However, an important development was the proposal of two new measures to support the deployment of connectivity infrastructure, especially in underserved areas.

The upcoming auction for allocating available frequencies is aimed at fostering competition at the infrastructure level, which should contribute to creating conditions for increased competition on the wholesale market. In parallel, the development of 5G stand-alone networks is ongoing.

Semiconductors

Slovakia's contribution to the semiconductor ecosystem remains limited, but the country is seeking to build its production capacity to become part of the value chain.

While no new measures were introduced in the roadmap, the implementation of existing ones continues, despite some challenges. Following a 2023 call for proposals by the Research and Innovation Authority (VAIA), EUR 20 million were allocated to four projects in the microelectronics sector, part of the European Union's Important Projects of Common European Interest (IPCEI ME/CT) initiative. While two projects are currently underway, receiving funding from the RRF, the other two were unable to proceed, due to reasons such as failing to meet financing criteria or rejecting the grant agreement.

The two ongoing projects aim to develop cutting-edge technologies. One includes product development of chips and embedded systems, aimed at offering the best performance for specific memristor-based neuromorphic applications across the entire value chain and large-scale

industrialisation. The other seeks to develop a new generation of wireless receiver technology integrated on a single chip, meant to save costs and reduce electricity consumption. Although each project received EUR 5 million in financing, they face a combined financing gap of over EUR 70 million. Discussions are ongoing to secure future funding, with one potential solution being integration into the Strategic Technologies for Europe Platform (STEP).

Edge nodes

The Edge Node Observatory estimates that Slovakia had 10 edge nodes by 2024, double the number of edge nodes in 2023 (estimated number revised from 2023), and was still one of the countries with the fewest edge nodes in the EU. However, no specific measures have been introduced so far to promote the development of edge nodes, and Slovakia is currently unable to define its contribution to the EU's target in this area. The country is looking to identify, within the public administration, the department that can lead concerted efforts for the deployment of edge nodes.

Quantum technologies

Slovakia is working on the construction of a quantum communication network, with funds from the Digital Europe programme (under the EuroQCI initiative) and the RRP. The network is meant to connect 12 Slovak academic institutions, from Bratislava to Košice. Slovakia is taking a strategic approach to quantum technology development, building on its strengths through a range of measures. These initiatives focus on establishing the necessary infrastructure (including cross-border communication lines, a satellite quantum communication node, and a virtual institute for quantum information research) and on educational activities and trainings. No new measures were introduced in the adjusted Digital Decade roadmap.

2024 recommendation on semiconductors, edge nodes and quantum: Foster increased involvement at the European level to promote the adoption of semiconductors, edge nodes, and quantum technologies.

In 2024, Slovakia continued the implementation of existing measures but did not take any new measure. While emphasis has been placed on the field of quantum networks, in which a concerted and comprehensive approach is ongoing, room for improvement exists in the fields of semiconductors and edge nodes, particularly in coordinating actions at institutional level.

In its Digital Transformation Action Plan, **Slovakia has put in place a coordinated approach to promote the development of a high-performance computing (HPC) ecosystem.** This involves supporting the development and sustainability of the national HPC infrastructure, education and competence development in HPC, and the adoption of HPC within the public administration and among businesses. Notably, Slovakia will develop a supercomputer for the National Supercomputing Centre as part of its RRP. The supercomputer will have 2 nodes, one in the Slovak Academy of Sciences and one in the Technological University in Kosice, with procurements procedures having been signed.

In relation to this, **a new measure was introduced in the roadmap, aimed at establishing and operating a robust supercomputer infrastructure ecosystem.** This ecosystem will serve as a hub for HPC technology, encompassing all aspects of the technology life cycle, from development and promotion to education and capacity building. The National Ecosystem for Supercomputing will join the European Joint Undertaking for High Performance Computing (Euro HPC) initiative.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Slovakia's innovation and digitalisation performance is below that of other EU Member States. The Slovak economy is affected by slow technology adoption among businesses, particularly SMEs, low public spending on research and innovation, and a weak digital infrastructure. This is compounded by a fragmented governance structure and a poor business environment, hindering the country's global competitiveness. Nonetheless, the country is making considerable efforts in implementing a set of policy measures to promote the digitalisation of businesses.

SMEs with at least basic digital intensity

In 2024, 62.90% of Slovak SMEs had at least a basic level of digital intensity (2030 national target: 90%), after a year-on-year growth rate of +2.2% between 2022 and 2024. As such, Slovakia still fell below the EU average of 72.91%. Among the most digitally advanced SMEs, only 26.50% achieved a high or very high digital intensity. This is below the EU average of 32.66% and shows a generally low level of digitalisation. Looking at the uptake of specific technologies or services, a smaller share of Slovak SMEs provided remote working options⁶ compared to the EU average, and they were also less likely to hire or train ICT specialists⁷. Moreover, a relatively low share of SMEs in Slovakia had documents on measures, practices or procedures to ensure ICT security⁸. Overall, despite some progress in the digitalisation of Slovak SMEs, efforts need to be intensified to bridge the gap with the EU average.

Slovakia's 2030 target corresponds to the EU target of at least 90% of SMEs having at least basic digital intensity, as per the initial roadmap submitted in 2023. Considering the ambitious target, efforts to support the digitalisation of SMEs should be stepped up in this area. While SMEs play a central role in the Slovak economy, constituting 96% of enterprises with 10 or more employees in 2022, the Slovak government has only few, small-scale measures in place targeting SMEs and their digitalisation process.

Despite existing limitations, Slovakia is working on creating an environment that supports the digitalisation of SMEs, focusing on two areas: improving access to digital services and increasing investment. To enhance access to digital services, awareness-raising, training and support measures are being implemented, and a platform for exchange is being put in place. In this context, two new measures were included in the adjusted roadmap, and one was revised:

- **Support for the operation of EDIHs was extended up to 2030**, with the allocation of EUR 7 million from 2027. This marks a positive development, as EDIHs have proven to play an important role in providing SMEs with a space for testing and experimentation, access to technology, and help in obtaining additional financial support or improving employees' digital skills. Slovakia has five EDIHs, which cover a range of areas, including Artificial Ontelligence (AI), digitalisation of businesses, green digitalisation, and innovative healthcare. Notably, the Slovak Centre for Digital Innovations EDIH has received the European Commission's seal of excellence. The Slovak EDIHs' services are in high demand, which shows that businesses

⁶ In 2024, 71.26% of Slovak SMEs provided remote access to the enterprise's e-mail system, documents or applications to employees, against the EU average of 83.01%; 37.07% of Slovak SMEs conducted remote online meetings, against the EU average of 51.65%.

⁷ In 2024, 16.59% of Slovak SMEs provided training to their personnel to develop their ICT skills, against the EU average of 20.76%; 17.25% of Slovak SMEs employed ICT/IT specialists, against the EU average of 20.05%.

⁸ In 2024, 22.89% of Slovak SMEs had document(s) on measures, practices or procedures on ICT security, against the EU average of 34.11%; 69.40% of Slovak SMEs used at least 3 ICT security measures, against the EU average of 75.83%.

recognise their added value and need for support. The new measure, which is financed by the RRF and Digital Europe Programme (DEP), represents an important commitment to supporting their operation in the medium term.

- **Digitrans Slovakia** is a promising new project, piloted with the support of the World Bank and funds from Programme Slovakia. It consists of a consultancy and training programme, combining technical assistance through a targeted capacity-building programme and financial grants to support the implementation of the programme, with a reimbursement of up to EUR 2 000. The measure targets the least-digitalised micro and small businesses and thus seeks to complement the services provided by the EDIHs. The pilot was implemented in Slovakia, Poland and Bulgaria, and has received highly positive feedback by participants. Under the plan, 500 businesses are to be supported per year between 2025 and 2027. Although the current beneficiary pool is relatively small, the Slovak government is optimistic about the project's potential and is open to expanding it, contingent on continued success and resource availability.
- The **establishment of a National Centre for Digital Economy and Society**, planned in the roadmap submitted in 2023, is **no longer planned**. The creation of a new body was deemed unnecessary, given the already rich existing institutional environment. Instead, the Ministry of Investments, Regional development and Informatisation (MIRRI) will directly undertake the activities originally planned for the new body, granting institutional support and coordination for various digital initiatives and organisations and the implementation of the relevant digitalisation strategies in Slovakia. Relying on existing structures will allow for the provision of faster and streamlined support.

To complement efforts to digitalise SMEs, the Slovak government is working on easing access to investment. Although financial barriers initially delayed the rollout of planned measures, at the end of 2024, the Ministry of Economy was able to launch a new [financial instrument](#) offering state-backed guarantees to commercial banks; in turn, these banks can provide loans to SMEs, which can be associated with grant support, aimed at co-financing investments in technological tools, digitalisation and innovation projects. This initiative, currently available through selected commercial banks using RRF resources, will expand to additional financial institutions through funds from Programme Slovakia.

On the other hand, **the planned measure aimed at the dissemination of education on the use of digital technologies was removed from the roadmap**. This measure represented a positive initiative, aimed at raising awareness of the impact and potential benefits of digitalisation for SMEs. Its removal is unfortunate, considering that only a few measures specifically targeting SMEs are included in the roadmap.

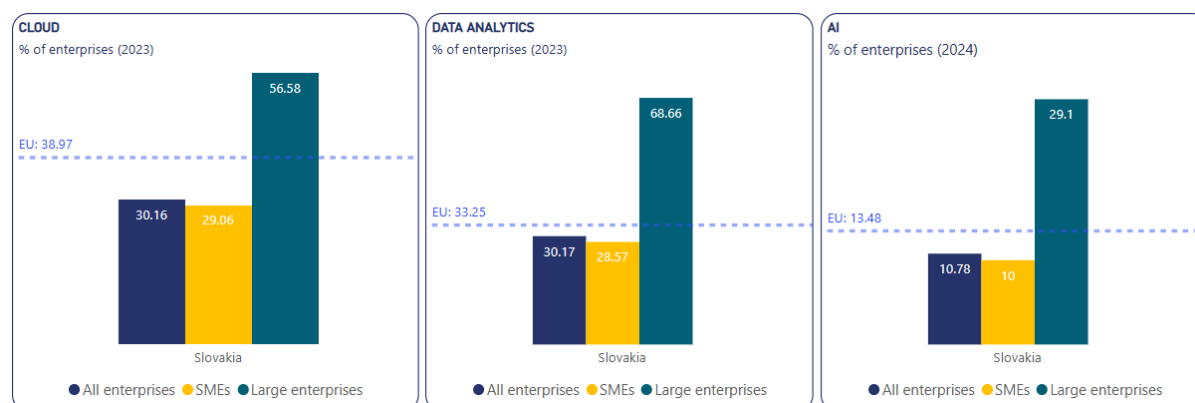
2024 recommendation on digitalisation of SMEs: Accelerate the diffusion of innovative technologies and solutions across the economy to improve digital adoption and competitiveness.

Slovakia made some efforts to address the recommendation through new policy actions in 2024. Slovakia's commitment to supporting the **continued operation of the EDIHs** until 2030 and the **Digitrans project** represent a positive step in ensuring the availability of digital services to SMEs in the longer term. Notably, the complementary nature of these two measures, with Digitrans targeting the least digitally intense SMEs, will contribute to addressing the disparities in digitalisation levels across the SME sector. Moreover, the newly introduced **Digital Policy Forum** and Slovakia's participation in the **European Digital Infrastructure Consortium - Alliance for Language Technology (ALT-EDIC)** (see next section) are also expected to contribute to catalysing digital

transformation among businesses, including SMEs, and to facilitate a collaborative and dynamic ecosystem.

However, it is worth noting that no additional expenditure from the public budget is planned for the new measures and EU funds appear to be insufficient to meet the demand. Hence, reliance on limited domestic budget allocations might constrain the government's ability to adapt to changing circumstances or scale up successful new initiatives, potentially hindering their long-term impact.

Take up of cloud/AI/data analytics



According to the most recent data, in 2024, 10.78% of Slovak firms were using AI (2030 national target: 75%), which represents an increase of +53.13% compared to the share of firms using AI in 2023. However, AI uptake still stood below the EU average of 13.48%, which saw a relatively stronger increase of 67.2% between 2023 and 2024. Nonetheless, **the country is on track according to its national trajectory**. More specifically, a significant difference exists between the uptake among SMEs, which was 10%, and that of large enterprises, of which 29.1% were using AI. This corresponds to a gap of 19.1 percentage points between SMEs and large enterprises, which is lower than the corresponding EU level gap of 28.53.

In 2023, 30.16% of Slovak firms were using cloud computing services (2030 national target: 75%), a share which remained essentially unchanged compared to 2021, and below the EU average of 38.97%. More specifically, while SMEs had an uptake of 29.06%, 56.58% of large enterprises were using cloud computing services. This amounts to a difference of 27.52 percentage points in uptake between SMEs and large enterprises in Slovakia, which is lower than the EU level gap of 31.68 percentage points.

30.17% of enterprises in Slovakia were using data analytics in 2023 (2030 national target: 75%), thus falling behind the EU average of 33.25%. Notably, the uptake was lower among SMEs - 28.57% - compared to 68.66% among large enterprises. This indicates a gap of 40.09 percentage points between SMEs and large enterprises, which is in line with the EU level gap.

When looking at all three technologies together, in 2023, 45.76% of enterprises in Slovakia used either AI, cloud, or data analytics, considerably below the EU average of 54.7%. Large enterprises had a significantly higher uptake of 82.78%, while use among SMEs reached 44.22%. This indicates a difference of 38.56 percentage points in uptake between SMEs and large enterprises in Slovakia, which is higher than the EU level gap of 32.97. In conclusion, Slovakia's adoption of cloud computing, data analytics, and AI technologies fell short of the EU average, with the country exhibiting lower uptake in all areas. The gap between SMEs and large enterprises was substantial, reflecting broader EU trends.

Various measures on the digitalisation of businesses are included in Slovakia's roadmap. These are mainly of a horizontal nature, focusing on multiple technologies at once. As part of the measures' implementation over the past two years, for instance, Slovakia has disbursed digital and innovation vouchers. While these were met with high demand by beneficiaries, heavy administrative procedures and requirements presented some challenges. Support is also being provided for research and development (R&D) projects and receiving a positive response. However, stakeholders underlined that execution has been slow in this area, with more concrete advancements and additional resources needed.

With the goal of creating a more favourable business environment that promotes digitalisation and innovation, two new measures were introduced in Slovakia's roadmap:

- **The Digital Policy Forum** will serve as a regular platform for cross-sectoral dialogue. Organised by MIRRI, the Forum will bring together industry, academia, civil society, and consumers to discuss digital policies and strategies, fostering collaboration and knowledge-sharing between the public and private sectors. By facilitating a coordinated approach to digitalisation, the Forum aims to promote the effective adoption of digital technologies among businesses.
- **Slovakia actively participates in the ALT-EDIC as an observer.** The ALT-EDIC is expected to enable Slovak enterprises to draw inspiration for alternative uses of data solutions in the field of language models, thereby expanding the scope of big data analytics.

- **Cloud**

Slovakia's 2030 target for the uptake of cloud computing services among enterprises remains set at 75%, the same as the EU level target, as per the initial roadmap submitted in 2023. Among the three technologies considered (AI, cloud and data analytics), cloud computing services are the least widespread. In its roadmap, Slovakia prioritises horizontal measures, supporting the adoption of different technologies, depending on businesses' specific needs. The only measure directly targeted at cloud is the cloud popularisation campaign planned for 2027 and already included in the roadmap in 2023. Considering these factors, the 2030 target appears difficult to achieve.

- **Data Analytics**

Slovakia's 2030 target for the uptake of data analytics remains set at 75%, the same as the EU level target. Slovak businesses perform relatively better in the field of data analytics compared to the other two technologies considered (AI and cloud), but there is still room for improvement to catch up with EU peers. Similarly to cloud computing services, the only measure directly targeted at the uptake of data analytics is a popularisation campaign, planned from 2027. However, given the challenges ahead, achieving the 2030 target may prove difficult without additional support.

- **Artificial Intelligence**

Slovakia remains committed to achieving 75% AI adoption by businesses by 2030, in line with the EU target. Progress to date is encouraging, aligning with the country's projected trajectory. As the rate of adoption increases, however, the strong growth experienced between 2023 and 2024 might slow down. Slovakia's roadmap focuses on encouraging the uptake of AI by businesses, with several planned activities, complemented by measures to promote education and the acquisition of skills in the AI field. Relevant developments in 2024 included: the establishment of an AI information point; activities to enhance AI skills among non-ICT specialists; preparation of an AI popularisation campaign; and participation in AI initiatives at EU level.

Nonetheless, the 2030 target is highly ambitious and will require significant efforts to be achieved. No new measures were introduced in the roadmap through the adjustment, but the Slovak government acknowledged the potential to introduce new initiatives related to AI in the future, reflecting its ongoing commitment to harnessing AI's transformative potential. However, as stressed by Slovak authorities, businesses face informational barriers due to a lack of understanding of AI's full potential and managerial barriers linked to established practices and inadequate digital transformation skills. Additionally, generally low levels of digitalisation among businesses hinder the adoption of more advanced technologies, such as AI.

2024 recommendations on AI, Cloud and Data analytics: (i) Support the development, roll out and take up, including support for capital investment in cloud computing, artificial intelligence, data analytics, and other cutting-edge technologies.

Slovakia made some efforts to address the first recommendation through new policy actions in 2024. While these focus on the digitalisation of the broader business environment rather than on the development, roll out and take up of specific technologies, they can make a positive contribution towards addressing the recommendation. The Digital Policy Forum and participation in the ALT-EDIC aim to drive innovation and digitalisation, by fostering collaboration and knowledge-sharing between the public and private sectors. In addition, the planned continuation of the EDIHs and the Digitrans project are aimed at supporting the adoption and effective use of digital technologies, especially among SMEs.

Unicorns, scale-ups and start-ups

At the beginning of 2024, Slovakia still had no unicorns (2030 national target: 3). At EU level, there were 286 unicorns in 2024. As of December 2024, Slovakia had two potential unicorns, though still facing a long way ahead in reaching the scale and valuation required to be considered unicorns. Considering these factors, reaching the 2030 target will represent a challenge for the country.

Slovakia's ecosystem of innovative start-ups is small. The country's venture capital and private equity markets are underdeveloped, with investment levels below the EU average. Support for innovative start-ups is limited, but some actions have been taken for the development of seed venture capital funds, primarily through the coordination of the Slovak Investment Holding. One notable collaboration involves the Venture to Future Fund, which provides venture capital, primarily at the scale-up level. The government also offers counselling and assistance to companies to participate in the European Innovation Council (EIC) Accelerator programme. Compared to other Member States, only a limited number of Slovak businesses have been involved in the EIC Accelerator, highlighting a need for additional support to encourage entrepreneurship and innovation.

To further support the growth of scale-ups and start-ups, a new measure aimed at establishing a European Institute of Innovation and Technology (EIT) Digital Regional Office was introduced in the roadmap. The goal for the EIT Regional Office is to create a supportive ecosystem for entrepreneurs and innovative businesses to network with other actors and source funding, connecting them with the broader European innovation network.

2024 recommendation on unicorns: Expand existing measures aimed at supporting the growth of scale-ups and start-ups that drive innovation and invest in emerging technologies.

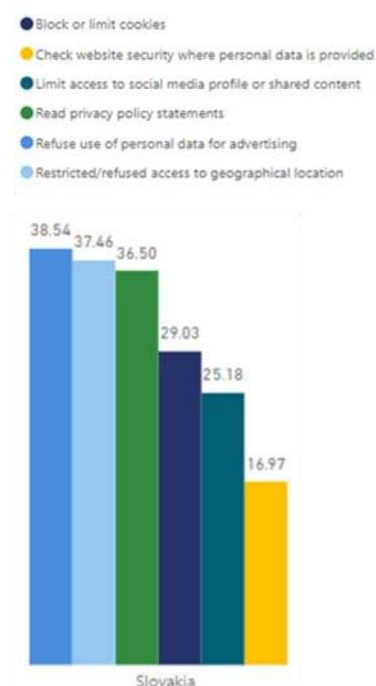
Slovakia made some efforts to address the recommendation through new policy actions in 2024, with the commitment to establish an EIT Digital Regional Office. However, the limited availability of

funding, at both national and EU level, continues to represent a barrier to the growth of start-ups and scale-ups.

Strengthening Cybersecurity & Resilience

In Slovakia, approximately 2 out of 3 of individuals have at least basic digital safety skills, with 63.91% of individuals having taken at least one action in 2023 to protect their personal data online, only slightly below the EU average of 69.55%. About 1 out of 3 people (33.99%) took three or more such actions (and therefore could be considered as having above basic digital safety skills). The most common action taken was to refuse the use of personal data for advertising purposes (38.54%). Conversely, checking the security of websites where personal data was provided was the least frequently taken safety measure (16.97%).

Type of activities to protect personal data online (% of individuals)



Slovak enterprises fare well in terms of ICT security incidents and employee awareness. The number of enterprises that experienced unavailability of ICT services due to external attacks (e.g. ransomware attacks, Denial of Service attacks) slightly increased to 2.02% in 2024, from 1.78% in 2022, but remained below the 2024 EU average (3.43%). A fairly high share of enterprises (87.13%) had deployed some ICT security measures in 2022 (though slightly below the EU average of 92.76%) and had made their employees aware of their obligations in ICT security related issues (61.44%, above the EU average of 59.97%).

At the end of 2024, **Slovakia was leading in the roll out of the secure Internet Protocol version 6 (IPv6) for servers but had fallen behind in the deployment of IPv6 for users and in the adoption of Domain Name System Security Extensions (DNSSEC).** The degree of deployment of IPv6, which ensures the scalability, stability, and security of the internet, reveals a mixed picture. On the user side, only 8% of end-user hosts could connect to the internet using IPv6, significantly lower than the EU average of 36%. On the server side, however, 51% of internet services could operate over IPv6, exceeding the EU average of 17%. This discrepancy makes Slovakia a laggard in end-user IPv6 adoption but a leader in server-side IPv6 roll out at the EU level. In term of Domain Name System (DNS), a high level of adoption of DNSSEC is important to protect the integrity of the DNS internet infrastructure, ensuring the interoperability and security of the global cyberspace. Here Slovakia reached a 24% DNSSEC validation rate (i.e. verification of the authenticity of responses sent by name servers to clients, using a digital signature technology), significantly below the EU average of 47%.

Cybersecurity is currently a priority topic on Slovakia's political agenda, and an increasing number of cybersecurity incidents are being detected. This is likely due to a combination of increasingly frequent attacks (90% of which are phishing attacks) and higher reporting rates, motivated by increased awareness. In [January 2025](#), the information system of the Office of Geodesy, Cartography and Cadastre of the Slovak Republic was hit by the largest cybersecurity attack in the history of the

country. The incident raised concerns about the current security level of digital public services and generated increased attention to cybersecurity matters.

This is confirmed by the 2025 Eurobarometer results, which reveal that for 90% of Slovak citizens, improved cybersecurity, better protection of online data and safety of digital technologies would significantly facilitate the daily use of digital technologies. This result is considerably higher than the EU average (81%) and reveals an increase of 5 percentage points compared to 2024.

A range of cybersecurity measures are being implemented as part of the current Cybersecurity Strategy (2021-2025), including incident response and handling; security monitoring; and vulnerability assessments across the public sector; moreover, cybersecurity training is being offered to businesses, public sector staff and schools through the dedicated National Competence Centre. However, **MIRRI's limited authority to enforce remediation measures when threats or weaknesses are detected hinders its ability to drive meaningful change and increase cybersecurity**. Only recommendations can be issued by MIRRI, and entities sometimes fail to implement them.

A new cybersecurity strategy for 2026-2030 will be adopted, building on the current strategy by incorporating new priorities and strengthening critical areas. Notably, the Strategy will align with the NIS2 Directive, as implemented through the Cybersecurity Act entered into force on January 1, 2025. Key actions will include a review of existing legislation to ensure compliance with cybersecurity standards and the expansion of the capabilities of the Government Security Operations Centre with the provision of services to additional organisations. The Achilles Project will conduct monthly vulnerability assessments for the public sector. Additionally, MIRRI will offer a Threat Intelligence Service to share knowledge and insights on vulnerabilities with various ministries. Specific emphasis will be placed on implementing proactive measures, such as strengthening penetration testing services, which, due to limited available resources, will be initially targeted at the healthcare and critical infrastructure sectors. Training in cybersecurity skills will also continue to be a priority, particularly for technical staff and managers, through dedicated training modules. Various measures will be financed by the RRF to boost cybersecurity within the public administration, by standardising technical and procedural cybersecurity solutions, improving cybersecurity training and skills for public administration staff, as well as developing an early response system.

A new measure was introduced in the roadmap to highlight the operation of the **Cyber Security Competence and Certification Centre** under Regulation (EU) 2021/887. The Centre carries out national coordination, education, conformity assessment and expert activities in cybersecurity.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Slovakia is implementing a comprehensive set of measures, under the umbrella of the Digital Skills Strategy, to improve digital skills learning in an inclusive manner. The country has identified the most digitally vulnerable groups, which include older adults (55+), financially disadvantaged groups, and Roma communities, and is taking targeted actions to improve access to digital technologies among these groups. The importance of women's participation in the ICT sector is also recognised, with targeted initiatives both in the educational and professional spheres. Overall, measures to improve digital skills and increase the share of ICT specialists are being gradually implemented, though results will likely require several years to materialise.

At the same time, according to 2025 Eurobarometer results, human support is considered highly important in today's digital age, with 89% of respondents agreeing that assistance in accessing and using digital technologies would make their daily use easier (considerably above the EU average of 77%). Furthermore, 92% believe that public authorities should prioritise ensuring people receive adequate human support to navigate the transformation brought about by digital technologies and services.

Equipping people with digital skills

Basic Digital Skills

In 2023, 51.31% of Slovakia's population (ages 16-74) had at least basic digital skills (2030 national target: 70%), after a decline of -7.01% from 2021 levels (55.18%). Thus, the share of individuals with at least basic digital skills in 2023 was below the EU average of 55.56%. However, when the results are broken by age, education level, and living area, a more nuanced picture emerges. Younger people's results in Slovakia align with the EU average, but disparities persist for the older generations, those with lower education levels, and rural residents, who have weaker digital skills.

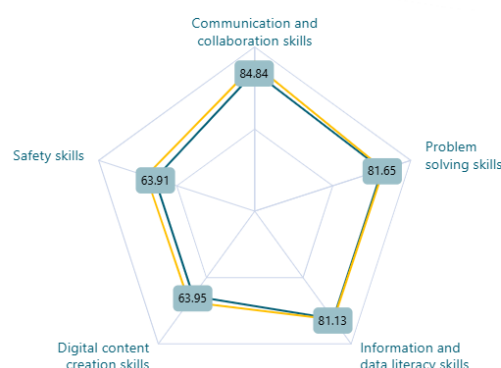
A clear divide appears across age groups. Digital skills among the lower age groups of the Slovak population (ages 16 to 24, 25 to 34, and 35 to 44) are in line with the EU average. Young people (ages 16 to 24) are the most digitally skilled in Slovakia, with a rate of 70.58% having at least basic digital skills, slightly above the EU average of 69.98% for the same group. Looking at older population groups, however, there is a gap, which becomes progressively wider with age, against the corresponding EU levels. Among working age groups, 51.91% of 45 to 54-year-olds have at least basic digital skills (EU average: 57.75%), while 38.23% of 55 to 64-year-olds have at least basic digital skills (EU average: 44.31%). The 65 to 74-year-olds have the lowest level of digital skills, at 18.77%, falling below the EU average of 28.19%.

Individuals with lower levels of formal education and those living in rural areas also tend to have a lower level of digital skills. Among those with a high level of formal education, 77.31% have at least basic digital skills, which is only slightly less than the EU average of 79.83%. For individuals with low formal education, the percentage with at least basic digital skills drops to 32.28%, only slightly below

the EU level (33.61%). This is 19.03 percentage points below the national average, which is less than the EU average gap of 21.95 percentage points. Rural residents in Slovakia show lower levels of digital skills, at 44.03%, which is below the EU average for rural areas (47.50%). The gap between rural areas and the national average is 7.28 percentage points, narrower than the EU average gap of 8.06 percentage points.

Looking at the specific **digital skills making up the Digital Skills Index, the Slovak respondents scored best in communication and collaboration**, with a score of 84.84%, slightly under the EU average of 89.33%. On the other hand, safety skills were a relatively weaker point, with Slovakia scoring 63.91%, below the EU average of 69.55%. Room for improvement also exists in digital content creation, at 63.95%, against the EU average of 68.28%. On problem solving skills, Slovakia reaches 81.65%, close to the EU average (82.53%).

Digital Skills Index components
% of individuals



Legend
— MS — EU

The **IT Fitness Test** is a free online assessment of tool for digital skills, which has been available in Slovakia since 2010 and is targeted at elementary school and university students and teachers. The

test allows takers to gain an understanding of their digital skills and weaknesses, thus providing a basis for improvement. The IT Fitness Test 2024 measures digital skills in 5 areas, including Internet, Security, Complex Tasks, Office Tools and Collaborative Tools and Social Networks.⁹ In the [2024 testing round](#), students aged 7-16 averaged a success rate of 52.10%, indicating an average level of basic IT knowledge and skills. Respondents aged 15+ achieved a lower success rate of 45.38%. Although these findings are not representative of the entire Slovak student population, they suggest that skill levels fall below expectations.

Slovakia has a target of 70% of its population achieving at least basic digital skills by 2030, below the EU target of 80%. This target has remained unchanged since the 2023 roadmap submission. Improving the population's digital skills is a gradual and ongoing process, which will require systematic barriers to be addressed. These barriers include: declining mathematical literacy among students; a shortage of mathematics and IT teachers; social and financial vulnerabilities; and fragmentation in the management of digital skills policies between different public authorities. Considering these factors, it is unlikely that the target will be fully achieved by 2030.

Slovakia is committed to boosting digital skills nationwide, even though it may take some time to see tangible results. Its 2023 National Digital Skills Strategy focuses on improving access to digital devices, education, and lifelong learning, in particular for digitally vulnerable groups. Recent measures include, for instance, the disbursement of a EUR 350 voucher to 130 000 first-grade secondary school students from disadvantaged backgrounds for purchasing digital devices (Digital Allowance for Pupils pilot project). Teacher support measures include the deployment of [Digital Coordinators](#) in schools to help improve the digital skills of staff; the provision of Microsoft 365 licences; and the translation of the DigComp and DigComEdu, which are now being incorporated into teacher preparation

⁹ While the Test partially reflects the [DigComp framework](#), it does not fully reflect the components of the Digital Skills Index. Therefore, no direct comparisons between the two can be performed.

programmes. More broadly, the curriculum reform launched in 2023 for primary and lower secondary education – which is gradually being rolled out – aims to equip students with essential 21st century skills, such as critical thinking and digital literacy. The goals of the reform are to integrate the learning of digital skills across subjects and to reintroduce an additional hour for teaching ICT each week.

Although these are not included in the roadmap, **various initiatives targeting jobseekers** have also been launched. The project [Employment Counselling](#) offers digital skills assessments and financial support for further digital skills education, while the national project [Activating Young NEETs for the Digital Age](#) aims to develop testing tools for assessing digital skills and identifying young people's predispositions for individual career paths. The [Digital Counsellor](#) project supports workers in adapting to market changes brought about by the digital transformation, AI, and automation. Through diagnostic testing and coaching, the project helps jobseekers transition to new, sustainable jobs.

The adjusted roadmap introduced two new measures aimed at creating the appropriate conditions for students and teachers to develop their digital skills.

- **Provision of a financial contribution to vulnerable final-year primary and first-year secondary school students to acquire digital devices** (laptop and keyboard). This measure builds on the previously implemented 'Digital Pupil Allowance', aiming to ensure that all students have access to digital equipment.
- **Integration of an AI-powered assistant into the education system.** The goal of this measure is to automate administrative tasks for teachers, freeing up more time for interactions with students. Simultaneously, the tool is expected to increase teachers' familiarity with AI tools. This initiative seeks to promote the development of digital skills within the education system, while helping to address the pressing issue of teacher shortages faced by Slovakia.

On the other hand, **lack of funding led to the removal of a measure that aimed to provide Industry 4.0 training to all population groups, including older people and pupils.** This measure would have offered a range of digital skills training, including basic ICT and coding, and was a valuable opportunity for a diverse range of beneficiaries to acquire the skills they need to succeed in the digital economy.

2024 recommendation on basic digital skills: (i) Expedite the implementation of new curricula in primary and secondary schools, incorporating robust programmes focused on informatics and digital skills. (ii) Implement a comprehensive upskilling program for schoolteachers to ensure that all educators possess adequate digital competencies.

Slovakia made some efforts to address the recommendations through new policy actions in 2024, although these do so only indirectly. The provision of digital equipment to students and the integration of AI tools into education play a supporting role in establishing foundational conditions for widespread digital skills development, which is crucial for the effective implementation of the recommendations, but neither directly targets the recommendations. At the same time, while these new measures represent a positive step forward, their long-term viability might be compromised by the lack of public funding allocated to them.

In addition to the new initiatives, the ongoing curriculum reform and existing measures targeted at students, teachers, jobseekers and vulnerable population groups are relevant steps towards implementing the recommendations. The provision of social vouchers to pay for high-speed internet connection and digitalisation of school infrastructure (mentioned above) will also contribute to the development of digital skills, especially among young individuals.

Slovakia acknowledges the existence of a digital division in Slovak society and has implemented initiatives to promote inclusivity in the development of digital skills. To address the digital inequalities faced by older adults (55+) and disadvantaged groups, targeted actions have been taken, including training and guidance, the provision of digital equipment, and support in the use of digital services. For instance, a training programme aimed at equipping older adults with the skills to effectively use a computer or smartphone reached 11 300 participants by the end of 2024, with plans to reach a further 70 600 people in 2025. In addition to training, tablets have been distributed to the older population, and face-to-face courses have been held on topics such as basic computer skills, online communication, and information security. Despite these initiatives, challenges persist, particularly in overcoming the lack of confidence and mistrust among older adults towards digital technologies.

ICT specialists

In 2024, ICT specialists accounted for 4.6% of total employment (2030 national target 6%), a +9.5% increase from 2023 when their share stood at 4.2%. Slovakia still trails slightly behind the EU average of 5% in 2024, which increased by 4.2% from 2023 (when ICT specialists represented 4.8% of total employment in the EU). **Nonetheless, the country is on track according to its trajectory.** The share of female ICT specialists continues to be low, having slightly decreased to 17.2% in 2024, compared to 17.4% in 2023. As such, it falls below the EU average of 19.5%.

Similar to ICT specialists, a positive growth trend can be observed in the share of enterprises providing ICT training, which constituted 18.5% of all enterprises in 2024, marking an annual growth rate of 9.5% compared to 15.42% in 2022. Despite this, the share of enterprises providing ICT training was still lower than the EU average, which was 22.29% in 2024. Nonetheless, Slovakia demonstrated a much stronger growth rate compared to the slight decline of 0.2% annually experienced at EU level.

In terms of labour market demand for specific ICT profiles, Eurostat's experimental web scraping statistics reveal that in Slovakia, software and applications developers and analysts were the most in-demand ICT specialists in 2024, sought in 37.3% of online job advertisements. This is followed by information and communications technology operations and user support technicians, who appear in 23% of such ads. These profiles align with EU level trends, where software and applications developers and analysts are sought in 58% of ads. However, Slovakia shows a higher demand for support technicians compared to the EU average, where they are mentioned in just 10.4% of job listings (though still being the second most frequently searched profile). A relatively high share of other ICT specialists (i.e. not included in the categories listed by Eurostat) are also sought-after (20.7%), considerably higher than at EU level (9.3%).

Slovakia's target of 6% of its population being ICT specialists by 2030 remains unchanged from the roadmap submitted in 2023, and is below the EU target for 2030 (10% of the total employment in the EU). To better reflect the current capacity of the Slovak education system, the ICT specialists' trajectory was adjusted, with lower numbers of ICT experts expected between 2026 and 2028 compared to the original projections. Considering the level reached in 2024 and current growth rate, the national 2030 target appears achievable.

Actions to increase the number of ICT specialists are being implemented. The government is seeking to align the educational offer with the skills needs of the labour market. The Ministry of Education has been focusing on identifying in-demand professions, such as ICT specialists, and providing support to universities that offer relevant programmes. The Centres of Excellence project identifies secondary schools that excel in relevant areas, such as IT, and provides them with a seal of excellence and financial

support. Moreover, in 2025, the Gymnasium project will launch, which will focus on training students in IT (with a goal of 200 per year). The national project [Skills for the Labour Market](#) also supports the employability and adaptability of the service recipients of the Offices of Labour, Social Affairs and Family through education allowances that can be used to develop ICT skills.

Several measures are planned to promote women's participation in the ICT sector, both at the education and job market levels. To this end, a new measure was also introduced in Slovakia's roadmap as part of its adjustment. Aiming to strengthen women's digital skills, the measure encompasses actions to create a supportive and inclusive information environment, investment in training and mentoring, and provision of organisational and resource support to relevant third-party initiatives.

2024 recommendation on ICT specialists: Foster the development of more flexible and diverse certified ICT studies at various levels and modalities within higher education.

In 2024, Slovakia continued the implementation of existing measures and introduced a new measure, which, however, does not directly address the recommendation. Despite this, the Slovak government's efforts to identify and support high-demand professions, including ICT professionals, are promising and demonstrate a commitment to addressing the skills gap. However, they currently remain at a relatively low scale.

[Key digital public services and solutions – trusted, user-friendly, and accessible to all](#)

In 2024, Slovakia's total digital public services score for citizens reached 72.58 (2030 national target: 100), after an increase of 0.7% from 72.06 in 2023. As such, while Slovakia is below the EU average (82.32), it is on track according to its national trajectory. The average EU score rose faster, by 3.6%, from its 2023 level (79.4%). The limited availability of digital public services to cross-border users is the main weakness behind Slovakia's total score. For cross-border digital public services for citizens, Slovakia's score in 2024 was 55.0, significantly below the EU's 71.28. Compared to 2023, the score decreased by 7.8%, from 59.68, while the EU average score increased by 4.3%, from 68.37. Conversely, when looking at digital public services for national citizens, Slovakia reached a much higher score of 90.16 in 2024, compared to 84.44 in 2023.

Slovakia's total digital public services score for businesses was 73.38 in 2024 (2030 national target 100), after a decrease of -7.3% from 79.18 in 2023, standing below the EU average (86.23). The country is lagging compared to its national trajectory. The decline in the score is primarily linked to the unavailability of two services to cross-border users, namely the possibility to report the termination of a business activity and to apply for a certificate of insurance coverage. These two services were included in the eGovernment Benchmark assessment for the first time in 2024, which explains the decrease compared to the score obtained in the previous year. Notably, Slovakia's score for cross-border digital public services for businesses fell to 50 in 2024, experiencing a decline of 20.7% from 63.06 in 2023. These results are considerably below the EU averages of 73.13 in 2023 and 73.76 in 2024. On the other hand, digital public services for businesses available to national users in Slovakia had a considerably higher score of 96.76, having increased from 95.31 in 2023.

With respect to e-Health, in 2024, Slovakia reached a score of 72.03 (2030 national target: 100), after an increase of 8.6% from 2023. While this result is below the EU average (82.7), Slovakia's increase in access to e-Health records (from 66.34 in 2023) outpaced the EU's growth rate of 4.5% (from 79.12 in 2023). As such, the country is well ahead of its trajectory.

Overall, Slovakia's digital public services and access to e-Health records scores are below the EU average, with notable gaps in cross-border services for both citizens and businesses. However, the country experienced a more positive trend in relation to digital public services for national users, each receiving a score of over 90 and having improved compared to 2023. Solid growth was also experienced in the e-Health score.

Looking at specific characteristics of digital public services, Slovakia scores very well in terms of mobile friendliness (97.62, compared to the EU's 92.25) and user support (85.19, compared to the EU's 88.75), which suggests that services are provided through mobile-friendly interfaces and that online support, help features, and feedback mechanisms are available. On the other hand, considerable room for improvement exists in the transparency of service processes and design and management of personal data (52.99, compared to the EU's 69.46).

e-ID

Despite an eID scheme being available to the majority of the population, the use of eID in Slovakia is still lower than expected. A mobile ID application was launched in 2022, but it still has a number of limitations, such as: not being compatible with government websites, which limits online service access; lack of certain features (e.g. offline authentication and document signing capabilities); and fragmentation among different authentication schemes. At the same time, limited awareness and understanding among the population as regards the use of eID and related online services continues to undermine its uptake. Along similar lines, stakeholders state that the *Slovensko v Mobile* application would benefit from streamlined eID identification processes and more integrated, user-friendly services that enable seamless digital communication with public authorities. Notably, the share of e-Government users within the population has been decreasing from 81.59% in 2022 to 80.46% in 2023 and 76.15% in 2024

Slovakia's roadmap includes one measure focused on the implementation of a digital wallet. While no funding is dedicated to this measure, it is expected that the basic elements will be in place by the end of 2025, while the full implementation of the digital wallet is expected to be completed by the end of 2026.

Digitalisation of public services for citizens and businesses

Slovakia is working towards a score of 100 for the digitalisation of public services for citizens and businesses by 2030. Despite limited progress in this area since 2023, important measures have been launched in 2024, which are expected to provide the basis for the continued improvement of e-Government services (see below). While significant room for improvement remains in making digital public services available to cross-border users, the 2030 target is deemed reachable.

In 2024, progress was achieved in the digitalisation of public services primarily through the support of the RRF. One of the key actions was the adoption of a roadmap and investment plan for the digitalisation of 16 priority life situations. These will be embedded in a modernised IT platform – Slovensko 3.0 – and will allow citizens and businesses to complete a series of administrative procedures digitally, in one location. The [Slovensko 3.0](#) platform is a positive example of simplification and centralisation in the delivery of digital public services. It delivers digital services based on key life events (e.g. starting a business), thus prioritising a user-centric approach, allowing users to access all services in one place.

Moreover, **Slovakia has established the Government Cloud (GovCloud) platform**, which provides IaaS, PaaS, and SaaS services to critical state systems through a centralised catalogue. The platform,

implemented within the framework of the Slovak RRP, enables ministries to provision resources, such as servers and software licenses, through a unified web interface, reducing operating costs by 15–20% through shared infrastructure. Overall, activities aimed at the digitalisation of public services continue to be guided by the **National Concept of Informatisation of Public Administration**, which is currently being updated to shift towards a more proactive and personalised approach to public services.

The relevance of actions aimed at developing digital public services is underscored by the results of the 2025 Eurobarometer, which reveal that 89% of Slovaks find accessing digital public services online important, above the EU average of 84% and increasing by 5 percentage points compared to 2024.

2024 recommendation on digital public services: Strengthen the digital transformation of public services and actively encourage the adoption of electronic modalities by both workers and retired citizens.

In 2024, Slovakia continued the implementation of existing measures but did not take any new measure. Plans are underway to enhance the digitalisation of public services, including 16 priority life situations, which are expected to play a key role in meeting the 2030 target. While progress has been made, the implementation process is still ongoing, and the full benefits of these efforts are yet to be realised.

Slovakia is seeking to exploit digital technologies to reduce the administrative burden on citizens, the public administration and businesses. Once operational, the 16 digital priority life situations are expected to simplify the carrying out of several administrative tasks. Furthermore, the Slovak RRP includes an investment to digitally transform 34 public administration sections, aiming to reduce the time required to complete public services by streamlining and automating administrative processes. MIRRI is also exploring the possibility of integrating AI solutions within the public administration to streamline administrative processes. Careful consideration and stringent rules will be required to ensure AI use remains aligned with its intended purpose.

Additional efforts aimed at reducing administrative burden include a technical solution conceived by the Statistical Office of the Slovak Republic to enable automated or semi-automated data collection. Once developed in collaboration with entrepreneurs and software developers, the software will reduce the administrative burden of statistical reporting on businesses. Another example is the new digital recruitment system planned to be developed to automate processes and improve multi-channel recruitment for the Slovak Armed Forces. This constitutes a new measure introduced in the adjusted roadmap, aimed at attracting more applicants to meet personnel need.

To ensure the security of digital services and sensitive data, and address sovereignty concerns, Slovak law requires critical infrastructures to process data within the EU/EEA under the amended Cybersecurity Act (2025). Global providers like AWS and Microsoft Azure host Slovak institutional data primarily in Frankfurt (Germany) and Amsterdam (Netherlands), while national platforms (e.g., e-prescriptions) increasingly use local experimental infrastructure. Such local experimental facilities allow for the testing of advanced technologies under controlled conditions. Notable examples include post-quantum cybersecurity ASICs, designed to protect against future cyber threats, and integrated HSM/KMS modules for secure cryptographic operations within the GovCloud framework.

Slovakia also participates in the **European Cloud working group in Brussels**, which is focused on creating a European cloud. While there is still a significant journey ahead to implement this initiative, Slovakia considers it crucial, as its data centres are currently working at capacity and face limitations in terms of public procurement.

Slovakia still aims to reach a score of 100 in the provision of access to electronic health records. Considering the promising growth path experienced by the country, which largely exceeded the projected score for 2024 as per its trajectory, the target appears to be achievable.

In 2024, 80-100% of citizens had access to electronic health records, compared to 60-79% in 2023, since all citizens can now have an identity card with a chip. However, challenges continue to exist in the functioning and use of e-Health. Due to the relatively low uptake of eID, despite expanded accessibility, the use of e-Health records remains lower than expected. Gaps exist in the availability of medical images to citizens and access opportunities for legal guardians, authorised individuals, and disadvantaged groups. Additionally, the access services do not yet comply with WCAG 2.1 (Web Content Accessibility Guidelines). While there was an increase in the categories of healthcare providers supplying data to the online access service, public and private geriatric homes do not yet supply relevant data.

Moreover, healthcare professionals are facing some challenges in using the national e-Health system. To operate it, they rely on systems provided by private companies, which must be certified by the National Health Centre. However, difficulties in complying with the requirements sometimes arise, resulting in an administrative burden that may hinder their ability to integrate with the e-Health system. Additional hurdles faced by healthcare staff include often outdated applications and IT infrastructure in healthcare facilities and burdensome processes associated with their use. The need for centralising the key components of e-Health (e.g. centralised databases, a central way to access high-volume records, standardisation and compliance with the payment mechanism) was also stressed by stakeholders, along with the need for improvement of the quality of patient e-services and patients' level of digital skills.

Two measures are foreseen in the roadmap in relation to e-health, consisting of two awareness raising campaigns on the use of electronic health services, which are expected to be launched in 2025. The first one will target healthcare professionals, aiming to educate them on registering information in the e-Health records. The second one will focus on patients, with the goal of informing them about the possibility to access the system and its functions. Going forward, additional initiatives to further improve the delivery of healthcare services through ICT are foreseen, building on the first phase of eHealth services programme (eSO1 project, *Elektronické služby zdravotníctva*), managed by the National Health Information Centre (NCZI). For instance, a procurement procedure is currently being prepared for a system meant to enable hospitals to share medical imaging, such as CT or MRI scans, which is currently limited by interoperability constraints.

Similar to digital public services, according to the Digital Decade Eurobarometer, 89% of Slovak citizens find it important to access or receive healthcare services online, above the EU average of 80% and increasing by 4 percentage points compared to 2024.

2024 recommendation on digital public services: (i) Offer a mobile application for citizens to access their electronic health records, enhancing the authentication method for logging into the online access services with full accessibility compliance. (ii) Make the data type of medical images available to citizens through the online access service. (iii) Expand the coverage of the online access service to ensure that all citizens can access their electronic health data online.

In 2024, Slovakia continued the implementation of existing measures but did not take any new measure. Access to electronic health records via an online portal has been expanded for citizens.

Although a mobile application is not currently available, citizens can authenticate themselves using a (pre-) notified eID that complies with the eIDAS Regulation. However, medical images are still not accessible to citizens.

Building a safe and human centric digital environment and preserving our democracy

The degree of online political participation in Slovakia in 2024 was relatively low. 16.42% of the population participated in online consultations, voted, or expressed their opinion on civic or political issues on websites or social media, which marked a slight increase from 2022 when 15.21% participated in this manner. Despite the increase, this share remained below the EU average of 20.45%.

The rise of digital technologies has increased the spread of disinformation and manipulated content in Slovakia, posing a threat to democratic processes. In September 2023, for the first time, Slovakia's parliamentary elections were [influenced by AI-generated content](#). Two days before the vote, a fake audio conversation, supposedly between one of the main candidates and a journalist discussing election fraud, was shared on social media and quickly reached thousands of listeners. Although the audio clip was quickly debunked as AI-generated, it raised fears of election manipulation and, more broadly, provided a stark example of how AI may drive disinformation in similar contexts. In line with such concerns, the 2025 Eurobarometer shows that 86% of Slovaks believe that shaping the development of AI and new digital technologies to align with EU values and principles is an important area for activity for public authorities.

Slovakia has one of the highest rates of exposure to online hate speech in the EU, with 48.78% of the population experiencing hostile or degrading online messages towards groups based on factors such as religion or ethnicity in 2023, significantly exceeding the EU average of 33.5%. Young people (ages 16-24), of whom 61.32% encountered hate speech, were notably more exposed than adults (ages 25-64), for whom the percentage was 51.86%.

At the same time, more than half (54.08%) of the population stated that they had encountered untrue or doubtful information or content on internet news sites or social media in 2023, which was higher than the EU average of 49.25%. Of those who reported encountering such material, 29.77% took steps to verify its truthfulness, suggesting a relatively good level (compared to the EU average of 24.29%) of critical evaluation skills among those exposed to potentially misleading information. Looking at specific age groups, young people (ages 16-24) reported significantly more exposure than adults (25-64) did (67.11% v. 57.97%). Verification rates showed the reverse discrepancy, being considerably higher among young people (45.76%) than among adults (31.24%). Males reported slightly higher exposure levels (56.67%) than females (51.55%).

Slovakia's Digital Transformation Action Plan places specific emphasis on preventing disinformation. Under the plan, by 2026, measures are to be implemented aimed at preventing and combating disinformation, increasing digital literacy and addressing the impacts of digital and media on mental health. In parallel, the Action Plan for the National Concept of the Protection of Children in the Digital Space for 2024 – 2025 guides the implementation of Slovakia's strategy on children's safety in the digital space. The plan focuses on prevention through formal and informal education, the improvement of digital safety, and promotion of media literacy among children and their caregivers. Training for professionals working with children and research are planned to better address digital challenges. The plan also emphasises providing comprehensive assistance and aftercare to victims, ensuring a supportive safety net within the digital child protection system.

Slovakia

In line with broader EU trends, Slovak citizens consider public action to protect children online to be urgent. The majority of Slovaks, as per 2025 Eurobarometer results, believe that urgent action is needed to address the negative impact of social media on children's mental health (96%), protect children from cyberbullying and online harassment (95%), and put in place age assurance mechanisms to restrict age-inappropriate content (95%).

Leveraging digital transformation for a smart greening

While Slovakia is exploring digitalisation as a means to support the green transition and contribute to climate adaptation, the country's current efforts are limited in scope and coordination.

The project 'Digital Skills for the Green Future of Slovakia' is a flagship initiative in this area, bringing together private and public stakeholders to discuss and raise awareness around the skills needed to navigate the green and digital transitions. As part of this project, reference frameworks have been developed to identify the green and digital skills required across various professions. These are being tested to ensure accurate competence assessment, with the ultimate goal of creating a benchmark for evaluating individual skill levels. This will also enable employers to make informed decisions about investing in employee training.

According to the Digital Decade Eurobarometer, Slovak citizens believe that digital technologies can play a crucial role in tackling climate change challenges. 77% believe that digital technologies will be crucial in combating climate change by 2030 (an increase by 3 percentage points from 2024), with 84% also agreeing that public authorities should focus on ensuring digital technologies support the green transition (an increase by 5 percentage points compared to 2024).

Among the Slovak population, environmental considerations largely do not figure into decisions on the purchase of new ICT devices or when disposing of old ones. In 2024, only approximately 8% of the Slovak population recycled their old laptop or tablet, mobile or smartphone, below the EU average of 10.93% for old mobiles and smartphones and 11.31% for old laptops and tablets. Moreover, only 13.89% of people considered energy efficiency to be an important characteristic when purchasing ICT devices, below the EU average of 19.35% in 2024. An even smaller share (6.1%) considered the eco-design of the device important, which is half of the EU average (12.04%). Price, followed by the speed of the hard drive or the processor, were considered significantly more important in the purchasing of ICT devices than environmental aspects.

2024 recommendations on green ICT: (i) Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs. (ii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

In 2024, Slovakia continued the implementation of existing measures through the project 'Digital Skills for the Green Future of Slovakia' but did not take any new measure. Future plans aim to strengthen the coordination of green and digital transformation activities within the public administration, for instance by setting sustainability standards while prioritising the integration of digital technology, and by evaluating sustainable ICT practices within the public administration.

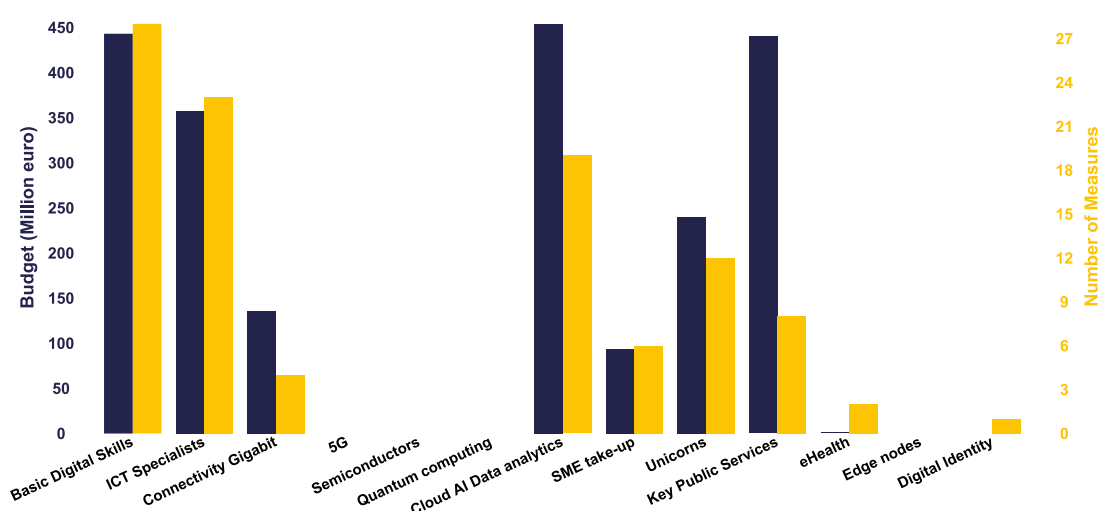
Annex I – National roadmap analysis

Slovakia's national Digital Decade strategic roadmap

Slovakia submitted an addendum to its Digital Decade roadmap on 27 November 2024, which contains 11 additional measures and 2 revised trajectories. Due to the timeline of Slovakia's standard legislative process, which mandates that all revisions and new measures be submitted to the Government by June each year for the budget finalisation in September, Slovakia was unable to draft measures directly addressing the recommendations provided by the State of the Digital Decade report in June 2024.

Nonetheless, the country introduced new measures aimed, in particular, at: supporting the digitalisation of businesses; the promotion of an environment that is conducive to exchange and innovation; and the enhancement of digital skills. All of these are relevant to the reality and needs of Slovakia's digital landscape. However, additional national funding for the new measures could not be secured. This implies they will have to rely on external financing, particularly from the RRF and Programme Slovakia. Such a limitation might also limit flexibility in adding or expanding measures going forward.

Measures and budget in national roadmap¹⁰



In total, the roadmap is composed of 127 measures with a budget of EUR 2.26 billion, equivalent to 1.74% of Slovakia's GDP.

The adjusted roadmap addresses a limited number of roadmap recommendations issued in 2024:

- *Propose national target values for FTTP and edge nodes:* the roadmap still lacks a target and trajectory for edge nodes and FTTP.
- *Recompute the VHCN trajectory using the correct values:* the VHCN trajectory was not recomputed using the correct observed values.
- *Re-evaluate possible efforts on 5G coverage, basic digital skills and ICT specialists:* targets associated with 5G coverage, basic digital skills and ICT specialists have remained

¹⁰ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

unchanged. However, the intermediate projected values for the share of ICT specialists were decreased between 2025 and 2028, and those for 5G coverage were increased between 2024 and 2028, in order to better reflect reality.

- *Reinforce measures aimed to contribute to digital skills development and to foster connectivity:* three of the newly introduced measures aim to support the development of digital skills, while one measure was introduced to foster connectivity, though this relates to the development of a supercomputer infrastructure, rather than directly to digital networks.
- *Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it:* A systematic contribution to the digital rights and principles was not carried out. Information on the implementation of digital rights and principles was only highlighted for the newly introduced measures.
- *Review the budget estimated for all presented measures, highlighting the different sources, including more detail on EU funds such as RRF:* no additional details were provided on the budget allocated to the different measures.
- *Provide further detail on the consultation process of the roadmap:* A detailed explanation of the consultation process behind the roadmap adjustment was provided.

Overall, Slovakia's roadmap presents a comprehensive set of measures, which are grounded in multiple national level strategies and action plans. Together, these aim to support the digitalisation of Slovakia's economy and society from multiple angles, linking to all of the Digital Decade targets (except for edge nodes) and objectives. However, certain aspects, such as promoting leadership and sovereignty, and contributing to the green transformation, would require more concerted efforts. In total, the measures have a value of EUR 2.26 billion.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Slovakia is a member of the Local Digital Twins towards the CitiVERSE EDIC and an observer to the Alliance for Language Technologies EDIC. Slovakia is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT). Slovakia is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Slovakia has not yet presented any project in the framework of Digital Decade's Best Practice Accelerator¹¹.

EU funding for digital policies in Slovakia

Slovakia allocates 21% of its total recovery and resilience plan to digital (EUR 1.2 billion)¹². In addition, under cohesion policy, EUR 886 million (representing 7% of the country's total cohesion policy funding), is dedicated to advancing Slovakia's digital transformation¹³. According to JRC estimates, EUR 1.8 billion directly contribute to achieving Digital Decade targets (of which EUR 1.1 billion comes from the RRF and EUR 670 million from cohesion policy funding)¹⁴.

Slovakia's recovery and resilience plan was updated in May 2025. Notably, the plan makes a significant contribution towards the digitalisation of public services, aiming to provide better services for citizens and businesses by introducing user-friendly e-government solutions. Good progress was made in this area in 2024, particularly with the adoption of a roadmap for investment for the digitalisation of 16 priority life situations. Digitalisation of school infrastructure and strengthening of digital skills across the population are key priorities of the Slovak RRP. The plan further supports the digital transformation of the economy and society, for instance through the development of a quantum computing ecosystem, the ongoing commissioning of a supercomputer and the digitalisation of businesses.

¹¹ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

¹² The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹³ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹⁴ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹⁵



¹⁵ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

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DIGITAL DECADE 2025 COUNTRY REPORTS

Slovenia

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Executive summary

Slovenia can rely on a well-developed digital infrastructure but lags behind in digital skills. The country is very active in several cutting-edge technology projects, particularly in quantum, semiconductors, cloud and Artificial Intelligence (AI). Slovenia shows a high level of ambition in its contribution to the Digital Decade having set 13 national targets, 100% of which are aligned with the EU 2030 targets.¹ The country is following its trajectories moderately well with 63% of them being on track (considering 2024 trajectories defined for 8 KPIs out of 8 analysed). Slovenia addressed 82% of the 11 recommendations issued by the Commission in 2024 by making some changes through new measures.

In 2024, 5G coverage increased considerably, including in rural areas. However, the country lags behind in basic digital skills and ICT specialists, which may also be one of the factors limiting the uptake of advanced technologies in SMEs. An exception is AI adoption by enterprises, which has recently shown considerable progress. Often in collaboration with other EU Member States, the country takes an active role in several pioneering technology projects, including those focused on quantum computing, semiconductors, cloud computing and AI.

Digital Decade KPI ⁽¹⁾	Slovenia				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (4)	DESI 2025	Annual progress	SI	EU
Fixed Very High Capacity Network (VHCN) coverage	78.5%	79.6%	1.5%	80.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	78.5%	79.6%	1.5%	82.0%	69.2%	8.4%	100.0%	-
Overall 5G coverage	82.1%	96.7%	17.8%	74.0%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate) (2)	8	16	100.0%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (3)	-	67.6%	0.4%	-	72.9%	2.8%	90.0%	90%
Cloud	36.0%	-	-	-	-	-	75.0%	75%
Artificial Intelligence	11.4%	20.9%	83.7%	33.0%	13.5%	67.2%	75.0%	75%
Data analytics	19.1%	-	-	-	-	-	75.0%	75%
AI or Cloud or Data analytics	44.7%	-	-	-	-	-	-	75%
Unicorns	0	0		-	286	4.4%	7	500
At least basic digital skills	46.7%	-	-	-	-	-	80.0%	80%
ICT specialists	3.8%	4.3%	13.2%	6.0%	5.0%	4.2%	10.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	77.0	78.6	2.0%	76.0	82.3	3.6%	100.0	100
Digital public services for businesses	84.0	85.0	1.2%	90.0	86.2	0.9%	100.0	100
Access to e-Health records	87.6	87.5	-0.1%	83.0	82.7	4.5%	100.0	100
(1) See the methodological note for the description of the indicators and other metrics (2) Slovenia aims to contribute to this target through the deployment of edge nodes by 200 companies. (3) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index. (4) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)								

¹ While the KPI on edge nodes measures the number of edge nodes deployed, Slovenia intends to contribute to the target of 10 000 edge nodes with 200 companies deploying edge nodes.

According to the special Eurobarometer on 'the Digital Decade' 2025, 78% of Slovenian citizens consider that the digitalisation of daily public and private services is making their lives easier. Concerning the action of the public authorities, 90% consider it important to counter and mitigate the issue of fake news and disinformation online, and regarding competitiveness, 82% consider it important to ensure that European companies can grow and become "European Champions" able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

The fibre to the premises coverage is relatively high in Slovenia and very high capacity network coverage is gradually increasing, although some rural gaps remain. The country is taking action to reduce these gaps. 5G coverage increased significantly, including in rural areas, and fibre-to-the-premises coverage remains strong. The country is actively advancing strategic technologies such as quantum computing, semiconductors, cloud computing and AI. To strengthen its ecosystem and capacities, it is establishing Competence Centres for semiconductors and AI, and will host an AI Factory featuring a supercomputer. With the exception of the businesses' uptake of AI, where Slovenia has made significant progress recently, the uptake of more accessible digital technologies that could enhance competitiveness on a larger scale for SMEs is relatively low. This limitation may partly stem from a shortage of sufficiently skilled employees. For the start-up sector, initial steps are being taken to enhance framework conditions, such as through legislative changes. However, several initiatives are still under development, and venture capital expenditure and funding via capital markets remain relatively low. Slovenia is developing cyber awareness and capabilities across multiple areas, including securing infrastructure and providing trainings in the public sector, safeguarding healthcare systems and launching pilot training programmes within the education system.

Protecting and empowering EU people and society

Slovenia lags behind in digital skills. Its population has a relatively low level of basic digital skills. Despite ongoing efforts to improve basic digital skills across various demographic groups, it remains to be seen whether these initiatives will effectively bridge the significant gaps. The current education reform presents an opportunity to integrate digital skills into the curriculum, which will be crucial in addressing this issue. Although Slovenia has made good progress in increasing its proportion of ICT specialists within the workforce, it still lags behind the EU average. The relatively low share of ICT specialists may be one of the factors limiting businesses' adoption of advanced digital technologies. While training programmes for acquiring advanced digital skills in specific technologies are available, they appear to be insufficient to meet the demand for ICT specialists. Additionally, despite Slovenia's efforts in anticipating future job market trends and the demand for ICT specialists, addressing these dynamic needs remains challenging. In this regard, integrating digital skills into the ongoing higher education reform will be crucial. The availability of digital public services in Slovenia is a bit less widespread than in the EU, especially when it comes to cross-border services. However, their uptake is higher than the EU average. Slovenia plans to enhance the digital transformation of public authorities, in particular on data access and on municipality level. Furthermore, the country is preparing the Digital Healthcare Act, a major project that aims to drive digital transformation in the healthcare sector.

Leveraging digital transformation for a smart greening

Slovenia is taking steps to support the green transition through digital technologies, building on its existing measures and introducing new ones as part of its adjusted roadmap. Initiatives range from modernising green public procurement and creating digital twins to establishing circular and digital business models. However, current efforts still appear to be fragmented and there does not yet seem to be a systematic approach to fully leverage their potential together.

National Digital Decade strategic roadmap

Following a public consultation, Slovenia submitted a fully revised national Digital Decade roadmap on 31 January 2025². This document will also serve as the Action Plan for the Digital Slovenia 2030 strategy, which was adopted in 2023. The roadmap contains some new or changed measures compared to the initial roadmap submission in 2023 and maintains its ambitious national target values. However, several measures have been removed from the adjusted roadmap, especially those linked to Digital Decade objectives and all measures linked to start-ups. The revised roadmap addresses a limited number of the roadmap recommendations issued in 2024. All national target values were kept in line with the EU's 2030 ambition level and the additional target on e-ID uptake, the quantitative estimates on how Slovenia will contribute to the semiconductor and the edge nodes targets were maintained. The update is composed of 81 measures with a budget of EUR 685 million, which represents 1.02% of Slovenia's GDP. While it brings some new impulses in line with the new Commission's priorities in areas like green ICT, AI and semiconductors, the update does not sufficiently address the country's challenges and is not fully aligned with its very ambitious national targets, especially in the areas of basic and advanced digital skills and digitalisation of businesses.

Funding & projects for digital

Slovenia allocates 20% of its total recovery and resilience plan to digital (EUR 513 million)³. In addition, under cohesion policy, EUR 287 million, representing 9% of the country's total cohesion policy funding, is dedicated to advancing Slovenia's digital transformation⁴.

Slovenia is a member of the three established EDICs; the Alliance for Language Technologies EDIC, the Local Digital Twins towards the CitiVERSE EDIC and of the EUROPEUM EDIC on blockchain. Slovenian entities are indirect and/or associated partners in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS).⁵ Slovenia is also a participating state in the EuroHPC Joint Undertaking (JU) and in the Chips JU.

² Government approval pending due to some changes linked to the Digital Slovenia 2030 Action Plan. For the purpose of the Digital Decade Policy Programme, the content of the roadmap submitted on 31 January 2025 can be considered final. Corrigendum to Digital Decade Country Report Slovenia 2024: The initial national roadmap was adopted by the Slovenian Government in December 2023, before its publication and submission to the European Commission.

³ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

⁴ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

⁵ Corrigendum to Digital Decade Country Report Slovenia 2024: Slovenian entities are indirect partners in the Important Project of Common European Interest on Next Generation Cloud Infrastructure and Services (IPCEI-CIS).

Slovenia leads the Digital Skills cluster of the Best Practice Accelerator⁶. In this context, it led the organisation of five workshops and shared four Slovenian best practices on digital literacy, an adult digital literacy program, mobile heroes (for older people) and digital training for children and young people).

Digital Rights and Principles

According to a support study, Slovenia has shown rather limited activity in implementing the [European Declaration on Digital Rights and Principles](#), with 38 initiatives overall and 3 new initiatives launched in 2024. Slovenia is most active in the area of Solidarity and inclusion. Less activity has been identified with regards to privacy and individual control over data. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing participation in the digital public space.

Recommendations

- **ICT specialists:** Improve the early identification of labour market needs and address them accordingly through training offers and with the help of the higher education reform.
- **Basic digital skills:** Increase and intensify education and training offers and integrate digital skills into the education curricula from an early age.
- **SME take up:** Provide continuous support to SMEs and create enabling framework conditions for their uptake of digital technologies.
- **Advanced technologies:** Quickly implement measures to increase the uptake of advanced technologies by businesses, with a focus on SMEs.
- **Cybersecurity:** Sustain and enhance activities to increase cybersecurity in the sectors of public services and education and introduce these with activities to support businesses.
- **Unicorns/startups:** Quickly implement measures to improve framework conditions and access to funding for start-ups.
- **Green:** Enhance digital technologies to support the green transition, in particular by addressing the interaction between green and digital initiatives in a more systematic manner.

⁶ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

A competitive, sovereign and resilient EU based on technological leadership

Slovenia lags behind the EU in innovation performance, particularly in areas such as business' investment in innovation⁷. Surveys suggest that this is related to the lack of skilled labour⁸. Furthermore, companies invest a high share of their capital in machinery (54% compared to 48% in the EU) and relatively less in areas like employee training, ICT and R&D⁹. The ICT sector in Slovenia is among the smallest in the EU (accounting for 4.3% of GDP, compared with an EU average of 5.5%).¹⁰ Moreover, expenditure on R&D and the share of R&D personnel in the ICT sector are the lowest in the EU (9.3% of total R&D expenditure and 15.1% of total R&D personnel).

While the country is very active in several cutting-edge technology projects, the adoption of digital technologies by SMEs remains limited. Slovenia is contributing to the development of advanced technologies in several projects (e.g. on quantum, semiconductors, cloud and AI), often in collaboration with other EU Member States. Slovenia has included two projects in its adjusted roadmap that are intended to enhance cooperation and knowledge transfer between businesses, research organisations and other stakeholders ('Establishment of RDI junction' and 'Support for strategic development innovation partnerships'). Such initiatives are important, considering that the broader adoption of more accessible digital technologies, which could enhance competitiveness on a larger scale for SMEs, is comparatively limited. This limitation may partly stem from a shortage of sufficiently skilled employees. An exception is the AI adoption by enterprises, which has recently shown considerable progress. For the start-up sector, initial steps are about to be taken to improve framework conditions (e.g. legislative changes), but several initiatives are still in development, and venture capital expenditure and funding from capital markets remain low. According to the 2025 Eurobarometer¹¹, 86% of Slovenians think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

Slovenia's digital infrastructure is well-developed, although some gaps in rural connectivity still remain. Recent improvements have led to a significant increase in 5G coverage, including in rural areas.

Building technological leadership: digital infrastructure and technologies

Connectivity infrastructure

Slovenia's Very High Capacity Network (VHCN) coverage stood at 79.65% in 2024 (2030 national target 100%) after an increase of 1.5% and remained below the EU average of 82.49% (growth rate of 4.9%). The country is on track according to its national trajectory. For households in sparsely populated areas, Slovenia's VHCN coverage was 58.58%, below the EU's 61.89%. The coverage growth rate of 3.1% for these households was significantly lower than the EU's 11.3%. For broadband take-up, Slovenia's share of fixed broadband subscriptions at 1 Gbps or higher was 10.89% in 2024, below the EU's 22.25%. The growth rate for this indicator in Slovenia was 14.9%, lower than the EU's 20.5%.

⁷ See European Innovation Scoreboard 2024, [European innovation scoreboard - European Commission](#).

⁸ See European Investment Bank Investment Survey 2023, [EIB Investment Survey 2023: European Union overview](#).

⁹ See European Investment Bank Investment Survey 2023, [EIB Investment Survey 2023: European Union overview](#).

¹⁰ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

¹¹ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Slovenia was at 79.65% Fibre to the Premises (FTTP) coverage (2030 national target 100%) following an increase of 1.5% in 2024 and stood above the EU average of 69.24% (growth rate of 8.4%)¹². The country is on track according to its national trajectory. For households in sparsely populated areas, Slovenia's FTTP coverage was 58.58% in 2024 in line with the EU average of 58.78%. The growth rate of 3.1% was lower than the EU's 11.9%.

Slovenia's 5G coverage reached 96.72% after a significantly faster increase than the EU in 2024 (17.8% vs 6.0%) and stood above the EU's 94.35%. The country is on track according to its national trajectory. For households in sparsely populated areas, Slovenia's 5G coverage was at 87.65% in 2024, exceeding the EU's 79.57%. The growth rate of 92.4% was substantially higher than the EU's 11.9%, which also reflects Slovenia's low starting point. Slovenia's 5G coverage in the 3.4 -3.8 GHz band was at 92.85%, compared to the EU's 67.72%. The growth rate of 36.3% was again higher than the EU's 32.6%. For households in sparsely populated areas, Slovenia's 5G coverage in the 3.4 -3.8 GHz band was 75.77% after a considerable increase of 239.2%, significantly higher than the EU's coverage of 26.19%. Furthermore, Slovenia has fully assigned 100.0% of its 5G pioneer bands spectrum, outperforming the EU's 74.63%. Yet, the 5G uptake remains low compared to the high 5G coverage throughout the country. The number of 5G SIM cards expressed as the share of the population was 30.97%, below the EU average of 35.56%.

VHCN and FTTP

Slovenia's VHCN and FTTP targets remain at 100% in its adjusted roadmap. However, this may be a challenge in rural areas, where low connectivity has been a persistent issue, related to the country's topography. Almost all gigabit connectivity measures in the initial Slovenian roadmap were already focused on this challenge. But in the roadmap adjustment, some initiatives have been reduced in budget and no new initiatives have been introduced.

A key initiative for enhancing connectivity in rural areas was the launch of a [public tender](#) in summer 2024 to co-finance the construction or upgrade of high-capacity fixed broadband networks. This tender is part of an investment under the Slovenian Recovery and Resilience Plan (RRP) and will be completed by a second public tender, scheduled to be launched before this summer. Together, the tenders are expected to bring gigabit connectivity to more than 6800 additional households in white areas (i.e. areas with limited or no high-speed internet access). Given that connecting the remaining rural households will become increasingly more expensive, AKOS, the national regulatory authority for telecommunications, is collaborating with the Ministry of Digital Transformation to develop a tool for assessing the costs of building gigabit infrastructure in Slovenia. The aim is to propose various connection scenarios and identifying the most cost-effective solution by locating the closest manhole, which serves as an access point for digital infrastructure, thereby minimising the distance to be covered to set up additional connections. Additionally, again in the context of its RRP, Slovenia has taken steps to improve connectivity in the education sector, specifically providing high-speed internet access to educational institutions and ensuring that public research institutes are connected to each other with very high-speed connectivity.

Moreover, AKOS is laying the groundwork to future-proof Slovenia's connectivity networks. For example, AKOS has begun preparations for the country's copper switch off. A proposal for a 'Strategy of regulatory measures to accelerate the copper switch off' is currently under public consultation. Additionally, following the floods in 2023, AKOS has launched a project to build a resilient network that

¹² The VHCN coverage is defined as the combination of FTTP and DOCSIS 3.1 coverage. As Slovenia has not upgraded its DOCSIS 3.0 infrastructure to DOCSIS 3.1, the VHCN coverage equals the FTTP coverage.

will cover approximately 95% of Slovenian households, ensuring the availability of at least voice calls and critical communications in the event of a major outages caused by floods or other natural hazards.

5G

Slovenia's 5G target remains at 100% in its adjusted roadmap. Given the significant recent progress and the measures outlined in the adjusted roadmap, this target is within reach. In addition to the measures already included, such as spectrum management and co-financing open base stations (i.e. open passive 5G mobile networks), Slovenia has added a new initiative, which will co-finance open base stations in flood-affected areas, with EUR 4.2 million allocated from the national reconstruction fund. The first tender has been launched, and a second one will follow soon. These efforts are expected to further boost Slovenia's already high level of 5G coverage.

With the 5G pioneer bands spectrum fully assigned, Slovenia is now preparing for future technological advancements as part of its radio spectrum development strategy 2024-2026. This strategy will also support businesses in maximising the benefits of 5G. According to AKOS, companies, municipalities and the operator who acquired spectrum for private 5G networks, have begun using their allocated spectrum, focusing on industrial automation, IoT applications and public safety projects. A separate [auction](#) for 700 MHz bands, intended for machine-to-machine communication networks, failed to attract any bids and was subsequently cancelled. As part of the radio spectrum development strategy, AKOS will also be harmonising the methodology for implementing 5G standalone networks in 2025.

2024 recommendation on connectivity infrastructure: (i) Continue and supplement measures to tackle 5G connectivity challenges, especially in rural areas. (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G standalone core networks.

(i) Slovenia made some efforts to address the recommendation through new policy actions in 2024. 5G coverage, including in rural areas, increased significantly (by 14.6 percentage points (pp) overall and 42.1 pp in rural areas). Besides continuing the implementation of existing measures to prepare for future advancements of the 5G technology, a new measure was introduced in the adjusted roadmap. This measure will co-finance open passive 5G mobile networks in flood-affected areas, further enhancing Slovenia's 5G coverage.

(ii) Slovenia made some efforts to address the recommendation through new policy actions in 2024. Slovenia auctioned spectrum for private 5G networks, reporting that the successful bidders begin to use their allocated spectrum. Additionally, an auction for spectrum on machine-to-machine communication was initiated (but did not attract any bids).

Semiconductors

In its adjusted roadmap, Slovenia maintains its commitment to contribute to the semiconductor target, projecting that 10 R&D companies with a focus on semiconductors and 25 manufacturing companies will be involved. The country currently reports having two R&D enterprises and eight active manufacturing companies in the semiconductor sector (as well identical to its initial roadmap).

Slovenia continues to take action to develop its semiconductor ecosystem. The adjusted roadmap maintains key initiatives (see below) and has added a new initiative on providing a supportive environment for semiconductors. This new measure aims to create a supportive framework for R&D&I efforts and chips prototyping. Under the Slovenian RRP, two Slovenian companies continue to be

involved as indirect or associated partners in the IPCEI on Microelectronics and Communication Technologies. The country also reported that it has started to collaborate with direct partners of this IPCEI.

After a considerable preparatory phase, a draft of the [Semiconductor Strategy](#) was published in July 2024 and publicly consulted afterwards. The draft strategy includes three major actions: the establishment of the Chips.si Competence Centre and the Centre of Excellence for Chips and Semiconductor Technologies as well as activities for strengthening the existing capacities in the semiconductor ecosystem. The Chips.si Competence Centre has been operational since April 2025 and is expected to begin providing access to technical expertise and experimentation to support companies, especially SMEs, in developing relevant design capabilities and skills. Chips.si is among the centres [selected](#) by the EU Commission to collaborate in a European network of semiconductor competence centres, aiming to strengthen the European semiconductor industry and to address the needs of local ecosystems in the broader context of the European Chips Act. Furthermore, Slovenia is reinforcing its innovation environment with strategic research and development in electronic components and systems.

2024 recommendation on semiconductors: Sustain activities on semiconductors and quickly implement them on the ground.

Slovenia made some efforts to address the recommendation through new policy actions in 2024. Slovenia continues to take action to develop its semiconductor ecosystem and some acceleration can be perceived. Moreover, the roadmap adjustment introduces new impulses.

Edge nodes

According to the Edge Node Observatory, Slovenia is estimated to have deployed a total of 16 edge nodes by 2024, an increase of 100% since 2023. In its adjusted roadmap, Slovenia maintains its ambition to contribute to this target through the deployment of edge nodes by 200 companies. The country reports having approximately 20 companies, in particular telecommunication companies, working on the deployment of edge nodes (identical to its initial roadmap).

Slovenia's main activity in this area remains that Slovenian entities are indirect partners in the IPCEI on Next Generation Cloud Infrastructure and Services. The multi-country project will support the development of software and data processing capabilities for the exploitation of edge nodes. One of the recently launched projects which is part of this initiative involves the development of decentralised, edge-based data storage (see cloud section for more details).

Quantum technologies

Slovenia continues to engage in EU-level initiatives and to develop a national framework for quantum technologies, although most of these activities are not reflected in its adjusted roadmap. Given the early stage of development for quantum technologies, Slovenia's efforts are currently focused on basic technology research and exploring proof of concept schemes to assess technical feasibility in the near future.

The successful bid for the AI Factory, including a new supercomputer, underpinned Slovenia's well-developed infrastructure and expertise in this field (see AI section for more details). The project exemplifies Slovenia's contribution to several EU initiatives. Additionally, after an extensive preparatory phase, the national quantum strategy is expected to be published by September 2025. The strategy was developed through a participatory process involving stakeholders at various stages.

The strategy will focus on research and innovation, talent development, quantum infrastructure and industrialisation. According to the Government Information Security Office, the country is in the process of connecting several government bodies across six locations through a quantum key distribution network as part of the Slovenian Quantum Communication Infrastructure Demonstration (SiQUID) project which is part of the Slovenian RRP.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

SMEs with at least basic digital intensity

In Slovenia 67.63% of SMEs had at least a basic level of digital intensity in 2024 (2030 national target 90%), after a limited growth of 0.4% compared to 2022¹³ and the country stands below the EU average (72.91% and growth rate of 2.8%). Nonetheless, among all SMEs, 31.78% achieved high or very high digital intensity, close to the EU average of 32.66%. The data on the adoption of AI/cloud/data analytics by enterprises across all sizes also indicate relatively low take-up among SMEs (see more details in dedicated section). While Slovenian SMEs lag in these areas, its large enterprises outperform the EU average, with the exception of AI.

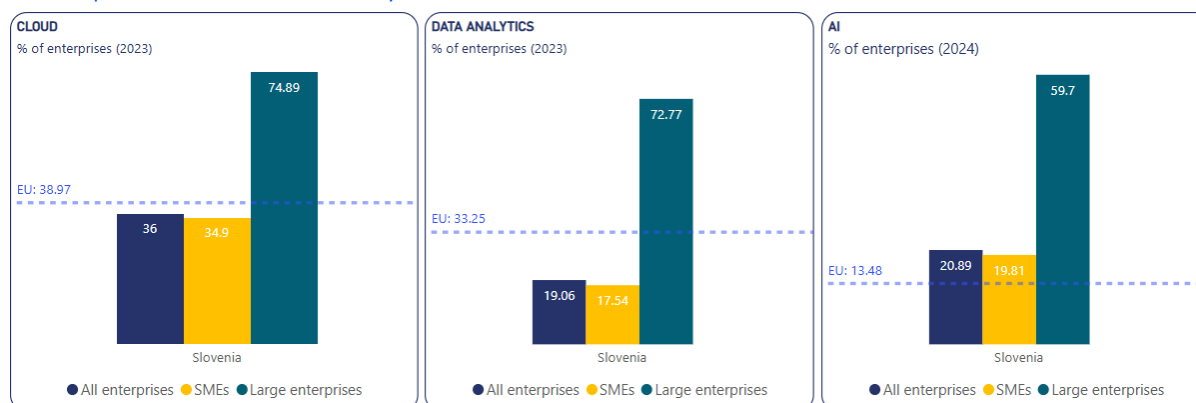
Slovenia still aims to reach the 90% target for SMEs with basic digital intensity in its adjusted roadmap. However, given the current adoption levels and growth trends in Slovenia, additional measures may be needed to meet these targets. No new measures have been added and a few measures targeted specifically to SMEs have been removed from the adjusted roadmap, though they are still being implemented. For example, after a pause, the Slovene Enterprise voucher system to support SMEs in digitalising products or services will be relaunched with a focus on cybersecurity and some other specific topics, including AI. Slovenia reported that for some topics, the relaunch is already ongoing. Furthermore, Slovenia continues to support the uptake of digital technologies in SMEs with two European Digital Innovation Hubs, the [Digital Emergency Response for Slovenia \(EDIH DIGI-SI\)](#) and the [Smart, Resilient and Sustainable Communities - European Digital Innovation Hub \(SRC EDIH\)](#) as well as projects to support SMEs' investments in (in)tangible assets ('incentives for digital transformation') and in the twin transition ('circular and digital business models'). However, following the implementation of the RRP measure 'Industrial/business digital transformation programme' (see details in take-up of cloud/AI/data analytics section), it seems important for Slovenia to transfer and maximise the impacts of this measure, as there are currently no plans for new comparable projects in terms of size and scope.

2024 recommendation on digitalisation of SMEs: Accelerate policies to increase the uptake of digital technologies by SMEs. In particular by quickly implementing, maintaining and complementing the efforts to provide supportive framework conditions, including a highly skilled workforce, in a continuous manner and by paying particular attention to the specificities of industries.

In 2024, Slovenia continued the implementation of existing measures but did not take any new measure. Apart from moving forward with the RRP consortia project on digital transformation for SMEs and large companies, which is a key measure in this area, Slovenia did not report any significant progress on other measures and no substantial new measures have been reported.

¹³ 2022 is the last comparable year that used a similar methodology for measuring the digital intensity of enterprises.

Take-up of cloud/AI/data analytics



In 2024, 20.89% enterprises in Slovenia adopted AI (2030 national target is 75%), following an increase of 83.73%, considerably outpacing the EU average of 13.48%. However, the country is lagging behind compared to its national trajectory. Among SMEs, the uptake rate was 19.81%, while large enterprises showed a significantly higher rate of 59.7%. This corresponds to a gap of 39.89 percentage points between SMEs and large enterprises, which considerably exceeds the EU gap of 28.53 percentage points.

In 2023, cloud uptake in Slovenia reached 36% (2030 national target is 75%), slightly below the EU-level uptake of 38.97%. However, SMEs exhibited a 34.9% uptake, while large enterprises adopted cloud services at a much higher rate of 74.89%. This resulted in a gap of 39.99 percentage points in uptake between SMEs and large enterprises in Slovenia, which was higher than the EU-level gap of 31.68.

Similarly in 2023, 19.06% of enterprises utilised data analytics in Slovenia (2030 national target is 75%), falling short of the EU average of 33.25%. However, SMEs had a lower uptake at 17.54%, while 72.77% of large enterprises engaged in these activities. This led to a notable gap of 55.23 percentage points between SMEs and large enterprises, which exceeded the EU gap of 39.72 percentage points.

When taking the three technologies together, 44.71% of enterprises in Slovenia engaged with either AI, cloud or data analytics, which was considerably below the EU average (54.7%) in 2023. The uptake among SMEs was slightly lower at 43.41%, while large enterprises had a higher engagement rate of 91.06%. This indicates a percentage point difference of 47.65 in uptake between SMEs and large enterprises in Slovenia, which was again higher than the EU-level gap of 32.97.

In its adjusted roadmap, Slovenia still targets a 75% adoption rate for each of the three technologies in enterprises by 2030. Meanwhile, the EU target is for at least one of the three technologies to be used by 75% of enterprises. However, given the current adoption levels and growth trends in Slovenia, additional measures may be needed to meet these targets. While the adjusted roadmap maintained a few measures to promote the broader uptake of advanced technologies, which can also contribute to increase the basic digital intensity of SMEs, Slovenia remains particularly focused on the development and uptake of AI.

In February 2025, Slovenia [reported](#) the implementation of the 'Industrial/business digital transformation programme', a key measure for promoting digital innovation and advanced technologies in businesses. This RRP measure, also part of the adjusted roadmap, supported 23 consortia, comprising 42 large companies and 84 SMEs. Funded projects focused on areas previously identified as relevant to the digital transformation, e.g., to introduce AI to decision-making and

planning processes. This initiative is expected to have contributed to bridging the gap between SMEs and large enterprises in the uptake of advanced technologies, while also positively impacting the value chains of the participating companies.

- [Cloud](#)

The key action to increase the uptake of cloud computing services remains that Slovenian entities are indirect partners in the IPCEI on Next Generation Cloud Infrastructure and Services¹⁴. In the context of this RRP-funded project Slovenia [launched](#) 'SiChain EIPS'. This project focuses on developing blockchain infrastructure and decentralised, edge-based data storage, with the goal of integrating it into a common European data and services infrastructure. The project aims to enhance the interoperability and security of European data and services infrastructure, potentially boosting cloud service adoption by businesses, while also contributing to the development of integrated infrastructure that links cloud computing with other advanced technologies. Slovenia reported that Slovenian companies collaborate with direct partners of this IPCEI, in particular in the field of digital infrastructures and platforms, including through use cases focused on establishing different types of cloud infrastructure and services networks.

- [Data Analytics](#)

There is not specific update to report beyond what is already included in other sections.

- [Artificial Intelligence](#)

AI continues to be a central priority for Slovenia in advanced technologies. With the successful bid to host an '[AI Factory](#)' and the launch of the '[Machine Learning for Science and Humanities – SMASH](#)' [project](#), the country is poised to contribute to the further development of AI. The AI Factory will primarily provide AI tools and computing power to support businesses and the public sector. More concretely, building on the achievements of the Vega supercomputer, [a new supercomputing infrastructure](#) is expected to boost research and industrial use of advanced technologies like AI (e.g. for climate change prediction) and accelerated process simulation in areas like manufacturing. The project SMASH aims to enhance the use of machine learning in research, fostering the development of new scientific methods and strengthening research infrastructure.

Moreover, the implementation of other measures is gaining momentum. After a considerable preparatory and scoping phase starting in 2023, the first call for tender for the AI Competence Centre with a budget of EUR 3.6 million will be published in 2025. The Competence Centre's activities will cover a broad range of areas, including supporting AI skills, facilitating AI adoption by businesses, and creating an AI ecosystem and international cooperation. In alignment with the Digital Decade target, the Centre will focus on helping businesses embrace and develop AI through training, consultancy services and practical information on the use of AI tools. Stakeholders appear to agree on scope and aim of the Centre. Additional calls for tenders will follow in subsequent years.

The 2025 Eurobarometer shows that 80% of Slovenians think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values.

The adjusted roadmap introduces a new initiative focused on 'Support for low-value AI applied projects', while removing a previously planned measures on support for vocational training

¹⁴ Corrigendum to Digital Decade Country Report Slovenia 2024: Slovenian entities are indirect partners in the Important Project of Common European Interest on Next Generation Cloud Infrastructure and Services (IPCEI-CIS).

programmes. Trainings for employees will instead be delivered through the AI Competence Centre. With EUR 6.4 million, Slovenia aims to assist around 70 companies in developing AI-based solutions, from initial testing to full commercial deployment. This initiative is expected to expand the availability of AI solutions and increase AI capabilities within funded companies, thereby indirectly boosting AI adoption across the broader business landscape.

2024 recommendations on advanced technologies: Accelerate policies to increase and speed up the uptake of advanced technologies. In particular by stepping up actions on data analytics, and by speeding up and further targeting preparation and implementation of measures on AI.

Slovenia made some efforts to address the recommendation through new policy actions in 2024.

Slovenia is implementing projects to increase the adoption of advanced technologies, with a strong emphasis on AI and new activities are planned, including in the adjusted roadmap.

Unicorns, scale-ups and start-ups

Slovenia is one of the six EU Member States without a unicorn company¹⁵ and there is also no potential future unicorn in the country¹⁶. In its adjusted roadmap, Slovenia maintains its very ambitious goal of seven unicorns by 2030. Given the current situation in Slovenia, additional measures may be needed to meet this target.

Slovenia continues to take action to improve access to funding and framework conditions for start-ups, although these initiatives are no longer part of its adjusted roadmap. A key development is the start-up strategy currently under preparation. The [draft strategy](#) from May 2024 outlines several objectives closely linked to the Digital Decade target. To support the achievement of these objectives, the strategy proposes actions in five key areas: strengthening the supportive environment for start-ups, attracting global talent, developing the venture capital market, introducing employee stock option remuneration and creating a new legal business entity to simplify company creation and management. At the [Slovenian Start-up event in January 2025](#), stakeholders emphasized the need for the swift finalisation and implementation of the strategy, alongside strong support and collaboration across ministries.

In terms of framework conditions, the Foreigners' Act and the Employment, Self-employment and Work of Foreigners Act have been amended to streamline the procedures for employing foreign workers. Closely aligned with the draft start-up strategy, additional legislative changes are being developed, including introducing new legal entities and of employee stock option remuneration. These changes are expected to be implemented later in 2025.

On access to funding, venture capital expenditure remains low and Slovenian businesses rely less on funding from capital markets than the EU. Venture capital amounts to only 0.005% of GDP in Slovenia, which is the second lowest in the EU. Shares and bonds only represented 7.4% of Slovenian non-financial corporations fundings sources (compared 23.8% in the EU). In this context, one key initiative is the [Slovene Early Stage Innovation Fund](#), which will fund around 70 projects of innovative deep-tech start-ups and scale-ups with a budget of EUR 25 million (this measure was included in the initial roadmap with a total budget of EUR 125 million). The launch was already announced last year but is

¹⁵ Based on data from Dealroom (extracted on 24.03.2025). A unicorn is a company that has been valued at over USD 1 billion in an initial public offering or trade sale or a company that has been valued at over USD 1 billion in its last private venture funding round. Only companies headquartered in the EU are considered. In its adjusted roadmap, Slovenia reports one unicorn, which was acquired in 2017 by a non-Slovene company.

¹⁶ Based on data from Dealroom (extracted on 31.01.2025). A potential future unicorn is a company with a market valuation between USD 250 million and USD 999 million, headquartered in the EU.

currently still being prepared. In the meantime, a call for proposals with a total budget of EUR 2.2 million has been [launched](#) to fund the innovative start-ups in their development of minimum viable products and product launches.

Strengthening Cybersecurity & Resilience

In Slovenia, 56% of people have at least basic digital safety skills, well below the EU average of 69.55%. Moreover, only 28.98% of individuals are engaged in three or more precautionary actions (and therefore could be considered as having above basic digital safety skills). The most frequent measure was refusal of the use of personal data for advertising purposes (34.21%), while limiting access to social media profiles and content was the least common (20.71%).

Slovenian enterprises tend to experience fewer incidents related to cyberattacks and employees are less aware of their ICT security related obligations compared to the EU.

The number of enterprises that experienced ICT security incidents leading to unavailability of ICT services due to attack from outside (e.g. Ransomware attacks, Denial of Service attacks) slightly increased in Slovenia, from 2.15% in 2022 to 2.58% in 2024. It remains below the EU average (3.43%). Furthermore, Slovenian enterprises are less prone to incidents related to hardware or software failures (8.13%) which is one of the lowest figures in the EU. In terms of security measures, the proportion of enterprises implementing them is below the EU average (86.12% compared to 92.76%). Similarly, the share of enterprises that made their employees aware of their obligations in ICT security related issues is also lower than the EU average (55.08% vs 59.97%).

Type of activities to protect personal data online (% of individuals)



Slovenia is significantly lagging behind in the adoption of the secure IPv6 protocol, both among end users and on the server side.

In deploying secure internet standards, only 12% of end users in Slovenia have adopted Internet Protocol version 6 (IPv6), compared to the EU average of 36%. Similarly, for the internet services that can operate over IPv6, Slovenia stands at 4%, while the EU average is 17%. IPv6 is an important protocol as it ensures the scalability, stability, and security of the Internet. Its deployment has become increasingly urgent, as traditional IPv4 addresses have been exhausted for some time. Domain Name System Security Extensions (DNSSEC) is another important standard that introduces security features to DNS. In Slovenia, the DNSSEC validation rate is 65% in Q3 2024, much higher than the EU average of 47%.

According to the Government Information Security Office, the transposition of the Network and Information Systems (NIS) 2 directive through the new Information Security Act is close to finalisation. The NIS 2 directive seeks to strengthen cybersecurity in 18 critical sectors, including public electronic communications and manufacturing. Industry stakeholders expect that, while the implementation may pose challenges for businesses – such as the need for specialised skills – it could also help drive the adoption of digital technologies in Slovenian businesses. The planned cybersecurity voucher (see SME with at least basic digital intensity section) may provide additional support to businesses in this regard.

With increasing cyber threats, Slovenia develops cyber awareness and capabilities on several fronts.

However, in its adjusted roadmap, Slovenia has maintained existing measures without introducing any new ones. For its public services, Slovenia is working on connecting several government bodies via a quantum key distribution network to secure their communications (see also quantum section) and is providing cybersecurity trainings to its civil servants. As part of the Digital Healthcare Act, which is still to be adopted, the digitalisation of healthcare infrastructure, including cybersecurity, will be managed by an independent agency that is still to be established. According to the Digital Decade Eurobarometer 2025, 80% of Slovenians think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies.

In terms of integrating cybersecurity into education, Slovenia is creating a network to conduct cybersecurity trainings in schools. This initiative, maintained in its adjusted roadmap, started in summer 2024, with training for teachers set to continue in 2025. So far, 22 schools are involved, with plans to expand the network to a total of up to 80 schools. Additionally, a pilot project of cybersecurity training for girls has been launched, with around 80 girls trained so far.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Slovenia lags behind in digital skills. Although its population has a relatively low level of basic digital skills, the disparities across gender, education level, living areas and age groups are less pronounced compared to the EU and the country is actively working to enhance digital inclusion. Despite making good progress in increasing its proportion of ICT specialists within the workforce, Slovenia still falls below the EU average. The relatively low share of ICT specialists may be one of the factors limiting the adoption of advanced digital technologies by businesses. For example, in 2023, 58.3% of companies expressed interest in adopting AI technologies, but refrained due to the lack of relevant skills¹⁷. In this context, it will be crucial to see how digital skills will be integrated into the ongoing higher education reform and the education curricula reform. The availability of digital public services is less widespread than in the EU, but their uptake is higher than on EU average. According to the Ministry of Public Administration, providing cross-border services remains challenging, but is expected to be improved with the implementation of the Single Digital Gateway. Moreover, the country intends to enhance the digital transformation of public authorities, in particular for data access and use and on municipality level. A relatively high share of Slovenians encounters hostile and degrading messages online and is exposed to misinformation, which they are less likely to verify compared to their EU peers. Despite leading in using the internet to express opinions on political issues online, Slovenians are the least likely to participate in online consultations or voting on political issues, such as signing a petition.

Equipping people with digital skills

Basic Digital Skills

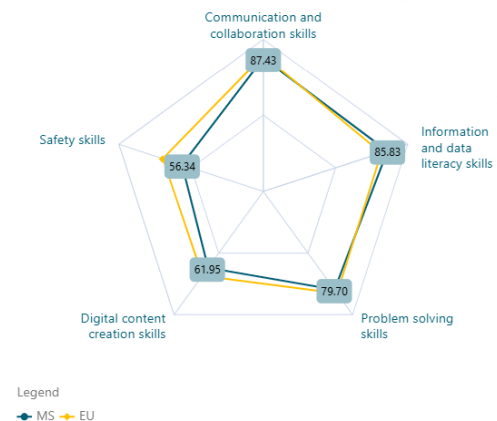
In 2023, Slovenia's population with at least basic digital skills stood at 46.70% (2030 national target is 80%) after a decline of -3.0% compared to 2021¹⁸, lagging behind the EU average of 55.56%. While there are no figures available for 2024, detailed breakdowns of the 2023 data provide a more granular perspective.

¹⁷ IMAD Development Report 2024 (SURS, 2024b).

¹⁸ The decrease could be explained by post-COVID-19 effects, with a decreased digital activity of the population, e.g., with less teleworking or online purchases. Looking at some indicators focused on one specific activity, e.g., use of cloud services, internet use, use of ICT at work and doing financial activities online, Slovenia mainly scores around the EU average.

- **Gender Gap:** The gender disparity in Slovenia is minimal, with 46.92% of men and 46.47% of women having basic digital skills. This gap is also lower than the EU average (0.45 percentage points (pp) compared to 2.23 pp).
- **Education Level:** Slovenia scores below the EU average across all education levels, but the skills gap between these levels is narrower compared to the EU average. Among individuals with a high formal education, 68.69% have basic digital skills (EU average: 79.83%). The group with no or low formal education is most affected, with only 32.61% possessing basic digital skills (EU average: 33.61%). However, the gap between this group's digital skills and the national average is 14.09 pp, smaller than the EU average gap of 21.95 pp.
- **Living Areas:** 42.41% of the rural residents in Slovenia have basic digital skills, which is under the EU rural average of 47.50%. However, the gap between rural residents and the Slovenian national average is 4.29pp and narrower than the EU average gap of 8.06pp.
- **Age Groups:** The age group analysis shows that 16 to 24-year-olds are the most skilled digitally, with 73.07%, which is the only age group where Slovenia is surpassing the EU average (69.98%). Conversely, the 65 to 74-year-olds demonstrate the lowest digital skills level, at a mere 17.06%, which is far below the EU average of 28.19%.
- **Digital Skills Index components:** Looking at the five Digital Skills Index's individual areas, Slovenia is above the EU average only in one of them: information and data literacy, scoring 85.83%. Moreover, the level of safety skills is concerning, with Slovenia scoring only 56.34%, substantially lower than the EU average of 69.55%.

Digital Skills Index components
% of individuals



Although Slovenia lags behind in basic digital skills, the disparities across gender, education level, living areas and age groups are less pronounced compared to the EU.

Slovenia's target for the basic digital skills of its population remains at 80% in its adjusted roadmap.

To support this, Slovenia has introduced two new measures in its roadmap focusing on digital inclusion: one aimed at assisting NGOs in the use of digital technologies and another one on monitoring digital inclusion to inform future initiatives. However, two measures in formal education and digital inclusion have been removed (one of them has been removed due to the pending legal basis for implementing a train-the-trainer concept for digital literacy).

A key initiative in this area is the modernisation of education curricula, with the goal of integrating digital skills more comprehensively into pre-school, primary, and secondary education. A broad group of experts from academia, public development institutions, and practitioners has been involved in the reform, and the work on updating the curricula is about to be finalised. The updated curricula are expected to be processed for government adoption by the end of 2025., Slovenia reported that it plans to integrate digital skills at all levels, including in primary and secondary schools. However, it remains to be seen how extensively digital skills will be integrated. Although acquiring digital skills is not mandatory in teacher training programmes, digital skills for teachers are being incorporated into various educational projects. Additionally, new IT solutions in teaching are being supported through dedicated projects, such as an app for pupils on learning to read, already used by over 4 000 teachers in their classes.

Slovenia continues to implement measures to support basic digital skills across different demographic groups, including young people, adults, older people, and vulnerable groups. However, it remains to be seen if these efforts will be sufficient to address the low level of basic digital skills across the population overall. Since 2022, people aged 55 and older have been able to develop basic digital skills through the 'classroom on wheels' project. By now, the project [mobile heroes](#) has reached over 5 000 participants throughout the country and Slovenia has also shared this project as one of four best practices for the Digital Decade Best Practice Accelerator on basic and advanced digital skills. Since 2024, more than 15 000 young people have improved their digital skills in the project [Youth 2024](#) through workshops and courses, with a focus on encouraging girls into ICT, teaching advanced digital technologies like AI and blockchain, and building competencies such as information and data literacy and problem-solving. The project will be continued, with a [new call for tender](#) already underway. Furthermore, over 10 000 participants aged 30 and more have taken part in [non-formal training courses](#) to acquire basic and advanced digital skills, as well as increased awareness about responsible and safe technology use. By October 2025, the number of adults trained is expected to exceed 25 000. Moreover, ongoing training programmes are enhancing the digital competencies of civil servants, covering both basic and advanced digital skills as well as digital leadership skills. In total, at least 40 000 participations will be provided by 2026, with Slovenia reporting that more than half of these have already been completed.

According to the 2025 Eurobarometer, 78% of Slovenians think that human support to help accessing and using digital technologies and services would facilitate their daily use of digital technologies. 86% of Slovenian respondents think that public authorities should prioritise ensuring that people receive proper human support to accompany the transformation brought by digital technologies and services.

2024 recommendation on basic digital skills: Accelerate efforts in the area of basic digital skills. In particular, by increasing the level of these skills to allow its population and economy to make full use of the potential of digital transformation. This can be done through an increased and intensified offer and collaboration between public and private actors.

Slovenia made some efforts to address the recommendation through new policy actions in 2024. Slovenia continues to implement measures to support basic digital skills across various demographic groups and added two new measures in its adjusted roadmap to promote digital inclusion. The curricula reform, a vital component for integrating digital skills more broadly throughout the population, is currently still ongoing and it remains to be seen how digital skills will be reflected exactly.

ICT specialists

In 2024, Slovenia is at 4.3% of ICT specialists in total employment (2030 national target is 10%) after a considerable increase of 13.2% but remains below the EU average of 5.0%. The country is lagging behind compared to its national trajectory. Nonetheless, Slovenia is making progress in narrowing the gap with the EU, with its share of ICT specialists increasing from 3.8% in 2023 (EU-level share: 4.8%) at a notably higher growth rate of 13.2% compared to the EU's 4.2%. The percentage of female ICT specialists in Slovenia is now 19.2%, slightly below the EU average of 19.5%, yet marked by a growth rate of 12.3% which exceeds the EU's 0.5%. In 2023, Slovenia's female ICT specialist share was 17.1% compared to 19.4% at the EU level, indicating a positive trend in improving gender diversity within the sector. In 2024, 26.94% of enterprises with 10 or more employees in Slovenia provided ICT training, surpassing the EU's 22.29%. However, while the EU's share of enterprises providing ICT training stagnated, Slovenia's share declined compared to 2022 (28.86% in Slovenia vs 22.37% on EU level).

Slovenia's target for ICT specialists remains at 10% in employment in its adjusted roadmap. Despite the considerable efforts required to meet this target, Slovenia has not introduced any new measures in its adjusted roadmap. In fact, it has reduced the budget for most of the existing initiatives, which are often narrowly focused in scope and appear suitable for providing targeted support in specific technology areas (cybersecurity and quantum). Additionally, a range of shorter programmes for reskilling or -upskilling focused on different topics, will continue. These programmes will primarily be targeted at women. However, these efforts do not seem sufficient to address the need for ICT specialists in the country sufficiently.

A key initiative in this context is the reform of the higher education curricula, aimed at integrating digital skills more comprehensively into higher education. The proposal for this curricula update is currently in interministerial consultation and is expected to be introduced next year. Against the background of the current needs, it remains to be seen how extensively advanced digital skills will be integrated. At the same time, pilot projects are being carried out to test solutions for integrating digital skills into higher education curricula, with a focus on improving labour market outcomes. Given the strong interest from both employers and employees, micro-credential courses in digital skills have also been launched in this context. The [OECD's mid-term evaluation](#) of several pilot projects, presented in February 2025, confirms that digital transformation - often linked to upgrading digital infrastructure - and the development of micro-credentials are key focus areas of the pilot projects. The OECD also highlighted that identifying skill shortages and predicting the competencies needed remains a significant challenge, and that interdisciplinary approaches are crucial for embedding digital skills.

Efforts to anticipate the demand for ICT specialists and future job market trends are ongoing. However, the latest skills forecast data from the [Labour Market Platform](#) dates back to June 2023, with an update expected by 2028. Furthermore, Slovenia has conducted pilot projects in both the public and pharmaceutical sectors to explore how sector-specific changes, such as increased production in the pharmaceutical industry, can be factored into the higher education system. The key findings from these projects suggest that addressing the dynamic needs of various economic sectors remains challenging and that updating educational offers to match these needs can still take long (several years in this case). Reports suggest that Slovenia does not yet have an integrated mechanism for knowing and forecasting human resources needs or competences¹⁹.

2024 recommendation on ICT specialists: Strengthen the early identification of labour market needs and further complement them for a swift reaction, especially in the area of digital upskilling and reskilling, adapt the (higher) education curricula to the latest digital needs and addressing the gender gap. Strengthened collaboration between industries, (higher) education institutions, public administration and relevant stakeholders can increase the effectiveness of those measures.

In 2024, Slovenia continued the implementation of existing measures but did not take any new measures. Slovenia continues to implement previously existing measures (no new measures have been added to the adjusted roadmap). Some of these measures aim to address a critical issue: the swift adaptation to labour market demand. However, they have yet to result in significant improvements. The ongoing higher education reform will be crucial in this context. Additionally, the roadmap continues to primarily focus on measures that enhance skills for specific technologies. This approach is unlikely to substantially expand the pool of ICT specialists, also given the budget reductions in the adjusted roadmap for those measures.

¹⁹ IMAD (Institute of Macroeconomic Analysis and Development): [Development Report 2024](#)

Key digital public services and solutions – trusted, user-friendly, and accessible to all

For digital public services for citizens, in 2024 Slovenia scored at 78.58 (2030 national target is 100) after a growth of 2.0%, which is still below the EU average of 82.32. The country is on track according to its national trajectory. However, Slovenia's growth rate of 2.0% fell short of the EU's 3.6%. Looking at cross-border digital public services for citizens specifically, Slovenia scored lower than the EU (64.29 compared to 71.28) and had a lower growth rate than the EU (2.8% compared to 4.3%). The share of e-Government users, i.e. people using the internet to interact with public authorities on website or apps was higher than the EU average (80.56% compared to 74.71%).

For digital public services for businesses, Slovenia scored at 85.0 in 2024 (2030 national target is 100) after a growth of 1.2%, although still below the EU average of 86.23. The country is lagging behind compared to its national trajectory. Slovenia's growth rate of 1.2% outpaced the EU's 0.9%. For cross-border digital public services for businesses, Slovenia scored 70.0 in 2024, lower than the EU's 73.76, but again with a higher growth rate than the EU (1.2% vs 0.9%).

For access to e-health records, Slovenia scored at 87.47 (2030 national target of 100) with no significant change compared to 2023 (growth rate of 0.1%)²⁰, which is still higher than the EU's 82.7. The country is on track according to its national trajectory. However, Slovenia's growth rate of -0.1% was significantly lower than the EU's 4.5%.

e-ID

Slovenia's e-ID card scheme was notified under the eIDAS regulation and the country is contributing to the development of an EU Digital Wallet. In its adjusted roadmap, Slovenia maintains the additional, self-set target of having at least 80% of people using their e-ID for public services. In 2023, the share of the population who reported having used their e-ID to access online services in the last 12 months was below the EU average (35.7% vs 41.1%). More recent data is not available, but according to the Ministry of Public Administration, the e-ID penetration has remained relatively low. In response, the Ministry plans to simplify the authentication process for mobile applications by summer 2025.

Slovenia is also actively contributing to the development of the European Digital Identity Wallet (EUDI Wallet) by participating in two large scale pilots working on various use cases: [POTENTIAL](#), a consortium working on six key use cases, including bank account opening, qualified electronic signature' to sign documents remotely and 'e-government services' to prove user's identity quickly and securely. The country is also involved in the pilot [Digital Credentials for Europe \(DC4EU\)](#) focused on the educational and social security sectors. Furthermore, Slovenia is involved in the set-up of the consortium Wallet Ecosystem for Business & Payment Use cases, Identification, Legal person representation and Data sharing (WE BUILD). The project is set to begin later in 2025 and aims to pilot the use of EUDI Wallets across various use cases in business, supply chain and payments.

Digitalisation of public services for citizens and businesses

Slovenia's targets for digital public services for people and businesses remain at 100% in its adjusted roadmap. Several ministries are involved in implementing the Action Plan of the Digital Public Services Strategy 2030, which was adopted in summer 2023. An update on the progress of the Action Plan's implementation is expected to be published by autumn 2025. Additionally, the country [launched](#) a European Social Fund Plus-funded project in July 2024 to digitalise employment services. The new employment platform and e-services will support jobseekers in their search and provide career

²⁰ The slight decrease can be explained by adjustments in the definition of health facilities supplying data compared to the previous reporting period.

guidance and orientation. According to the 2025 Eurobarometer, 82% of Slovenians people think that accessing public services online will be important for their daily life by 2030.

In its roadmap adjustment, Slovenia has introduced several new measures to accelerate the digital transformation of public authorities. The measures focus primarily on two areas: enhancing data access, use and quality, and supporting the digital transformation at local level. To improve data quality and exchange within public sector organisations, Slovenia is in the process of establishing data administrators in different organisations. At the local level, the measures include assessing the digital maturity of Slovenian municipalities, developing digital transformation plans to strengthen the digital capacities of local communities and the creation of a smart community data space.

2024 recommendation on key digital public services: Continue efforts to digitalise public services. Slovenia should continue to pay particular attention to the participatory development and user-friendliness of these services.

Slovenia made some efforts to address the recommendation through new policy actions in 2024. Slovenia did not provide sufficiently detailed information to allow an assessment of the action taken since last year's report. A progress report on the Action Plan of the Digital Public Services Strategy will not be provided before autumn 2025. However, new measures have been incorporated in the adjusted roadmap, specifically targeting the digitalisation of public authorities on municipality level and the improvement of data access and usage.

e-Health

Slovenia's target for citizens' access to e-health records remains at 100% in its adjusted roadmap.

The preparation of the Digital Healthcare Act, which includes the standardisation of data across national registries to enhance healthcare access and quality, remains a key activity in this area (see also Cybersecurity section). In this context, an important milestone for 2025 is enhancing the patient portal zVem to a one-stop portal which allows safe and reliable communication with all healthcare providers via this channel. In this context, the patient portal of the National Health Insurance Institute has merged with zVEM, leading to patients having access to both electronic health records and their health insurance data through a single service.

According to the 2025 Eurobarometer, 77% of Slovenians people think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) for their daily life by 2030.

2024 recommendation on e-Health: Make the data types of medical imaging reports and medical images available to citizens through the online access service and build on existing legal provisions as well as technical solutions for authorised persons to access electronic health data on behalf of others.

Slovenia made some efforts to address the recommendation through new policy actions in 2024. While the number of registered users has increased and more sub-categories of health records are available to patients, data on medical devices and medical images are still not available to citizens. Regarding access for authorised persons, Slovenia is developing proxy authorisation that will enable individuals to authorise persons to use patient access services, but this is not yet implemented for citizens.

Building a safe and human centric digital environment and preserving our democracy

Slovenia shows a varied landscape in the internet use for civic or political participation. In 2024, 34.08% of people used the internet for civic or political participation, marking a significant increase from 21.41% in 2023, and positioning Slovenia as the highest scoring EU country. However, a closer look at the types of participation reveals a more nuanced situation. Slovenia leads the EU in using the internet to express opinions on civic or political issues on websites or in social media, with 32.13% of people engaging in this activity, compared to the EU average of 16.48%. On the other hand, Slovenia has the lowest participation rate in the EU for activities like online consultations or voting on civic or political issues, with only 5.63% of people taking part, well below the EU average of 10.05%.

Slovenia continues to actively address disinformation and hate speech through various initiatives. The Government Communication Office, the Ministry of Digital Transformation and AKOS, the national regulatory authority for telecommunications, are leading those activities. Under the [reREAD, reTHINK, RECHECK](#) campaign, Slovenia implements a range of communication activities, including additional campaigns, [webportals](#), social media accounts, podcasts²¹, events (e.g. for [government and non-government communicators](#)) and enlists Slovenian celebrities as testimonials in its activities to broaden their impact. Moreover, the country also trains civil servants (especially relevant for teachers) and the Slovenian Press Agency offers a [fact-checker](#). In 2024, AKOS published 98 articles, and 108 social media posts aimed at increasing awareness about disinformation and hate speech.

A high share of the Slovenian population, especially young people, is often encountering hostile and degrading messages online. In 2023, in Slovenia, 43.76% of individuals encountered online messages that were considered hostile or degrading towards groups based on factors such as political views, disability, ethnical origin or LGBTIQ identities. This figure was significantly above the EU average of 33.5%. Young people aged 16–24 were more exposed than adults aged 25–64 (52.89% compared to 46.30%), reflecting a moderate age-related difference. Males (42.01%) and females (45.61%) reported similar rates of exposure, indicating balanced impacts across genders. According to the Digital Decade Eurobarometer 2025, Slovenians think that the action of public authorities is urgent to protect children online regarding the negative impact of social media on children's mental health (97% of Slovenians), cyberbullying and online harassment (96%) and to put in place age assurance mechanisms to restrict age-inappropriate content (96%).

Slovenian internet users report higher exposure to untrue or doubtful information online compared to their EU peers, but they are less prone to check its truthfulness. In 2023, 52.77% of people reported having encountered untrue or doubtful information or content on internet news sites or social media, surpassing the EU average of 49.25%. However, only 18.86% of these individuals checked its truthfulness. While the percentage of people who did not check because they already knew the information, content or source was not reliable is nearly twice as high as in the EU (24.05% compared to 12.55%), this still reflects a relatively low level of critical evaluation among those who recognised misleading content. Looking at different age groups, younger users, aged 16-24, were more exposed to untrue or doubtful information online (72.55%) than adults, aged 24-64 (55.66%), which could be due to different patterns of internet usage. Verification rates also differed significantly, with 36.26% of younger users checking the accuracy of content, compared to just 18.52% of adults.

²¹ E.g. [GOVSI Podcast: »Democracy is under attack«](#) | [GOV.SI](#) or <https://www.gov.si/en/news/2024-05-24-govsi-podcast-lets-stop-disinformation/>.

Leveraging digital transformation for a smart greening

The new green budgeting framework that Slovenia is developing under the RRP will help authorities to better address climate and environmental challenges. Furthermore, municipalities have begun using land mass data to monitor the effect of climate change. More broadly, the activities of Slovenian municipalities on green and digital transition are currently being identified and mapped with the aim of preparing a country-wide matrix and increasing coordination with municipalities in a public consultation.

The population recycles only a small part of its ICT equipment. Slovenians recycled laptops, desktops or mobile devices (9.44% for laptops and tablets, 13.55% for desktop computers and 9.43% for mobile phones) less frequently than the EU average (11.31%, 14.66% and 10.93%, respectively). Overall, a higher percentage of Slovenians either never purchase new devices, continue to use old ones or choose to sell or give them away compared to the EU average. Similar to the EU, eco-friendly criteria are less important when purchasing a new ICT device than factors like price, performance and design. Looking more closely at these criteria, Slovenia falls below the EU average in considering energy efficiency and eco-design as important when buying ICT devices (13.39% compared to 19.35% for energy efficiency and 10.00% compared to 12.04% for eco-design). One key player in digital equipment reuse and redistribution is the Slovenian NGO [Duh Časa](#).

Slovenia is taking steps to leverage the green transition through digital technologies. The adjusted roadmap includes two new measures: one on modernising green public procurement and another one on creating a digital twin. The Green Public Procurement Regulation will be updated to pursue the 'energy efficiency first' objective in public procurement, specifically targeting data centres, server rooms, cloud services and electronic devices. The digital twin project will establish a national infrastructure for spatial information, offering applications to visualise property values or monitor environmental parameters. Although green and digital transition are sometimes addressed in the same projects and tenders (e.g. circular and digital business models), there does not yet seem to be a systematic approach on how to consider their interaction or leveraging each other. According to the Digital Decade Eurobarometer 2025, 64% of Slovenians consider digital technologies important to help fight climate change, while 79% of Slovenian respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities.

2024 recommendation on green ICT: (i) Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.

(ii) Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development, as well as of attracting relevant financing.

Slovenia made some efforts to address the recommendation through new policy actions in 2024. Slovenia is taking steps to leverage the green transition through digital technologies, including new

measures in its adjusted roadmap. These measures include monitoring activities and using digital technologies to leverage the green transition.

Annex I – National roadmap analysis

Slovenia's national Digital Decade strategic roadmap

Slovenia submitted a revised national Digital Decade roadmap on 31 January 2025²² which brings it together with the Digital Slovenia 2030 Action Plan. While the update brings some new impulses in line with the new Commission's priorities in areas like green IC, AI and semiconductors, the update does not sufficiently address the challenges the country is facing, especially in the areas of basic and advanced digital skills and digitalisation of businesses.

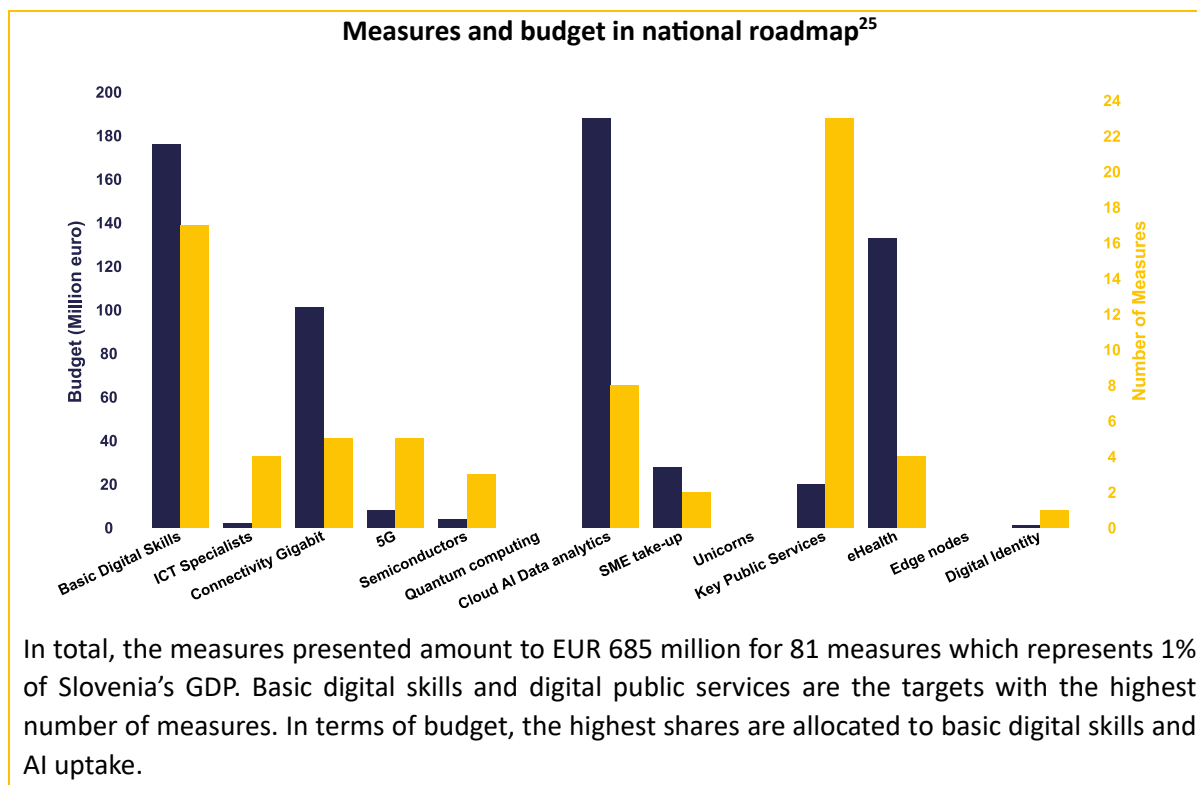
The new roadmap responds to a limited number of the recommendations issued in last year's report:

- All national target values were kept in line with the EU's 2030 ambition level. The additional targets on e-ID uptake by 80% of users of public services was also maintained, along with the quantitative estimates on how Slovenia will contribute to achieving the semiconductor target through companies involved in semiconductor R&D and manufacturing and the edge node target with companies deploying edge nodes.
- The roadmap contains some new or changed measures compared to the initial roadmap submission in 2023. New measures were added for several areas, especially for digitalisation of public administration. However, several measures, especially linked to Digital Decade objectives and all measures linked to startups have been removed from the adjusted roadmap.
- The adjusted roadmap was consulted with stakeholders²³. The Slovenian national network of non-governmental organisations for an inclusive information society has continued to systematically monitor the implementation of the national roadmap through the project '[Co-creating digital policies in Slovenia 2 – CODIS 2](#)', led by the Institute for Electronic Participation. This project received funding from the European Citizen Action Service (ECAS)²⁴. Key outcomes of the project include the development of a [dashboard](#) monitoring the roadmap implementation, the production of [monitoring reports](#) and the organisation of [workshops](#). Based on these activities, the NGO network has formulated recommendations on the roadmap adjustment, which were shared with the Ministry of Digital Transformation and also reflected in the NGO network's feedback in the context of the national roadmap adjustment consultation. The follow-up project 'CODIS 3', also funded by ECAS, will continue these monitoring activities with a focus on good governance principles.

²² Government approval pending due to some changes linked to the Digital Slovenia 2030 Action Plan. For the purpose of the Digital Decade Policy Programme, the content of the roadmap submitted on 31 January 2025 can be considered final. Corrigendum to Digital Decade Country Report Slovenia 2024: The initial national roadmap was adopted by the Slovenian Government in December 2023, before its publication and submission to the European Commission.

²³ Roadmap was published on 20 December 2024 for public consultation by 20 January 2025. Written consultation period 20 December 2024 until 20 January 2025.

²⁴ ECAS regrantee scheme of the European Citizenship Accelerator project 2024, co-funded by the Citizenship, Equality, Rights and Values programme of the European Union.



²⁵ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Slovenia is a member of the three established EDICs: the Alliance for Language Technologies EDIC, the Local Digital Twins towards the CitiVERSE EDIC and the EUROPEUM EDIC on blockchain. Slovenia is also working towards setting up an EDIC in the area of cybersecurity skills. Slovenian entities are indirect and/or associated partners in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS).²⁶ Slovenia is also a participating state in the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Slovenia is leading a working group of the Digital Decade's Best Practice Accelerator²⁷ aimed at improving basic and advanced digital skills. The Slovenian authorities have carried out extensive coordination work and shared their best practices and experience from different initiatives, in particular on digi info points, an adult digital literacy programme, mobile heroes (for older people) and digital training for children and youth. So far, five workshops have been organised by Slovenia to establish an exchange with the Members of Digital Skills and Jobs Coalitions, on digital skills in formal and non-formal education, on girls and women in ICT and on digital skills for employment.

EU funding for digital policies in Slovenia

Slovenia allocates 20% of its total recovery and resilience plan to digital (EUR 513 million)²⁸. In addition, under cohesion policy, EUR 287 million (representing 9% of the country's total cohesion policy funding), is dedicated to advancing Slovenia's digital transformation²⁹. According to JRC estimates, EUR 636 million directly contribute to achieving Digital Decade targets (of which EUR 439 million comes from the RRF and EUR 197 million from cohesion policy funding)³⁰.

For the RRF, the largest amounts are dedicated to digitalisation of key public services, including to remove obstacles to support the provision of digital public services and processes (e.g. enlarge the scope of electronic procedures in administrative processes), and e-Health, including to integrate new digital services into healthcare and to implement telemedicine. The third payment request was disbursed to Slovenia in October 2024. So far, the country received EUR 1.1 billion in RRF grants and loans. The Slovenian Cohesion Policy Programme 2021–2027 supports, inter alia, the digital transformation of public administration and SMEs.

²⁶ Corrigendum to Digital Decade Country Report Slovenia 2024: Slovenian entities are indirect partners in the Important Project of Common European Interest on Next Generation Cloud Infrastructure and Services (IPCEI-CIS).

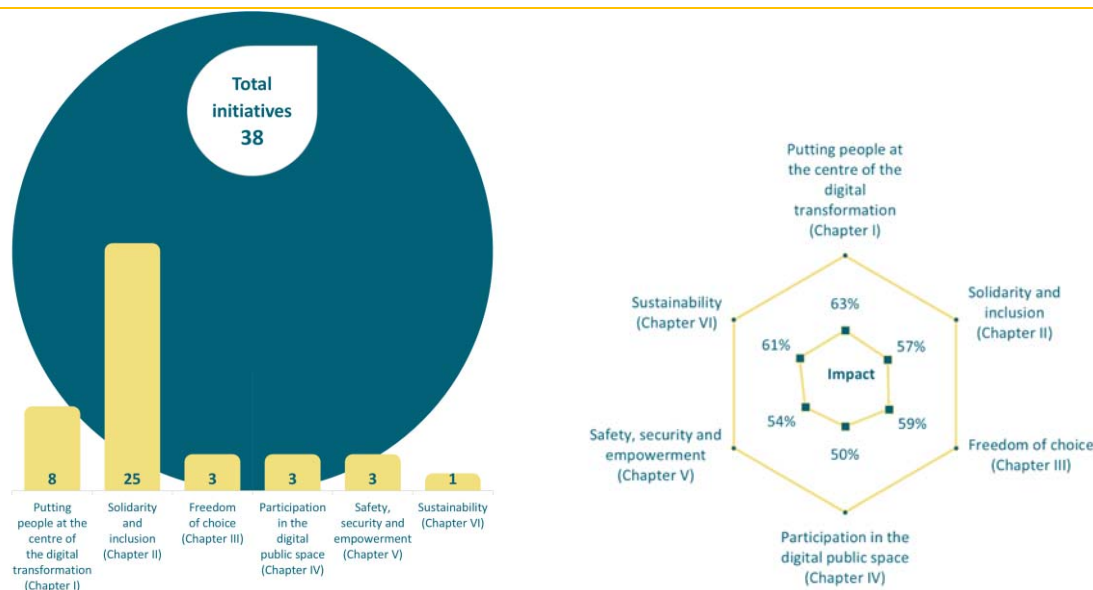
²⁷ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

²⁸ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

²⁹ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³⁰ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles³¹



Activity on Digital Rights and Principles (figure 1)

Slovenia has shown rather limited activity in implementing digital rights and principles, with the overall number of initiatives of around a half or less of the EU average (77). Slovenia launched 3 new initiatives in 2024, showing limited progress towards its commitments. Slovenia is most active in the area of Solidarity and inclusion (II). There is room for improvement, especially with regards to Privacy and individual control over data (V) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators developed by the support study illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Slovenia (mainly national government) and how these are perceived by citizens.

The indicators suggest that Slovenia is most successful in implementing commitments related to Putting people at the centre of the digital transformation (I). Slovenia should strengthen efforts in areas where the impact of digital rights initiatives appears to be limited, notably on Participation in the digital public space (IV).

According to the Special Eurobarometer 'Digital Decade 2025', 48% of citizens in Slovenia think that the EU protects their digital rights well (a 2% increase since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting freedom of assembly and of association in the digital environment (64%, above the EU average of 59%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (54%, above the EU average of 48%).

³¹ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

{COM(2025) 290 final} - {SWD(2025) 290 final} - {SWD(2025) 291 final} -
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DIGITAL DECADE 2025 COUNTRY REPORTS

Spain

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Executive summary

Spain benefits from a robust digital infrastructure, which allows it to develop its digital transformation. The country is making moderate progress in the adoption of key digital technologies by enterprises. Regarding AI, the Spanish government shows ambition with the last developments, but still continues to face challenges in AI adoption by SMEs. Although Spain lags behind in digital public services for business, the country has improved its performance in digital public services for citizens and in access to e-Health records. Spain is leading in initiatives to strengthen the cybersecurity of its public services and enterprises.

Spain's contribution to the Digital Decade is very ambitious, with 13 national targets, 92% of which are aligned with the EU 2030 targets. The country is following its trajectories well with 75% of them being on track (based on the 2024 trajectories established for 8 KPIs out of 8 analysed). Spain addressed 100% of the 7 recommendations issued by the Commission in 2024 by making some changes through new measures.

Digital Decade KPI ⁽¹⁾	Spain				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 ⁽³⁾	DESI 2025	Annual progress	ES	EU
Fixed Very High Capacity Network (VHCN) coverage	96.3%	95.0%	-1.4%	97.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	95.2%	94.9%	-0.4%	96.0%	69.2%	8.4%	100.0%	-
Overall 5G coverage	92.3%	95.7%	3.7%	98.9%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	167	301	80.2%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity ⁽²⁾	-	74.2%	4.8%	-	72.9%	2.8%	90.0%	90%
Cloud	27.3%	33.1%	21.5%	-	-	-	75.0%	75%
Artificial Intelligence	9.2%	11.3%	23.2%	10.6%	13.5%	67.2%	75.0%	75%
Data analytics	38.0%	40.9%	7.7%	-	-	-	75.0%	75%
AI or Cloud or Data analytics	49.9%	55.7%	11.6%	-	-	-	-	75%
Unicorns	13	13	0.0%	16	286	4.4%	24	500
At least basic digital skills	66.2%	-	-	-	-	-	85.0%	80%
ICT specialists	4.4%	4.7%	6.8%	5.0%	5.0%	4.2%	8.6%	~10%
eID scheme notification		Yes						
Digital public services for citizens	84.2	88.8	5.4%	88.7	82.3	3.6%	100.0	100
Digital public services for businesses	91.0	85.1	-6.5%	95.0	86.2	0.9%	100.0	100
Access to e-Health records	84.6	88.3	4.4%	87.3	82.7	4.5%	100.0	100
⁽¹⁾ See the methodological note for the description of the indicators and other metrics ⁽²⁾ DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index. ⁽³⁾ National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)								

According to the special Eurobarometer on 'the Digital Decade' 2025, 72% of Spanish citizens consider that the digitalisation of daily public and private services is making their lives easier. Concerning the action of the public authorities, 92% consider it important to counter and mitigate the issue of fake news and disinformation online. Regarding competitiveness, 85% consider it important

to ensure that European companies can grow and become “European Champions” able to compete globally.

A competitive, sovereign, and resilient EU based on technological leadership

Spain's digital infrastructure is generally more advanced than the EU average, with higher coverage rates in most categories. Spain's 5G spectrum assignment in pioneer bands is particularly strong too (98.33%). The country prioritises semiconductor production through PERTE Chip (The Strategic Project for Microelectronics and Semiconductors), which aims to strengthen design and production capabilities in the microelectronics and semiconductor industries. It is backed by a budget of EUR 12.25 billion until 2027 and the country has created the SETT (Spanish Society for Technological Transformation) to accelerate the allocation of funds. Spain is actively participating in the IPCEI-ME and Chips JU initiatives and is leading the Integrated Photonics Pilot Line. Notably, the Spanish government approved the updated 2024 National Artificial Intelligence Strategy and published an open-source GenAI models trained with a high percentage of data in Spanish and co-official languages as part of its effort to strengthen digital sovereignty. Moreover, Spain is actively participating in the IPCEI-CIS to accelerate the edge nodes deployment. Spain also launched a regulatory sandbox for high-risk AI systems, a pioneering step in implementing the European AI Act and supporting companies in meeting upcoming obligations.

The country's commitment to quantum technologies is reflected in the launch of the Quantum Technologies Strategy in April 2025 and in the deployment of initiatives, projects such as Quantum Spain, the Rydberg Atoms Computer and the EuroHPC Quantum Annealer. Concerning the digitalisation of business, the country shows strength in the basic digital intensity of SMEs (74.2%), and in the adoption of Cloud and data analytics by enterprises, although faces challenges in AI adoption by SMEs. Nonetheless, Spain is making efforts to improve its performance in these areas. The country is focusing on bolstering the innovative scale-up ecosystem with strategic investments to nurture and support innovative enterprises.

Protecting and empowering EU people and society

Spain continues to take positive steps toward empowering people and promoting opportunities for all individuals in the digital economy. The country is aiming to bridge gaps concerning the accessibility of digital technologies through all the activities related to its National Digital Skills Plan, which includes initiatives like a EUR 200 million program to train over 80 000 professionals in digital skills and AI. Spain is also making strides in the development of specialists in ICT, with initiatives like the ICT Talent Attraction and Retention Programme providing scholarships and contracts. Regarding Digital Public Services, Spain makes a significant contribution to the EU's Digital Decade targets, with its performance in public services for citizens (88.8), however the country lags behind concerning the public services for business (85.1). The Spanish government has taken significant policy actions against online misinformation and in favour of the minors' protection in the digital environment. It also pays particular attention to the promotion of digital rights and principles, with the recent launch of the Digital Rights observatory.

Leveraging digital transformation for a smart greening

Spain continues its efforts to support the synergies between the digital and green transitions. The country is implementing innovative programmes to reduce the environmental impact of energy-

intensive digital technologies. The National Green Algorithms Plan has four axes and aims to make AI more sustainable and to find AI solutions for the green transition.

National Digital Decade strategic roadmap

Spain did not submit a revised adjustment to its national Digital Decade roadmap. The Spanish authorities indicated that they plan at a later stage to formally revise the national roadmap, submitted in January 2024, in accordance with article 8 (3) of the Decision establishing the Digital Decade Policy Programme. The initial roadmap contains 67 measures with a budget of EUR 33.8 billion, of which EUR 26.7 billion come from public budgets (equivalent to 1.68 % of GDP). However, Spain has worked on addressing the recommendations made in 2024, by changing existing measures and implementing new ones that will be included in a future revised roadmap. The Spanish authorities published the initial national roadmap in March 2025.

Funding & projects for digital

Spain allocates 26% of its total recovery and resilience plan to digital (EUR 40.4 billion)¹. In addition, under cohesion policy, EUR 5.0 billion, representing 14% of the country's total cohesion policy funding, is dedicated to advancing Spain's digital transformation².

Spain is a member of the three established EDICs; the Alliance for Language Technologies EDIC, the Local Digital Twins towards the CitiVERSE EDIC and of the EUROPEUM EDIC. Spain is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Spain is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Spain has contributed to the **Best Practice Accelerator**³ by sharing one best practice in the frame of the Digital Skills cluster (The Generation D Pact launched in November 2022).

Digital rights and principles

According to a support study, Spain has been one of the most active Member States in implementing the [European Declaration on Digital Rights and Principles](#), with over 100 initiatives overall and 30 new initiatives launched in 2024. Spain is most active in the area of digital education, training and skills. Less activity has been identified with regards to sustainability. Measures in the area of solidarity and inclusion appear to have most impact on the ground, in contrast to those addressing participation in the digital public space.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Recommendations

- **AI, cloud and data analytics:** continue the efforts to support the digitalisation of enterprises, in particular, to foster the adoption of AI, and paying attention to SMEs.
- **ICT specialists:** continue the efforts to increase the number of ICT specialists and their percentage over the total employment in the country.
- **Green:** Develop a system for monitoring and quantifying the emission reductions of the deployed digital solutions.
- **Unicorns:** Continue efforts to improve the business environment and access to finance for digital start-ups.
- **Semiconductors and digital innovation:** Accelerate the efforts to allocate public funds in strategic projects.
- **Cybersecurity:** Continue efforts in cybersecurity to address evolving threats, particularly for enterprises and administration.

A competitive, sovereign and resilient EU based on technological leadership

Spanish policymakers are focusing on digital technologies as an enabler for competitiveness. In recent years, significant progress has been made thanks to the Digital Spain Agenda. It has succeeded in stimulating the development of infrastructure, continued growth, and digitalisation of the Spanish economy. In addition, the national Recovery and Resilience Plan significantly helps boost the digital transformation.

Spain's digital infrastructure is generally more advanced than the EU average, with higher coverage rates in most categories. However, the observed values are below the trajectories expected for 2024, which could indicate a need for accelerated development to maintain the lead.

Spain is making significant progress in ensuring that enterprises have a basic level of digital intensity and that they adopt more advanced technologies. Spanish SMEs accounted for 33.2% of the value added in the economy, while large enterprises generated 45.5%. SMEs in particular represented about 97.4% of the enterprises with more than 10 employees, while large enterprises constituted 2.6%. According to the last available data, R&D in the ICT sector represented 17.81% of total R&D expenditure by businesses and 22.73% of total R&D personnel in 2022⁴. However, as reflected in the European Semester report, regional disparities persist, affecting Spain's overall innovation performance. Regions like Madrid, Catalonia and the Basque Country are strong innovators with higher levels of investment in R&D than the Spanish average, while other regions continue to exhibit low R&D investment, highlighting an innovation gap.

The country also attaches importance to AI. On 15 May 2024, the Spanish government approved the updated **National Artificial Intelligence Strategy 2024** to build upon and accelerate the progress made by the 2020 strategy. Its goal is to strengthen Spain's position in AI by adapting to recent technological advances, promoting a transparent, ethical, and human-centered approach, while boosting innovation and competitiveness. The strategy focuses on key areas like supercomputing, data infrastructure, AI talent, cybersecurity, and promoting responsible AI across both the public and private sectors. Several initiatives are already underway, including major investments in the Barcelona Supercomputing Centre to support advanced AI model development and efforts to promote generative AI startups. Projects are also advancing the development of high-quality Spanish language corpora and foundational models as just in September 2024, the first AI model was published. This model has been trained with a high percentage of data in Spanish and co-official languages and is available to all as an open-source infrastructure. The country has already created a European Regulatory Sandbox on AI, with 12 selected high risk AI systems that will work on the implementation of the European regulation on AI through operational guidelines.

According to the 2025 Eurobarometer⁵, 86% of Spanish people think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

Building technological leadership: digital infrastructure and technologies

Spain benefits from its active deployment of connectivity infrastructures and the country has nearly met the EU targets for VHCN, FTTP and 5G coverage. The country is a leader in the deployment of edge nodes and invests heavily in semiconductors and quantum technologies.

Connectivity infrastructure

Spain's VHCN coverage for all households is significantly higher than the EU average, but the country is lagging compared to its national trajectory as coverage has not grown over the last year. In 2023, Spain's total VHCN coverage was 96.32%, compared to the EU's 78.64%, and in 2024, it was 95.01%, still above the EU's 82.49%. However, Spain's growth rate is -1.4%, which is below the EU's 4.9%. For households in sparsely populated areas, Spain's coverage was 86.94% in 2023 and 86.33% in 2024, both higher than the EU's 55.59% and 61.89%, respectively. Spain's growth rate of -0.7% is lower than the EU's 11.3%. These lower growth rates compared to the European average are due to the greater difficulty of increasing coverage in the last few %, as well as Spain's low population density.

Spain's FTTP coverage is also notably higher than the EU average, but it is also slightly below the expected national trajectory. In 2023, its total FTTP coverage was 95.21%, compared to the EU's 63.87%, and in 2024, it was 94.87%, still above the EU's 69.24%. Spain's growth rate of -0.4% is lower than the EU's 8.4%. For households in sparsely populated areas, Spain's coverage was 85.89% in 2023 and 86.32% in 2024, both higher than the EU's 52.55% and 58.78%, respectively. Spain's growth rate of 0.5% is lower than the EU's 11.9%.

Spain's broadband take up indicators show a strong performance in terms of high-speed broadband subscriptions, with shares well above the EU average. In 2023, Spain's share of fixed broadband subscriptions at 100 Mbps or higher was 93.54%, surpassing the EU's 65.9%. This figure increased to 95.68% in 2024, still ahead of the EU's 71.88%. For fixed broadband subscriptions at 1 Gbps or higher, Spain's share was 20.34% in 2023, outpacing the EU's 18.47%. In 2024, this increased to 25.4%, remaining above the EU's 22.25%. Spain's growth rate of 24.9% exceeded the EU's 20.5%. The share of 5G SIM cards in Spain was 22.08% in 2023, slightly above the EU's 21.7%. By 2024, this figure had risen to 35.14%, just below the EU's 35.56%. Spain's growth rate of 59.1% was lower than the EU's 63.9%.

Spain's overall 5G coverage is slightly higher than the EU average, but it is lagging compared to its national trajectory. In 2023, Spain's total 5G coverage was 92.28%, compared to the EU's 89.05%, and in 2024, it was 95.72%, still above the EU's 94.35% but 3 percentage points below the national trajectory for 2024 (98.9%). Spain's growth rate of 3.7% is lower than the EU's 6.0%. For households in sparsely populated areas, Spain's coverage was 67.44% in 2023 and 79.57% in 2024, equal to the EU's 71.1% and 79.57%, respectively. Spain's growth rate of 18.0% is higher than the EU's 11.9%.

Spain's 5G coverage in the 3.4–3.8 GHz band is higher than the EU average, but its growth rate is lower. In 2023, Spain's total coverage was 58.29%, compared to the EU's 51.06%, and in 2024, it was 74.04%, still above the EU's 67.72%. Spain's growth rate of 27.0% is lower than the EU's 32.6%. For households in sparsely populated areas, Spain's coverage was 10.24% in 2023 and 22.28% in 2024, both lower than the EU's 15.86% and 26.19%, respectively. Spain's growth rate of 117.6% is higher than the EU's 65.1%.

Spain's 5G spectrum assignment in pioneer bands is significantly higher than the EU average. In 2024, Spain's assignment was 98.33%, compared to the EU's 73.4%, and in 2025, it remained at 98.33%, still above the EU's 74.63%. Spain has no growth between 2024 and 2025, while the EU's growth is 1.7%.

Spain should focus on increasing growth rates in digital infrastructure to maintain its lead over the EU average. Priorities should include improving growth in VHCN, FTTP, and overall 5G coverage, as well as ensuring that households in sparsely populated areas are not left behind. The country's strong 5G spectrum assignment should be used to drive further advancements in digital connectivity.

VHCN and FTTP

Spain sets the VHCN/FTTP target at 100% by 2030 in its roadmap, which is aligned with the EU effort. Although the current VHCN/FTTP values are slightly below the trajectories expected in 2024, **the country is on track according to its national trajectory.**

In 2024, Spain launched UNICO Banda Ancha 2024 programme. It provides EUR 18.5 million in grants that will mobilise investments to provide coverage of new generation, very high speed, public broadband networks capable of providing fixed technology services at speeds of at least 300 Mbps, both downstream and upstream, to almost 60,000 homes and businesses.

5G

Spain's 5G target remains at 100%, as set in its national roadmap submitted in 2024, and it is planned to be achieved by 2027. In 2024, Spain showed an annual progress of 3.7%, achieving 95.7% of overall 5G coverage. However, to reach 100% coverage in populated areas by 2027 as planned in its national roadmap, it should have achieved the 98.9% according to the established trajectory. Nevertheless, the difference is a minor, which means that **the country is on track according to its national trajectory.** The national roadmap outlines six measures aimed at reaching 100% 5G coverage by 2030 and they are under implementation.

Between 2022 and 2024 the UNICO Sectorial 5G programme supported 5G projects aimed at transforming different economic sectors and essential services, with a total amount of nearly EUR 115 million awarded. Concerning the deployment of 5G standalone by private operators, Telefonica reported coverage in all cities with more than 250.000 habitants and continues expanding its network, while Orange is already covering more than 60 cities across the country.

In 2023, it was launched the first call (EUR 544 million) of the UNICO 5G Networks – Active programme, which aims to support deployment of equipment and infrastructure in less populated areas of Spain (with fewer than 10.000 inhabitants). A second call (EUR 171 million) was published in August 2024. This programme guarantees that the 5G stand alone will arrive to these less populated areas.

2024 recommendation: Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

Spain made some efforts to address the recommendation through policy actions in 2024:

To accelerate 5G deployment and its industrial use for innovative business-to-business (B2B), in the 26 GHz band, Spain has made the 450 MHz band available to businesses in the self-provision regime.

Semiconductors

With a budget of EUR 12.25 billion, **PERTE Chip** is the key strategic initiative to strengthen its scientific, design, and manufacturing capabilities in microelectronics and semiconductors. The goal

is to bolster the technological and research ecosystem across the entire value chain, supporting innovation, cleanroom infrastructure, talent development, and specific areas like integrated photonics and RISC-V architecture. The initiative takes a comprehensive approach, targeting all stages from conception and chip design to production and boosting the ICT manufacturing sector to increase demand for locally produced semiconductors. It supports scientific research in advanced microprocessors and quantum chips, promotes fabless companies and training networks, and promotes national semiconductor manufacturing with leading-edge and mid-range technologies. It also aims to stimulate the ICT manufacturing sector and entrepreneurial ecosystem through venture capital focused on chip startups and scaleups. **Despite the efforts of the Spanish government, there has been a delay in the implementation and allocation of funds. To try to accelerate public funding, [SETT](#) (Spanish Society for Technological Transformation) was created as a public entity in July 2024 to manage the EU funds for strategic sectors.**

The **Cátedras Chip initiative**, with EUR 45 million allocated, focuses on scientific capacity-building in universities involving private sector in the Chairs to contribute to the transfer of knowledge. Another major effort involves the Chips Joint Undertaking pilot lines, with over EUR 133 million of funding (half from the EU). It includes the Integrated Photonics pilot line intended to establish Spain as a global leader in photonics and ensure full technological independence in this area by 2030.

The Ministry of Industry and Tourism allocated EUR 65.4 million to direct participants in the **Important Project of Common European Interest (IPCEI) on Microelectronics and Communication Technologies**, with an additional EUR 56.6 million for indirect participants. Meanwhile, EUR 111 million were granted to a direct participant by the State Secretariat for Telecommunications in the same programme, summing EUR 233 million invested in the IPCEI-MC. These funds aim to strengthen the design ecosystem, supply chain capabilities, and the initial deployment of advanced semiconductor technologies.

Further efforts include EUR 110 million in support of R&D projects which enforce the whole value chain of microelectronics and semiconductors and operate outside of specific European programmes. An additional EUR 174.1 million to enhance the Spanish science and technology system, with funding for supercomputing, cleanroom networks, and research infrastructures. Moreover, EUR 76.1 million for lower TRL R&D projects and the consolidation of researchers. SETT will invest EUR 4 million in the only Spanish company to produce semiconductor metrology equipment. The aim is to dramatically improve chip wafer production using patented world-leading technology. SETT will also invest EUR 9 million in a project for the development of disruptive infrared sensors based on nanotechnology. **Spain also secured an agreement to establish Imec's second European manufacturing and R&D centre in Málaga, with over EUR 600 million in investment expected by 2030 partly funded through the RRF.**

Edge nodes

According to the Edge Node Observatory, Spain is expected to have deployed a total of 302 edge nodes by 2024, an increase of 80.2% since 2023. This is close to doubling (+134 edge nodes) the amount estimated for 2023 (167, number revised since SDDR 2024). Spain is currently the third country in the EU in terms of edge nodes deployment.

The European Project of Common Interest on Information Services and Cloud (IPCEI-CIS) is currently under being implemented and will allow at least 17 edge nodes to be deployed. The UNICO R&D Cloud project also supports R&D in this area. Private investments in the country are likewise noteworthy.

Quantum technologies

On April 2025, the Spanish government launched the first [Quantum Technologies Strategy](#), which amounts to EUR 808 million coming from European Regional Development Fund and the Recovery and Resilience Facility, with the possibility to leverage up to EUR 1.5 billion in public and private investments. This initiative seeks to boost funding for infrastructure and industrial applications of quantum technologies. It aims to highlight Spain's strengths in areas like quantum communications and post-quantum cryptography while also making the most of market-driven opportunities in sensing and metrology, particularly in sectors such as navigation, manufacturing, crisis prevention and defence. The strategy's core objectives include advancing research and market transfer, developing a national quantum industry, preparing society for digital transformation, and consolidating Spain's position in the global quantum landscape through coordinated initiatives spanning business support, AI integration, communications, sensing, data privacy, and infrastructure development. The strategy is aligned with the UN's International Year of Quantum Science and Technology and has been drafted after a participative process with regional governments and stakeholders. As a first action, in April 2025, the Council of Ministers approved the Royal Decree creating the Quantum Communications Hub. With a budget of EUR 10 million, it will promote the development of use cases, the promotion of R&D in quantum photonics and the implementation of training and dissemination initiatives.

In 2024, the Spanish Ministry for Digital Transformation and Public Service invested in the development of three quantum computing infrastructures, viewing quantum technology as a crucial component for more sustainable AI. One of the key initiatives is [Quantum Spain](#), a EUR 22 million project to build a national quantum ecosystem, featuring a superconducting qubit-based quantum computer, cloud access, quantum algorithm development, and emulators in Galicia, Castilla y León, and Barcelona. Another project involves the creation of a quantum device based on Rydberg atoms, backed by EUR 7 million. It is expected to function as a quantum simulator within two years and evolve into a universal quantum computer. This initiative is likely to generate patents and spin-off companies, further enhancing the Spanish quantum ecosystem. A third investment of EUR 8.5 million supports the Euro QCS-Spain quantum annealer, co-funded by the European Commission, to be hosted by the Barcelona Supercomputing Centre. It will integrate with existing supercomputers and quantum systems, contributing to a broader European hybrid supercomputing network.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Spain is notably progressing in ensuring the basic level of digital intensity of enterprises as well as regarding the uptake of more advanced technologies by companies. However, it is facing some challenges in AI take-up regarding small enterprises, as it is below the EU average, although it is performing significantly higher than the EU average regarding large enterprises. There are several public measures, implemented mostly under the national Recovery and Resilience Plan, to support digitalisation of businesses.

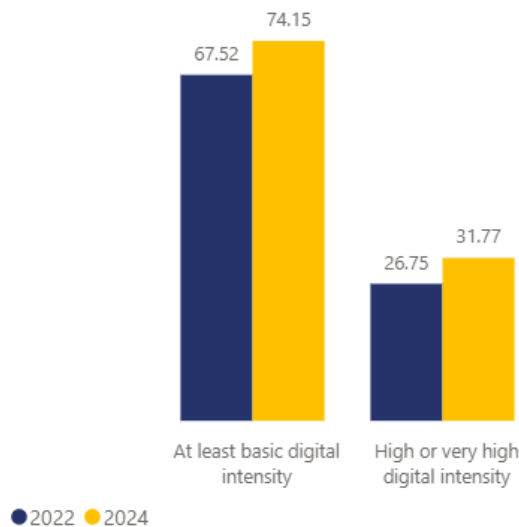
The country has not increased its number of unicorns over the last year. At the end of 2024, Spain was home to 13 unicorns, lagging behind the 16 unicorns expected for 2024 according to the trajectory established in its national roadmap. Spain aims to have 24 by 2030. However, this would still represent a limited contribution to the EU's target of nearly 500 unicorns by 2030. Spain remained stable in the Global Start-up Ecosystem Index 2024 between 2023 and 2024, ranking 7th in the EU, although the number of cities in the top 1 000 worldwide declined.

SMEs with at least basic digital intensity

By 2024, 3 out of 4 (74.15%) of SMEs in Spain had at least a basic level of digital intensity, an increase from 67.52% in 2022, with a robust growth rate of 4.8% every year (2022 is the last comparable year that used a similar methodology for measuring the digital intensity of enterprises). This placed Spain above the EU average of 72.91% in 2024. At the same time, zooming in on the SMEs that had a high or very high digital intensity, 31.77% achieved such an advanced level, in line the EU average of 32.66%. Overall, the data shows good progress for Spanish SMEs in their digital transformation.

Digital intensity Index

% of enterprises



According to the latest available data, in 2022, **Spanish SMEs accounted for 33.2% of the value added in the economy**, while large enterprises generated 45.5%. Notably, **SMEs represented about 97.4% of the enterprises with more than 10 employees**, while large enterprises constituted 2.6%.

The Spanish Ministry for Digital Transformation and Public Service is implementing several initiatives to strengthen the digitalisation and competitiveness of the enterprises. **The [Kit Consulting](#), which expands the existing Kit Digital programme to help SMEs adopt advanced technologies and extend support to medium-sized enterprises.** So far, EUR 165 million have been granted through over 12.000 aid packages, while the broader Kit Digital programme has distributed over 710 000 digital vouchers totalling

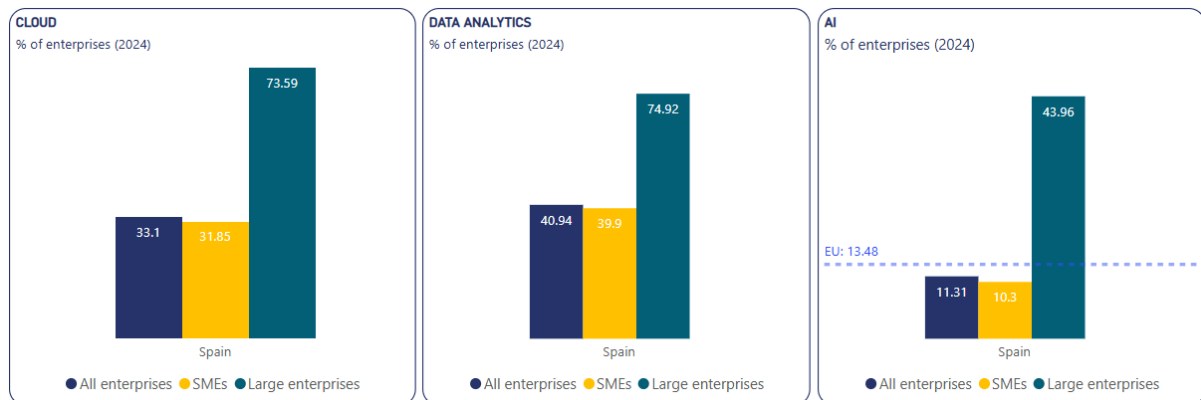
more than EUR 2.9 billion in investment. The **Generación D Pymes programme**, backed by EUR 256 million and managed by the School of Industrial Organization (EOI), aims to train SME leaders and employees in digital transformation to help create a new digital culture within businesses.

The **National Entrepreneurship Office**, with a budget of EUR 60 million, acts as a digital platform to support innovative entrepreneurship by connecting startups, entrepreneurs, and ecosystem stakeholders. It offers access to funding opportunities, educational resources, diagnostic tools, and a startup map, and has already engaged thousands of users and startups across the country. The UNICO Pymes programme, EUR 44.6 million in funding, focuses on bridging connectivity gaps for small businesses, microenterprises, and freelancers. It provides financial support in the form of connectivity vouchers to improve internet access and related services, helping businesses overcome a significant barrier in their digital transformation.

In addition, **the country has 50 digital innovation hubs** connected within [the European Digital Innovation Hubs network](#). They provide testing, training, funding and incubation support across sectors and technologies, e.g. in mobility, health, AI and cybersecurity.

SETT also helps channel funding to businesses, in particular, the Next Tech Fund, which contains EUR 4 billion from RRF funds.

Take up of cloud/AI/data analytics



In 2024, more than 1 in 2 enterprises (55.67%) in Spain adopted AI technologies, sophisticated or intermediate cloud computing services, or performed data analytics, a 11.61% increase compared to 2023 (49.88%). More specifically, the uptake among SMEs was slightly lower at 54.68% while large enterprises demonstrated a significantly higher engagement rate of 87.84%. As a result, a difference of 33.16 pps in uptake was recorded between SMEs and large enterprises in Spain, showing a decrease compared to the 2023 gap (39.04 pps).

Spain exhibited mixed performance in the adoption of cloud computing, data analytics, and AI technologies among enterprises with 10 or more employees. Data analytics and AI adoption exceeded EU averages, while cloud uptake and overall engagement with these technologies fell below EU levels. Large enterprises consistently reported significantly higher adoption rates than SMEs, with differences in technology uptake often exceeding EU trends. Considering the predominant share of SMEs among enterprises with 10 or more employees in Spain and their relatively lower contribution to economic value added, addressing these adoption disparities could play a key role in supporting balanced digital development.

In November 2024, the Spanish Minister for Digital Transformation and Public Function launched the [Plan to Promote Sectoral Data Spaces](#), which aims to accelerate the deployment of interoperable data ecosystems across all productive sectors in Spain. The plan is designed to help companies make the most of the future European single market for data, fostering innovation and boosting competitiveness. Its main goals include aligning with EU initiatives, boosting technological and industrial competitiveness, and encouraging public-private collaboration in the development of sectoral data spaces. The plan is structured around six strategic axes and involves 11 key initiatives that support demonstrators and use cases in strategic sectors, including tourism, language economy, smart urban infrastructures, and regional development. Funding is provided for technical and legal integration into existing data spaces, the development of digital products and services and for centralised management of public data demand. The plan also includes the creation of neutral data-sharing platforms, such as one for the tourism sector, which will host a marketplace for reusable applications and services. To support long-term sustainability and interoperability, the plan also establishes a centre of reference that will develop the technical reference framework, manage a registry of trusted and interoperable data spaces, and coordinate shared infrastructures and testing capacities. Additionally, a national campaign for awareness, training, and capacity building will be rolled out to ensure the broad adoption of sectoral data spaces and strengthen Spain's leadership in the digital data economy at both national and EU levels.

- [Cloud](#)

Based on the latest available data, **33.1% of Spanish enterprises used cloud services in 2024, revealing a 21.47% growth compared to 2023 (27.25%)**. However, while SMEs had an uptake of 31.85%, large enterprises showed a much higher adoption rate of 73.59%. This indicates a notable difference of 41.74 pps in uptake between SMEs and large enterprises in Spain.

- [Data Analytics](#)

40.94% of enterprises in Spain performed data analytics in 2024, showing a 7.71% increase compared to 2023, when 38.01% of them used data analytics in their work. More specifically, among SMEs, 39.9% adopted data analytics, while this was the case for 74.92% of large enterprises (about 3 out of 4). This indicates a gap of 35.02 pps between SMEs and large enterprises.

As part of the Sectoral Data Spaces roadmap, measures for the adoption of advanced data analytics have been implemented. A competitive grant call resulted in the approval of over EUR 75 million in funding for 78 projects. The aim is to establish demonstrator centres and use cases within data spaces, with additional private investment of EUR 47 million expected. These Data Space initiatives are being driven by a mix of companies and research organisations, with the collaboration of hundreds of entities acting as data providers or consumers. The funding supports two project lines: the creation of a national network of specialized demonstrator centres offering infrastructure for data space pilots across sectors like agri-food, health, and environment, and the development of data-sharing use cases to test new business models and services. Furthermore, the Language New Economy Data Space Project, under the 'Language Valley' initiative in collaboration with La Rioja, is underway with a EUR 12 million budget. This project will integrate data from various sources, including key institutions, and will create a Spanish speech corpus (a large collection of audio recordings of spoken language) as a shared data resource. Additionally, use cases will be developed for the Dialnet Global Data Space, a large Spanish scientific article database, to benefit economic sector data spaces.

- [Artificial Intelligence](#)

Approximately 1 in 10 (11.31%) enterprises in Spain were using AI technology in 2024. Although it is slightly below the corresponding EU level value of 13.48%, the country is on track according to its national trajectory. This reveals a 23.2% growth in AI uptake from 2023 (9.18%), considerably below the EU average growth rate (67.2%). Among SMEs, the 2024 uptake was 10.3%, whereas large enterprises showed a much higher rate of adoption, with 43.96% using AI. This corresponds to a gap of 33.66 percentage points between SMEs and large enterprises, above the EU gap of 28.53 percentage points.

To accelerate this trajectory, in January 2025 the Spain presented [HispanIA 2040](#), a strategic vision for how artificial intelligence can contribute to the country's future. At the same event, ALIA was presented, Spain's first foundational AI model developed with extensive data in Spanish and co-official languages (Catalan, Galician, and Basque). Designed as a public, open-source infrastructure, ALIA strengthens technological sovereignty by offering a transparent alternative to large-scale models trained mainly in English. Spain is also working to build an open-source AI community around ALIA to foster collaboration, encourage reuse, and support its adoption across public and private sectors.

In a further step towards leadership in ethical and human-centered AI, Spain activated in April 2025 a regulatory sandbox for high-risk AI systems. This controlled environment has started by testing 12 systems to evaluate their compliance with key requirements of the European Regulation such as human oversight. The initiative aims to support companies—especially SMEs and startups—in adapting to the EU AI Act, set to enter into force in August 2026.

Together, these initiatives aim to lower barriers to AI adoption, foster innovation, and ensure that the benefits of artificial intelligence are accessible across the entire economy.

2024 recommendation: continue the efforts to support the digitalisation of enterprises, in particular to foster the adoption of advanced technologies.

Spain made some efforts to address the recommendation through policy actions in 2024:

Spain has increased the basic level of digital intensity of its enterprises with a growth rate of 4.8% over the last two years. Concerning the adoption of advanced technologies, there has been a 11.61% increase compared to 2023. It is the result of different programmes implemented by the Spanish authorities. However, there are still challenges in AI adoption, which is still below the EU average (11.3% vs 13.5%), and in the gap between SMEs and large enterprises.

Unicorns, scale-ups and start-ups

At the end of 2024, Spain had 13 unicorns⁶ (2030 national target of 24), which is the same value as last year and represents a deviation from the value expected in the Spanish national roadmap (16). However, Spanish authorities are making efforts to reinforce and boost the startup ecosystem.

In December 2024, the Spanish government enacted Royal Decree 1138/2024 to formally establish the **National Forum for Emerging Companies**, as outlined in the Startup Law passed in late 2022. This forum is designed to foster strategic collaboration between public institutions and private sector players. The aim is to enhance Spain's technological and innovative entrepreneurship ecosystem. It will also promote coordination among various bodies that support technological innovation and entrepreneurship across the country. The creation of a structured space for dialogue among key players in Spain's innovation landscape is considered vital for improving public policy. Through this forum, stakeholders will assess existing objectives and measures, identify emerging needs, and ensure more effective and efficient policy design and implementation.

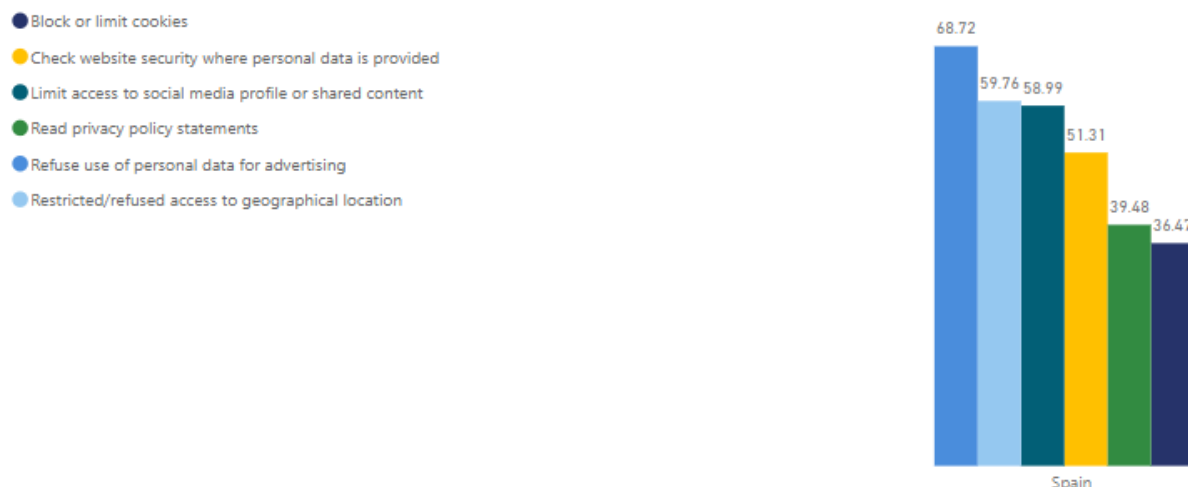
To better understand and guide the development of the startup ecosystem, and specifically to evaluate the impact of the Startup Law, a project funded by the European Commission under the Technical Support Instrument (TSI) is currently underway. Led by the OECD, this initiative involves Spanish ministries, public institutions, startups, and private organisations. Its goal is to pinpoint the ecosystem's main challenges and opportunities, assess the law's effectiveness, and develop policy recommendations to support its implementation and governance.

Strengthening Cybersecurity & Resilience

In Spain, 80.12% of individuals took at least one action to protect their personal data online in 2023, significantly higher than the EU average of 69.55%. In addition, a significant share of the population (62.94%) took three or more precautionary actions (and could therefore be considered as having above basic digital safety skills). Refusing the use of personal data for advertising purposes was the most common, with 68.72% of individuals engaging in this measure, while changing the browser settings to block or limit cookies on any device was the least common, reported by 36.47%.

⁶ Data extracted from Dealroom on 24 March 2025, including all possible retroactive revisions. See the methodological note for more details.

Type of activities to protect personal data online (% of individuals)



The number of enterprises that experienced ICT security incidents leading to unavailability of ICT services due to attack from outside (e.g. Ransomware attacks, Denial of Service attacks) has slightly decreased in Spain, from 3.67% in 2022 to 3.57% in 2024. It remains in line with the EU average (3.43%). Spanish enterprises are quite below the EU average (11.97% vs 17.97%) concerning incidents related to hardware or software failures.

In term of measures, 89.92% of enterprises deployed some ICT security measures (below the EU average of 92.76%) but only 57.14% of enterprises made their employees aware of their obligations in ICT security related issues, which is slightly below the EU average (59.97%).

Concerning the deployment of [secure internet standards](#), Spain lags behind in the roll-out of Internet Protocol version 6 (IPv6) for the end users (9% at the end of 2024), which is quite below the EU average (36%). It is similar the situation of Spain regarding the server side as the country stands with a 6% while the EU average is 17%. IPv6 is an important protocol as it ensures the scalability, stability, and security of the Internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have been long depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out as it introduces security features to DNS. In Spain, the DNSSEC validation rate is 25% (Q3 2024), below the EU average of 47%.

The data on several dimensions of cybersecurity suggest that Spain has room for improvement, performing significantly below the EU average despite the efforts of the Spanish authorities detailed as follows.

According to the Digital Decade Eurobarometer 2025, 85% of Spanish citizens think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies. An increase of four percentage points compared to last year, reflects the growing concern of the Spaniards about this subject.

The Spanish government has significantly advanced its cybersecurity infrastructure by consolidating a central [Cybersecurity Operations Centre](#) capable of offering coordinated protection to 126 public organisations and over 200 000 users. It enables continuous incident response and provides centralized security event management, proactive threat detection, and support services for onboarding new entities. Additionally, a dedicated **Security Operations Centre** has been deployed for

local organisations with fewer than 50 000 inhabitants to ensure uniform protection and benefit local authorities from virtual security operations centers.

Another key development includes the certification of the State Administration's private cloud at a high-security level, ensuring data integrity and confidentiality. Various digital transformation projects have been launched, such as the digitalization of consular services to enhance remote work, the modernization of unemployment benefits management systems, and the creation of a digital civil registry to streamline administrative interactions.

A new General Subdirectorate for Digital Security has been established to unify the Ministry for Digital Transformation's cybersecurity responsibilities. It leads strategic actions in telecommunications and digital infrastructure, including network security, regulatory supervision, and the management of aid programmes. The Subdirectorate is structured in the Division for Telecommunications and Infrastructure Security, which oversees 5G security compliance, manages the 5G Security Operations Centre, and represents Spain in international network security forums; and the Division for Cybersecurity in Digital Transformation, which coordinates national cybersecurity strategies in collaboration with INCIBE, supports the cybersecurity business ecosystem, promotes regulatory frameworks and manages EU funded programmes.

Additionally, the Council of Ministers has recently approved EUR 1.157 million for 40 new projects aimed at strengthening Spain's cybersecurity and cyberdefense capabilities. It is aligned with the 2022 National Cybersecurity Plan and the Industrial and Technological Plan for Security and Defense.

Meanwhile, **INCIBE (National Cybersecurity Institute)**, under the Ministry's authority, continues to strengthen cybersecurity for citizens, SMEs, and professionals. Among its services is 'Tu Ayuda en Ciberseguridad 017', a free, confidential assistance helpline that handled over 98.000 queries in 2024.

INCIBE is also working on a national list of harmful pornographic websites, particularly those targeting minors. Its outreach includes awareness campaigns like [Safe Internet Day](#) and [#ExperienciaINCIBE](#), which uses interactive and gamified experiences, and educational efforts that reached over 117.000 children, families, and teachers in 2024. Cybersecurity training programmes and digital skills initiatives targeted a wide range of groups, including vulnerable communities and people with disabilities.

Furthermore, INCIBE has developed and promoted a range of cybersecurity tools and solutions tailored to the needs of both enterprises and families. In 2024, a total of 14 820 SMEs and professionals benefited from these tools, which aim to strengthen digital security in the business sector. For families, INCIBE updated its catalogue of [parental control solutions, expanding it to 68 entries to help parents better protect children online](#). It also supports entrepreneurship through the [INCIBE Emprende](#) programme, which in 2024 included events, workshops, and startup incubations and accelerations. Public procurement initiatives focused on innovation led to the awarding of multiple contracts to foster technological advancements. INCIBE also contributes to the implementation of the Digital Services Act (DSA), serving as a trusted flagger (responsible for detecting potentially illegal content and alert online platforms) within European networks. As part of its strategic agenda, it has launched five research-based cybersecurity projects in collaboration with Spanish universities. Under the [RETECH Ciber initiative](#), INCIBE supports regional cybersecurity ecosystems, coordinating with 17 autonomous communities and with a budget of EUR 162 million. In 2024, agreements were signed with Asturias, La Rioja, Madrid, and Aragón to further develop these capabilities.

Finally, Spain actively participates in the European initiative IRIS2 (new EU Secure Satellite Constellation) and GOVSATCOM (European Union Governmental Satellite Communications programme) that aim to provide secure, resilient and cost-efficient satellite communications.

2024 recommendation: continue the implementation of the 5G Cybersecurity Toolbox to ensure secure and resilient 5G networks.

Spain made important efforts to address the recommendation in 2024:

In 2024, Spain approved Royal Decree 443/2024, establishing the **National Security Framework for 5G networks** and services. This decree, developed under Royal Decree-Law 7/2022, aims to ensure the security of fifth-generation electronic communications. Its main purpose is to strengthen national security and guarantee the continuous and secure operation of 5G networks by taking a comprehensive approach that involves all actors in the 5G value chain. It also seeks to reinforce security in the deployment and operation of 5G infrastructure, promote a diverse supplier market to avoid high-risk vendors, and support national cybersecurity R&D activities related to 5G. Furthermore, it emphasizes the importance of education and awareness in 5G cybersecurity. As part of this framework, Spain has launched a pioneering **5G Security Operations Centre**, which supports the Ministry for Digital Transformation and Public Service by assisting organisations in preventing, detecting, and responding to cyber threats and attacks on 5G systems. It also contributes to the certification and standardization of 5G security, and it is a joint initiative between the National Cryptologic Centre and the Ministry for Digital Transformation.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

Spain is making commendable efforts to empower its population and ensure ongoing opportunities for everyone within the digital economy. Achieving digital inclusion requires broad access to technology, and Spain is moving in that direction through the initiatives under its **National Digital Skills Plan**. The country's commitment to enhancing digital skills is evident in its current progress. However, a shortage of ICT specialists remains a challenge that may continue until recent policies begin to yield results. Nonetheless, advancements in Spain's digital public services are showing encouraging signs.

According to the 2025 Eurobarometer, 84% of Spanish people think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 84% consider it would improve their daily use of digital technologies, and 92% think public authorities should consider it important to ensure that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services.

Equipping people with digital skills

Basic Digital Skills

In 2023, Spain showcased a strong digital skills presence, with 66.18% of its population having at least basic digital skills, surpassing the EU average of 55.56%. Even without new data in 2024, a detailed look into various demographics reveals insightful trends.

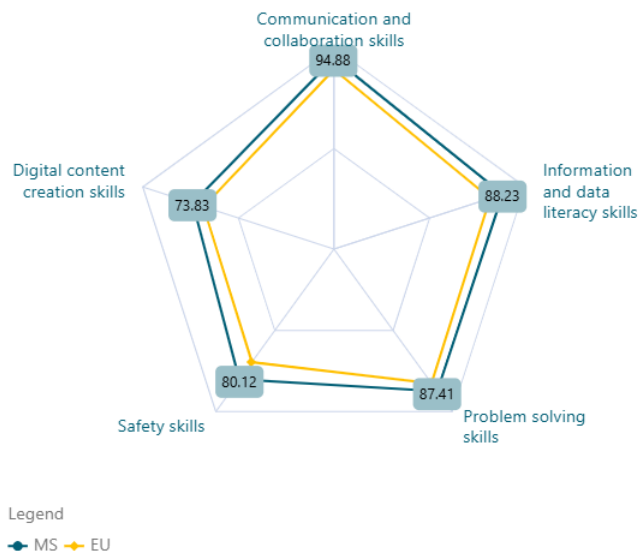
- **Gender Gap:** Spain shows a tiny gender gap in digital skills, with 66.49% of men and 65.87% of women proficient, leading to a gap of only 0.62 percentage points. This is better than the EU average gap of 2.23 percentage points.
- **Education Level:** Those with higher education in Spain are doing well in digital, with 85.78% having at least basic digital skills, which is above the EU average of 79.83%. However, individuals with lower levels of education are lagging, with 43.47% having at least basic digital skills, but still above the EU average (33.61%). The gap between this group and the national average is 22.71 percentage points, a tad higher than the EU average (21.95pp).
- **Living Areas:** In Spain's rural areas, 56.50% of people have at least basic digital skills, which is more than the EU average for rural areas (47.50%). Yet, there's a noticeable gap of 9.68 percentage points between rural areas and the rest of Spain, which is more significant than the EU average divide (8.06pp).
- **Age Groups:** Young Spaniards aged 16 to 24 are leading with digital skills, at an impressive 83.56%, way above the EU average (69.98%). The 65 to 74-year-olds are the least skilled in Spain, with 32.83%, but even this is better than the EU average for their age group (28.19%).

- **Digital Skills Index components:** Across the Digital Skills Index, Spain outperforms the EU average in all five categories. It excels in communication and collaboration skills with a high score of 94.88%. Even in its weakest area, digital content creation, the score is 73.83%, which is still above the EU average.

In summary, Spain's digital skills are robust, with particularly strong communication and collaboration abilities. While the gap in skills between education levels and rural versus urban areas does exist, the overall levels are very good, especially among young people and those with higher education. Spain's scores in the Digital Skills Index suggest a nation well-equipped for the digital age.

The country is in a good position to achieve its national target of 85%, which is above the EU target, by 2030. The roadmap contains eight measures for achieving basic digital skills, accounting for a total public investment of EUR 1 953 million.

Digital Skills Index components
% of individuals



Red.es has established a [digital skills training program](#) aimed at citizens at risk of digital exclusion to bridge various digital divides. The primary target audience includes individuals over 65, people with disabilities, vulnerable groups, and those with low digital skills. The programme includes in-person group training sessions with a practical focus and oriented toward everyday life situations, helping participants recognize how basic digital skills can support them in their daily activities. It will engage foundations, third sector organisations, and other companies with experience in providing basic digital skills training and reaching individuals at high risk of digital exclusion in both urban and rural areas. The goal is to leverage their local and regional presence and expertise in raising awareness to encourage participation in digital skills development.

In November 2022, the Secretary of State for Digitalization and Artificial Intelligence launched the **'Generación D Pact'** to improve the digital skills of the Spanish population through collaboration between public and private organisations. It aims to create a cohesive, coordinated and complete ecosystem to make visible and involve Spanish society in the digital transformation process, in order to close the digital skills gap, raising the percentage of the Spanish population up 100%. Currently 206 organisations have joined the Pact and have added 3 372 learning initiatives, and 80 772 citizens have registered in the portal and completed the self-diagnosis questionnaires of their level of digital skills.

ICT specialists

Spain's performance in ICT training and ICT specialists shows a mixed picture when compared to the EU average. Although the Spain's total percentage of ICT specialists is below the EU average, it is shown a positive trajectory in terms of growth rates. It is explained due to the significant growth in employment in other sectors in Spain in recent years, the percentage of ICT specialists as a share of

total employment remains below the EU average. According to the latest data published by Eurostat⁷, Spain now employs a total of 1 022 600 ICT specialists, accounting for approximately 10% of all ICT specialists in the EU.

In terms of percentage over the total employment, Spain's percentage of ICT specialists was 4.4% in 2023, compared to the EU's 4.8%. **By 2024, this figure increased to 4.7%**, although it is still below the EU's 5.0%. However, **Spain's growth rate of 6.8% surpassed the EU's 4.2%**, indicating a robust increase in the ICT specialist workforce. Regarding **female ICT specialists**, Spain's percentage was 19.5% in 2023, higher than the EU's 19.4%. **By 2024, this figure rose to 19.6%**, still higher than the EU's 19.5% and maintaining a growth rate of 0.5% equal to the EU's one.

Regarding ICT graduates, Spain is also showing a positive trend. According to the latest data published by Eurostat⁸, ICT graduates accounted for 5.7% in 2023, a 9.6% increase compared to the previous year. This rate exceeds the EU average, which rose from 4.5% in 2022 to 4.7% in 2023.

In 2022, the percentage of enterprises with 10 or more employees providing ICT training in Spain was 20.7%, compared to the EU's 22.37%. By 2024, this figure rose to 21.22%, slightly below the EU's 22.29%. However, Spain's annual growth rate of 1.2% outperformed the EU's -0.2%. This indicates that while Spain starts from a lower base, it is making strides to catch up.

To attract and retain AI specialists, Red.es launched in October 2024 the [Talent Attraction and Retention Programme in Artificial Intelligence](#) in collaboration with major research centers, offering 374 scholarships and training contracts lasting 48 months to support academic plans of at least 240 ECTS credits. Additionally, to meet the growing demand for digital experts across various professional fields, a EUR 200 million [training programme in digital skills for professional associations](#) has been initiated. The aim is to provide over 80,000 professionals in sectors such as legal, healthcare, economic, social, scientific, architecture, engineering, and educational with 150 hours of specialized training in advanced digital skills and AI.

2024 recommendation: Continue implementing its efforts to achieve a greater number of ICT specialists, designing incentives schemes to attract and retain them, and increasing the visibility and readability of training and reskilling options.

Spain made some efforts to address the recommendation through policy actions in 2024:

In 2024, the percentage of ICT specialists continued to grow in Spain as a result of the efforts of public administrations and the previously observed trend in the number of ICT graduates. However, the volume of ICT specialists continues below the EU average, although its growth rate is higher.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

Spain's digital public services and access to e-health records have shown a mixed performance when compared to the EU average. In 2023, Spain's total score for **digital public services for citizens** was 84.18, surpassing the EU's 79.44. This trend continued in 2024, with **Spain's score reaching 88.75**, compared to the EU's 82.32, **which makes the country on track according to its national trajectory**. Spain's growth rate of 5.4% in this area outpaced the EU's 3.6%. Similarly, Spain's cross-border digital public services score was 71.05 in 2023 and 78.73 in 2024, both higher than the EU's 68.37 and 71.28, respectively. Spain's growth rate of 10.8% in this category also exceeded the EU's 4.3%. The share of

⁷ Eurostat <https://ec.europa.eu/eurostat/databrowser/bookmark/0157d626-0bd6-4a78-8dac-8cc5a785a7b4?lang=en>

⁸ Eurostat <https://ec.europa.eu/eurostat/databrowser/bookmark/899b66a1-3936-4a3c-9512-97b3c9084062?lang=en>

people using government internet websites or apps remains quite above the EU average (82.70% versus 74.71%) in 2024.

However, Spain's **digital public services for businesses** tell a different story. **While Spain's total score was 91.0 in 2023, higher than the EU's 85.42, it dropped to 85.11 in 2024, falling below the EU's 86.23 and making the country lag behind compared to its national trajectory.** Spain's growth rate of -6.5% lagged behind the EU's 0.9%. A similar pattern is observed in the cross-border category, where Spain's score decreased from 82.5 in 2023 to 72.5 in 2024, while the EU's score increased from 73.13 to 73.76. Spain's growth rate of -12.1% was significantly lower than the EU's 0.9%.

In the realm of access to e-health records, Spain shows a positive trend. In 2023, its total score was 84.58, higher than the EU's 79.12. This gap widened in 2024, with **Spain's score reaching 88.29, compared to the EU's 82.70.** Spain's growth rate of 4.4% in this area was slightly lower than the EU's 4.5%.

In addition, the share of people using government internet websites or apps is slightly decreasing year after year in Spain, from 84.02% in 2022 to 82.70% in 2024. However, it was significantly above the EU average of 70.01% in 2024.

In overall, Spain's digital public services and access to e-health records have shown a mixed performance. While Spain has made significant strides in digital public services for citizens and access to e-health records, there is a clear need for improvement in digital public services for businesses. To enhance Spain's digital landscape, policymakers should focus on bolstering digital public services for businesses, while continuing to build on the progress made in other areas. This might involve investing in digital infrastructure, promoting digital literacy, and encouraging public-private partnerships to drive innovation and growth.

e-ID

In 2023, the last year with available data, 54.43% of Spanish people have used their eID to access online services for private purpose in the last 12 months, which is above the EU average (41.11%). However, 13.99% did not use eID because they did not have one.

Spain actively participates in several [Large Scale Pilots](#) to test the specifications of EU Digital Identity Wallets in a wide range of use cases, before their roll-out to Member States. Spanish stakeholders, both public and private, are taking part in three of the four LSPs projects which began in April 2023: POTENTIAL (involved in work on identification for eGovernment Services and registration for SIM cards, mobile driving licence, health credentials for ePrescription), EWC (piloting the use-cases of Digital Travel Credentials, payments and organisational digital identities) and DC4EU (Education/Professional qualifications & Social Security document).

Work is underway on the first version of the Spanish Digital Wallet, which will enable age verification to prevent minors from accessing adult content online. Its development will follow European standards in line with the EU agreement to ensure the protection of minors.

In addition, Spain has officially launched '[MiDNI](#)' app in April 2025 to obtain and use the digital National Identity Document (DNI). This application allows citizens to identify themselves, prove majority of age, carry out administrative procedures, register in services such as hotels or banks, and sign documents before a notary, among other functions. However, it is not yet valid for international travel or border controls, so the physical DNI is still required. In a second phase planned for 2026, functionalities such as electronic signature and authentication in online procedures will be incorporated.

Digitalisation of public services for citizens and businesses

Spain aims at reaching a score of 100 for the digitalisation of public services for citizen and businesses. Current observed rate of growth is significantly higher than EU average in public services for citizens but it is quite below the EU average in public services for business, where in addition, the country is lagging behind the expected value for 2024 in its national roadmap (85.1 vs 95.0).

Spain continues to lead in online public services, emphasizing omnichannel strategies to make digital services accessible to all citizens, primarily through mobile phones. Among the most impactful mobile applications are 'Mi Carpeta Ciudadana', which centralizes access to various public administration services and has over 5 million downloads, and others like 'Notifica' for managing notifications, 'Cita Previa' for scheduling appointments, 'Líneas de Ayuda' for accessing information on public grants, 'Empleo Público' for job opportunities, 'Catastro' for real estate information, QEDU for university data, and ICA for real-time air quality monitoring. Additionally, the 060 service has expanded its capacity with virtual agents, handling over 27 million calls and 140,500 chatbot inquiries since 2022.

In terms of data use and interoperability, Spain is advancing major initiatives. In 2024, Red.es granted EUR 12.9 million to the Spanish Federation of Municipalities and Provinces (FEMP) to develop multi-sectoral data spaces for smart cities, fostering public-private data exchange to improve decision-making and support economic growth, particularly in sustainable mobility. The Spanish administration is also developing the Data Platform, designed to break down data silos across ministries through big data technologies, improving data quality, innovation, and reuse. The platform is expanding in phases, aiming to create a shared data space for public organizations with analytical capabilities and interoperability with sectoral data spaces. 17 organisations and 51 information systems are already connected. Efforts continue to enhance the platform's capabilities, expand its development environment, and ensure compliance with the National Security Framework to guarantee the security and reliability of the hosted data.

As part of its broader public service digitalisation and AI strategy, Spain has also begun deploying ALIA across key government services. Early applications include a virtual assistant for the Tax Agency to streamline citizen queries, and 'Cardiomentor', a clinical decision-support tool used in primary care to improve the early diagnosis of heart failure, showcasing the potential of public, open-source AI to deliver inclusive, citizen-oriented solutions. More than thirty other use cases are being planned for the next phases of the project.

2024 recommendation: Continue efforts to digitalise public services and further promote their use.

Spain made some effort to address the recommendation through new policy actions in 2024:

Spain is making progress in the digitisation of public services and scores above the EU average in public services for citizens. However, there is a deviation from this trend in public services for businesses.

e-Health

Spain aims at a score of 100 for the access to medical records, in line with the 2030 EU target. In the context of the current rate of progress and the high score in 2024, which is one point above the expected value for 2024 in the national roadmap (88.3 vs 87.3), the country is on track to reach the target by 2030.

The National Health Data Space (ENDS) aims to integrate health system information nationwide to enable large-scale analysis and real-time responses, supporting disease diagnosis and treatment.

Led by the Secretary of State for Digitalization and Artificial Intelligence in collaboration with the Ministry of Health, the project provides regional governments with infrastructure for shared health data management, including multi-format repositories and advanced analytics tools with AI capabilities. In 2024, licenses were acquired for the data management platform, and procurement documents were prepared for the necessary on-premises and cloud infrastructure. A preliminary working environment was deployed, implementing three healthcare use cases related to antibiotic consumption, risk factors in COPD patients, and vector-borne disease monitoring. Work also began on defining Secure Processing Environments (SPE) to comply with the European Health Data Space Regulation. Additionally, a user support and incident management tool was launched and tested with regional staff. By the end of 2024, funds were successfully transferred to all regions and territories except Andalusia and Extremadura, which were finalizing the required documentation. A corporate visual identity for the ENDS was also created to support communication and outreach efforts.

According to the 2025 Eurobarometer, 80% Spanish people think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosis diseases) during their daily life by 2030.

2024 recommendation on e-health: (i) Make the data types of medical devices/implants, procedures/operations, and medical images available to citizens in all regions through the online access services; (ii) Increase the supply of health data by onboarding more categories of healthcare providers, especially in the private sector; (iii) Build on existing legal provisions and implement technical functionality for authorised persons to access electronic health data on behalf of others.

Spain made some efforts to address the recommendation through new policy actions in 2024:

Spain provided data for each of its 18 health regions. **In 2024, Spain improved their eHealth maturity score.** More data categories investigated under this framework have become available in more regions, especially data on procedures and operations, laboratory test results, medical imaging reports and hospital discharge reports. However, data on medical devices and implants and medical images are still unavailable in more than half the regions. Of the 11 categories of healthcare providers investigated in this study, all public ones and pharmacies in all regions supply data. In addition, in two regions, some private healthcare providers were supplying data. However, in general, **private providers in Spain have their own systems, which are not currently interoperable with the public systems.** It remains a significant gap for Spain.

Regarding access for legal guardians and authorised individual, legal provisions are in place across Spain. In 2024, one additional region introduced functionalities for legal guardians to access the data of their wards (56% of regions in total) and four regions for the first time implemented access for authorised persons as a functional feature (22% of the regions in total).

In 2024, authentication to the electronic health record systems is done using a (pre)notified eID compliant with the eIDAS regulation in all regions.

Building a safe and human centric digital environment and preserving our democracy

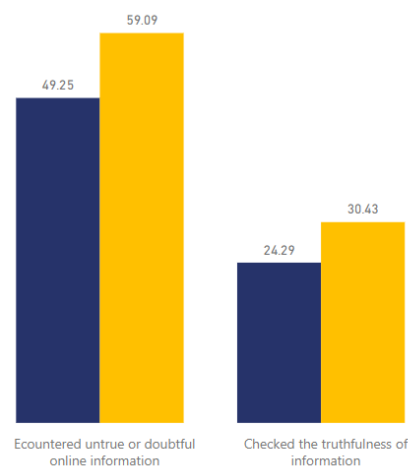
In Spain, the online participation to political and civic life is growing. In 2024, 23.02% of people used the internet to participate to consultation, for voting or sharing opinions online. This share is above the EU average and trending upwards (22.13% in 2022), which is in line of the trend observed at the EU level (17.59% in 2022 and 20.45% in 2024).

In 2023, 59.09% of individuals in Spain reported having encountered information or content on internet news sites or social media that they perceived as untrue or doubtful, considerably higher than the EU average of 49.25%. Among those exposed to such content, 30.43% engaged in verifying its truthfulness, highlighting that a significant proportion of individuals, compared to the EU average, took steps to assess the accuracy of the information. Young people aged 16–24 (71.69%) was significantly more likely than adults aged 25–64 (60.96%) to report such content, and their verification rates also differed, with 40.82% of young people verifying content compared to a significantly lower 31.24% of adults. Males (61.33%) and females (56.90%) reported similar levels of exposure, and their verification rates were also comparable, at 32.54% for males and 28.36% for females.

The 2023 data on online interactions in Spain reveals a high prevalence of potentially misleading information online, with a significant proportion of individuals encountering untrue or doubtful content. However, the data also suggests that Spaniards have been taking steps to address this issue, with a relatively high proportion of individuals, particularly young people aged 16–24, verifying the accuracy of online content. While there is still room for improvement, the findings indicate that Spain is making progress in promoting critical thinking and digital literacy, with a higher proportion of individuals engaging in fact-checking compared to the EU average.

People, ethics and democracy (% of individuals)

● EU average ● Member State average



In September 2024, the Spanish government presented the [Action Plan for Democracy](#), which includes key tools to combat the spread of disinformation, fake news, and other misleading content. Measures include the creation of a media registry and a 'one-stop shop' to increase transparency regarding media ownership and advertising investments, the introduction of a Law on Journalistic Professional Secrecy, and EUR 100 million in funding to strengthen the media sector. Additional actions involve establishing a new commission on disinformation in the Congress of deputies and reforming electoral law to make electoral debates mandatory. The aim is to promote pluralism, transparency, and political party engagement in fighting disinformation.

On protecting the children online, special attention is also being given to protecting minors in the digital environment. In December 2024, the Ministry of Youth and Childhood presented the [Report of the Committee of Experts for the Development of a Safe Digital Environment for Children and Adolescents](#), offering a detailed analysis and 107 proposed measures for government consideration. The Council of Ministers approved the first draft of the [Organic Law for the Protection of Minors in Digital Environments](#), incorporating 35 of the proposed initiatives, such as age verification systems and parental controls. The remaining proposals will be reviewed for possible inclusion during the legislative

process or through separate initiatives. Additionally, a National Strategy will be launched to guarantee children's rights, promote safe internet use, and encourage their participation in decision-making.

Separately, the Ministry for Digital Transformation and Public Service, through Red.es, is collaborating with UNICEF, the University of Santiago de Compostela, and the General Council of Computer Engineering of Spain to conduct a study on the impact of technology on children and adolescents. This study includes a survey of 100 000 of students aged 10 to 20 across 500 schools and 5.000 surveys of teachers. The aim is to build strong evidence to guide public policies and educational strategies. Supported by a Scientific Committee of 45 internationally recognized experts, the study aspires to become a national and international benchmark for understanding and managing the digital challenges faced by younger generations.

According to the Digital Decade Eurobarometer 2025, 95% Spanish people think it should be urgent the action of the public authorities to protect children online regarding the negative impact of social media on children's mental health, cyberbullying and online harassment and to put in place age assurance mechanisms to restrict age-inappropriate content.

Increasing attention is being paid to the promotion of the Digital Rights and Principles. In 2023, Red.es launched a public invitation to partner with nonprofit organizations to promote and implement digital rights through awareness and action. As a result, in 2024, seven collaboration agreements were signed with over 40 nonprofit organisations, amounting to initiatives valued at EUR 10.8 million, 80% of which is funded by Red.es through RRF funds. These agreements aim to deepen understanding of digital rights, stimulate public debate, foster consensus, and engage civil society, academia, and public and private institutions. The activities involve cooperation with 175 organisations and research groups, as well as over 280 experts.

In February 2025, the Spanish Government launched the [Digital Rights Observatory](#) as a result of one of the aforementioned agreements. It is intended as an **open forum to raise awareness and promote digital rights at both national and international levels, including public outreach initiatives like events, surveys on public perception, and an AI-based digital rights monitoring platform.** The other six agreements support initiatives related to freedom, protection, and security in the digital world; equality and non-discrimination, including accessibility and child protection; digital participation rights such as freedom of expression and access to truthful information; labour and business-related digital rights; rights in specific areas like health, culture, data access, and public services; and rights in emerging digital environments like AI, the metaverse, and neurotechnology. In this context, the government had already announced in late 2024 the creation of NEUROTECH, a national centre in Madrid dedicated to applied neurotechnologies and the ethical use of brain-computer interfaces. These efforts help to build a network of experts and include reflection sessions, research studies, and stakeholder discussions. Since their launch, 147 reports, 98 events, and 15 seminars have been organized, covering topics like digital equality, neurotechnology, education, industry, AI, and more. There have also been in-depth reports on gender perspectives in the workplace, disinformation, online appointment systems, and electoral reform recommendations involving AI.

In line with its broader commitment to a secure and human-centric digital environment, Spain is incorporating post-quantum privacy and confidentiality of information as part of the Digital Rights reflection and advancing these considerations internationally in fora like the UNESCO or the OECD.

In line with that, Spain is also contributing to international efforts on the ethical governance of artificial intelligence. Through its active participation in global forums, including the United Nations Global Digital Compact and the Dialogue on the Governance on AI, the country supports the development of

governance frameworks that uphold democratic values, human rights, and inclusive innovation—seeking to ensure that the benefits of AI are shared broadly while mitigating cross-border risks.

The 2025 Eurobarometer shows that 82% of Spanish people think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values. It represents an increase of three percentage points compared to last year and it is in line with the EU average (83%) that has also increased, reflecting the growing interest of the citizens at this respect.

Leveraging digital transformation for a smart greening

Spain is progressing in harnessing the digital and green transitions through several initiatives aimed at strengthening synergies.

Spain launched the **National Green Algorithms Programme** to promote the development of environmentally friendly AI algorithms. Its goal is to maximise energy efficiency and minimise the environmental impact of AI models, particularly during training and inference, thereby reducing carbon emissions. The programme follows a dual approach: 'Green in AI' focuses on eco-designing AI models, and 'Green by AI' which promotes sustainable solutions with a positive impact on key sectors for the green transition. It is structured around research in green AI through initiatives like the ENIA Chairs, including collaborations with UDC-Inditex and Siemens Energy to develop energy-efficient algorithms, sustainable robotics, and address the ethical and social implications of green algorithms. It also promotes the use of efficient infrastructures and services, currently under development through consulting and software services contracts. The integration of green AI into the production sector is supported through projects like advanced technologies for sustainable energy transition and AI applied to the agricultural production value chain, with a combined investment exceeding EUR 20 million. Furthermore, the Spanish market is being stimulated by activities such as hackathons focused on hydro predictive energy and biodiversity solutions using generative AI, emphasizing energy-efficient models trained on platforms and shared openly. The programme also involves developing tools and standards to measure energy consumption during AI training and inference, including collaborations with the Spanish Standardisation Agency and European working groups. Upgrades to government data centres are underway, aiming for a 45% energy saving, equivalent to preventing more than 10.000 tonnes of CO2 emissions annually.

To encourage the business adoption of green AI, voluntary certification schemes following the new national standards are being promoted, along with the creation of a green AI ecosystem involving academia, large enterprises, SMEs, and startups. Several webinars have been held and more are planned to increase awareness and collaboration around sustainable AI practices.

Under the **Sectoral Data Spaces Programme**, several projects have been selected to create data-sharing ecosystems focused on environmental protection and biodiversity. These include initiatives in marine science, wetlands conservation, plastic pollution mitigation, hydrological data management, and urban environmental sustainability, all aligned with the European Green Deal objectives.

The Spanish government has equipped over 140.000 public administration professionals with next-generation digital tools that enable remote work, helping to reduce emissions and support sustainable mobility. On plans to address the issue of planned obsolescence, the government will collaborate on incorporating Directive (EU) 2024/1799 into national law, which promotes the reparability of goods. The deadline for implementation is mid-2026, although it will not lead the process.

In the area of sustainable smart cities, the AENOR Technical Standardisation Committee CTN 178, promoted by the Secretariat of State for Telecommunications and Digital Infrastructures, is working to implement technological infrastructure that supports a new urban management model based on efficiency, sustainability, and resilience. The committee will develop and disseminate over 30 standards

covering areas such as energy efficiency, mobility, water management, city platforms, and smart destinations.

According to the Digital Decade Eurobarometer 2025, 76% Spanish people consider digital technologies important to help fight climate change (standing slightly above the EU average of 74% and showing an increment of four percentage points since last year), while 84% of Spanish respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities (above the EU average of 80%).

2024 recommendation: Continue developing and implementing a coherent approach to twinning the digital and green transitions, by leveraging advanced technologies and scaling up successful initiatives that improve the energy and material efficiency of digital infrastructures, in particular data centres, and by proposing decarbonisation measures and supporting the take up of green technologies that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture.

Spain has made effort to address the recommendation through new policy actions in 2024:

As described above, the Spanish authorities have put in place several programmes to address the synergies between the digital and green transition, in particular, the Sectoral Data Spaces programme, where several projects have been selected to create data-sharing ecosystems focused on environmental protection and biodiversity.

2024 recommendation: Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, in view of future policy development as well as of attracting relevant financing.

Spain has made some effort to address the recommendation:

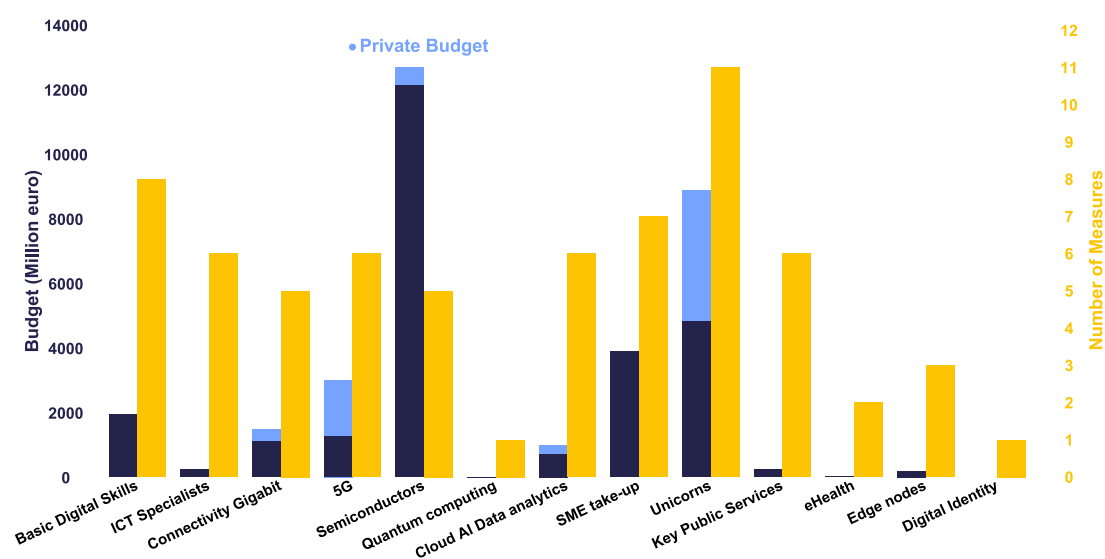
Although Spain has not put in place a system to monitor and quantify the emission reductions of the digital solutions deployed, the Spanish administration highlights the need for establishing key performance indicators and EU-wide objectives, agreed with Member States, to monitor and reduce the environmental footprint of the digital sector and infrastructures.

Annex I – National roadmap analysis

Spanish's national Digital Decade strategic roadmap

Spain did not submit an adjustment to its national Digital Decade roadmap. Spanish authorities expressed their intention to formally adjust the national roadmap, submitted in January 2024, in accordance with Article 8 (3) of the Decision establishing the Digital Decade Policy Programme, but in a later stage. The initial roadmap is composed of 67 measures with a budget of EUR 33.8 billion, comprising EUR 26.7 billion from public budgets (equivalent to 1.68 % of GDP). However, Spain has worked on addressing the recommendations made in 2024, modifying existing measures and implementing new ones that will be integrated into a further roadmap adjustment. The Spanish authorities published the initial national roadmap in March 2025.

Measures and budget in national roadmap⁹



⁹ When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

MCP and EDICs

Spain is a member of the three established EDICs; the Alliance for Language Technologies EDIC, the Local Digital Twins towards the CitiVERSE EDIC and of the EUROPEUM EDIC. Spain is a candidate host to an EDIC in the making in the area of cancer imaging and is also working towards setting up EDICs in the area of genomics and mobility and logistics. Moreover, Spain is actively promoting the transformation of the Europe Startup Nations Alliance (ESNA) into an EDIC, aiming to reinforce coordinated support for startup-friendly policies across the EU. Spain is directly participating in the IPCEI on Microelectronics and Communication Technologies (IPCEI-ME/CT) and in the IPCEI on Next Generation Cloud Infrastructure and Services (IPCEI-CIS). Spain is also a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Spain has contributed to the Best Practice Accelerator¹⁰ by sharing one best practice under the Digital Skills cluster (The Generation D Pact was launched in November 2022).

EU funding for digital policies in Spain

Spain allocates 26% of its total recovery and resilience plan to digital (EUR 40.4 billion)¹¹. In addition, under cohesion policy, EUR 5.0 billion (representing 14% of the country's total cohesion policy funding), is dedicated to advancing Spain's digital transformation¹². According to JRC estimates, EUR 42.8 billion directly contribute to achieving Digital Decade targets (of which EUR 39.4 billion comes from the RRF and EUR 3.4 billion from cohesion policy funding)¹³.

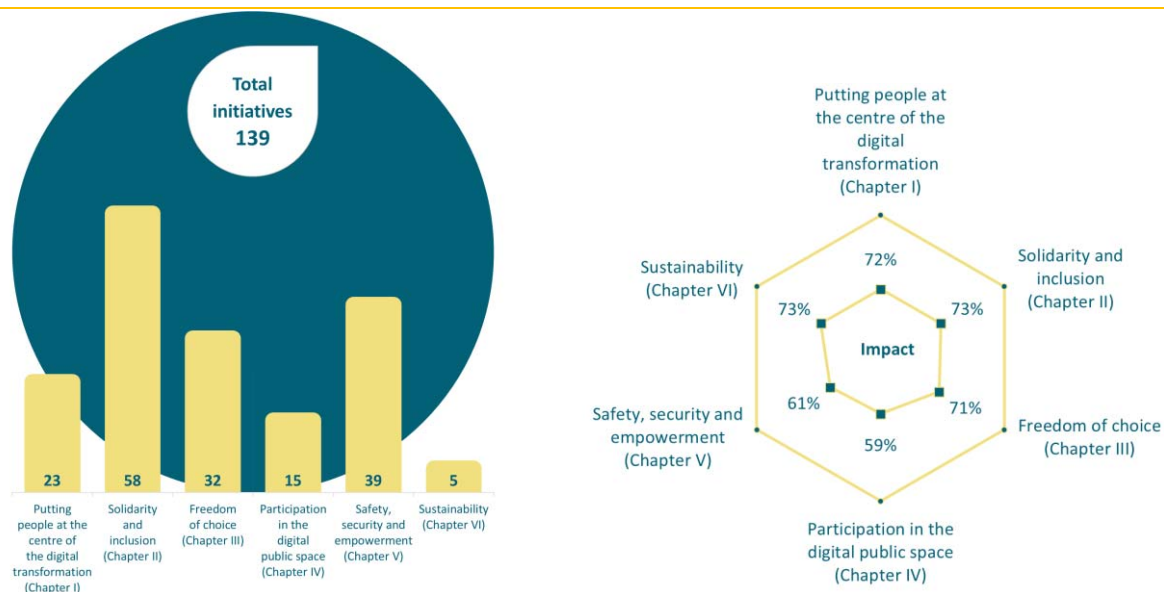
¹⁰ Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

¹¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

¹² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹³ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹⁴



Activity on Digital Rights and Principles (figure 1)

Spain has been one of the most active Member States in implementing digital rights and principles, with over 100 initiatives overall and 30 new initiatives launched in 2024, showing significant progress towards its commitments. Spain is most active in the area of Digital education, training and skills (II), however, less activity has been identified regarding Sustainability (VI).

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators developed by the support study illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Spain (mainly national government) and how these are perceived by citizens.

The indicators suggest that Spain is most successful in implementing commitments related to Solidarity and inclusion (II). However, the country could review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Participation in the digital public space (IV).

According to the Special Eurobarometer on the 'Digital Decade' 2025, 40% of citizens in Spain think that the EU protects their digital rights well (a 4% increase since 2024). This is below the EU average of 44%. Citizens are particularly confident about getting an affordable high-speed internet connection for everyone in the EU and getting basic and advanced digital education, training and skills (62%, above the EU average of 57% and 60% respectively). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (53%, above the EU average of 48%).

¹⁴ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).



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Digital Decade 2025 country reports

Accompanying the document

Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

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DIGITAL DECADE 2025 COUNTRY REPORTS

Sweden

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Executive summary

Sweden continues to seek to be a leading country in digitalisation. Although it has good digital infrastructure, it lags behind on e-Health. Its population scores high in both basic and advanced IT skills. The country is taking several steps to further digitalise its public services and to promote the use of AI.

Sweden shows a moderate level of ambition in its contribution to the Digital Decade having set 13 national targets, 54% of which are aligned with the EU 2030 targets. The country is following its trajectories well with 83% of them being on track (on the basis of the 2024 trajectories defined for 6 KPIs out of 8 analysed). The country is currently revising its national digitalisation strategies and is expected to submit its revised roadmap only later in 2025. Sweden addressed 55% of the 9 recommendations issued by the Commission in 2024, either by implementing significant policy changes (11%) or making some changes (44%) through new measures.

Its fibre and 5G coverage keep increasing; however, connecting the remaining buildings will become increasingly costly. A substantial part of Sweden's Resilience and Recovery Plan was reserved for supporting the expansion of broadband connectivity in rural areas.

Digital Decade KPI ⁽¹⁾	Sweden				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	SE	EU
Fixed Very High Capacity Network (VHCN) coverage	88.5%	89.7%	1.4%	-	82.5%	4.9%	98.5%	100%
Fibre to the Premises (FTTP) coverage	83.9%	85.6%	2.0%	-	69.2%	8.4%	98.5%	-
Overall 5G coverage	90.3%	98.6%	9.2%	99.0%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	32	63	96.9%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	86.6%	-0.2%	-	72.9%	2.8%	95.0%	90%
Cloud	66.0%	-	-	-	-	-	94.0%	75%
Artificial Intelligence	10.4%	25.1%	141.9%	15.4%	13.5%	67.2%	39.5%	75%
Data analytics	35.0%	-	-	-	-	-	56.5%	75%
AI or Cloud or Data analytics	73.1%	-	-	-	-	-	-	75%
Unicorns	39	39	0.0%	44	286	4.4%	64	500
At least basic digital skills	66.4%	-	-	-	-	-	89.7%	80%
ICT specialists	8.7%	8.6%	-1.1%	9.7%	5.0%	4.2%	12.9%	~10%
eID scheme notification		Yes						
Digital public services for citizens	93.3	85.9	-7.9%	87.0	82.3	3.6%	90.0	100
Digital public services for businesses	96.0	90.4	-5.8%	88.7	86.2	0.9%	90.5	100
Access to e-Health records	77.9	77.9	0.0%	75.5	82.7	4.5%	78.5	100

(1) See the methodological note for the description of the indicators and other metrics

(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.

(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024)

According to the 2025 special Eurobarometer on the 'Digital Decade', 85% of Swedes consider that the digitalisation of daily public and private services is making their lives easier. On the action of the public authorities, 97% consider it important to counter and mitigate the dissemination of fake news

and disinformation online. And on competitiveness, 82% consider it important to ensure that European companies can grow and become 'European Champions' capable of competing globally.

A competitive, sovereign, and resilient EU based on technological leadership

Infrastructure indicators (VHCN, FTTP, 5G) are all above the EU average. 5G coverage, in particular, has increased over recent years, following allocation of the remaining spectrum in the 900 MHz, 2.1 GHz and 2.6 GHz band. However, Sweden indicated in its Roadmap that it will not fully reach the target of 100 % VHCN coverage due to the high cost of connecting the last buildings. Sweden is well advanced in switching off its copper network, which is expected to be completed in 2026. The country excels in promoting an environment conducive for start-ups and has a large number of unicorns given the size of its economy. Since last year, Sweden has made good progress in the use of AI by enterprises. In 2023 Sweden asked an AI Commission to analyse and present proposals for making the best use of AI. Sweden is currently assessing the report, which was presented in November 2024. Cybersecurity is a priority for Sweden as demonstrated by the creation of its National Cybersecurity Centre and the presentation of a new cyber security strategy in March 2025.

Protecting and empowering EU people and society

Sweden has for several years been a front runner in basic and advanced digital skills. It has the largest share of graduates with a degree in ICT in the EU. In February 2025 Sweden presented a strategy to increase the number of graduates in science and technology. The strategy sets several long-term targets on the share of science students in secondary school and the number of science, technology, engineering and mathematics (STEM) students.

Sweden's ICT landscape is characterised by a high proportion of enterprises providing ICT training and a large share of ICT specialists in total employment. However, the country faces challenges in maintaining growth rates in these areas, particularly in the context of enterprises providing ICT training and the overall number of ICT specialists. The notable exception is the growth rate of female ICT specialists, which is significantly higher than the EU average, indicating a positive trend towards gender diversity in the ICT sector.

Sweden, however, remains below the EU average in online access to electronic health records and is at risk of not meeting the EU target of 100% by 2030.

Leveraging digital transformation for a smart greening

Sweden's Recovery and Resilience Plan (RRP) is focused on the green transition, with specific reforms and investments primarily targeting carbon-intensive sectors. To do this, the **RRP** supports local and regional investments to reduce climate emissions and in the transition of industry, energy efficiency in multi-dwelling housing, rail transport and biodiversity.

National digital decade strategic roadmap

Sweden did not submit an adjustment to its national Digital Decade roadmap. An adjusted roadmap is expected later in 2025. The initial roadmap is composed of 40 measures with a budget of EUR 3.5 billion, EUR 2.8 billion of which comes from public funding (equivalent to 0.5% of GDP).

Funding & projects for digital

Sweden allocates 21% of its total recovery and resilience plan to digital (EUR 674 million)¹. In addition, under cohesion policy, EUR 230 million, representing 13% of the country's total cohesion policy funding, is dedicated to advancing Sweden's digital transformation².

Sweden is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Sweden is not yet active in the Digital Decade's Best Practice Accelerator³.

Digital Rights and Principles

According to a support study, Sweden has been relative active in implementing the [European Declaration on Digital Rights and Principles](#), with 54 initiatives overall and 15 new initiatives launched in 2024. Sweden is most active in the area of digital education, training and skills and interactions with algorithms and artificial intelligence systems. Less activity has been identified with regards to fair and just working conditions. Measures in the area of solidarity and inclusion appear to have most impact on the ground, in contrast to those addressing freedom of choice.

Recommendations

- **5G:** Encourage operators to speed up the deployment of 5G stand-alone core networks.
- **Fixed broadband:** Ensure completion of the fibre network.
- **eHealth:** Continue efforts to increase the availability of electronic health records.
- **Artificial Intelligence:** Continue to encourage the use of AI by enterprises.
- **ICT specialists and advanced skills:** Continue the work to increase the number of STEM graduates.
- **Green:** Monitor and quantify the emission reductions of the digital solutions deployed.

¹ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

² This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

³ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

A competitive, sovereign and resilient EU based on technological leadership

Sweden's public finances remain strong. It performs well in the areas of innovation, human capital, renewable energy, digitalisation and trade integration. It is also taking further action to strengthen its performance in these areas. The Swedish economy shrank marginally in 2023, following real GDP growth of 2.7% in 2022. After weak economic growth in 2024, the Swedish economy is expected to remain sluggish in 2025 (1.1% GDP growth) before starting to pick up somewhat in 2026 (1.6% GDP growth). Trade and financial market disruptions are set to delay the recovery, given the high degree of openness of the Swedish economy. Inflation is expected to stay just above 2% in 2025 and to fall in 2026. The labour market is set to improve slowly from 2026.

Sweden attaches great importance to the digital sector. In Sweden, the ICT sector represented 6.24% of gross value added in 2022⁴, which has remained stable over recent years and above the EU average of 5.46%, pointing to an overall over-performance by the country. The business sector's R & D expenditure has been consistently high. In the ICT sector, R & D expenditure stood at 28.7% of total R & D business expenditure in 2021. Also, R & D personnel in the ICT sector accounted for 27.45% of total R & D personnel in 2021.

Sweden's digital economy and society index shows strong coverage in most areas, often exceeding EU averages. However, growth in some areas lags behind the EU average, indicating potential areas for improvement. Sweden's 5G coverage in sparsely populated areas shows significant growth, while Fibre to the Premises (FTTP) and Very High-Capacity Network (VHCN) coverage growth rates are lower than the EU's. Sweden's 5G spectrum assignment is consistently high, with no growth between 2024 and 2025. Sweden has 39 unicorns and promotes an environment conducive to start-ups.

Sweden appointed an AI Commission in 2023 to analyse and propose measures to make better use of Artificial Intelligence (AI). The deadline set for presenting its report was July 2025; however, the AI Commission decided to present its report before then, in November 2024. The report analysed AI on the basis of three aspects: the essential sectors for further developing AI, skills and governance. It also proposed measures and KPIs for following the progress made on those measures.

According to the 2025 Eurobarometer⁵, 94% of Swedish people think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities.

Building technological leadership: digital infrastructure and technologies

Sweden is continuing to roll out connectivity infrastructure. However, the fibre network is not expected to reach 100% coverage by 2030. Sweden's broadband take-up indicators show a mixed performance compared to the EU average. Sweden leads the way in the share of fixed broadband subscriptions at speeds of 100 Mbps or higher, but lags behind in the share of subscriptions at speeds of 1 Gbps or higher. Sweden's 5G SIM card adoption rate is higher than the EU's, but the growth rate is lower.

⁴ Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025

⁵ Special Eurobarometer 566 on 'the Digital Decade' 2025: <https://digital-strategy.ec.europa.eu/en/news-redirect/883227>

During the past three years, under the **Connecting Europe Facility (CEF)**, a total of 12 Swedish projects have been granted EU funding with coordinating activities for approximately EUR 74.4 million to further develop existing high-capacity infrastructure and establish new infrastructure to strengthen European connectivity. The Swedish Post and Telecom Authority, Post- och Telestyrelsen (PTS), coordinates this.

Sweden is active in the field of critical underwater infrastructure in several capacities, both at national level and in NATO and the EU. One of its roles is to coordinate operators, cable owners and other national agencies. The long-term focus is on building resilience in cross-border communications and strengthening the capacity to repair underwater infrastructure. In connection with recent events in the Baltic Sea, the PTS has been active in coordination efforts at both national and regional level (with neighbouring states). The role played by the PTS in the event of incidents is often to create opportunities to coordinate efforts between national agencies, operators and cable owners, and to support both criminal investigations and repair work to reduce consequences.

Connectivity infrastructure

Sweden is at 89.74% of VHCN coverage (2030 national target 98.5%) after a progression of + 1.4% in 2024, still above the EU average of 82.49%. However, Sweden's growth rate of 1.4% lagged behind the EU's 4.9%. For households in sparsely populated areas, Sweden's coverage was 65.22% in 2023 and 69.45% in 2024, both higher than the EU's 55.59% and 61.89% respectively. Sweden's growth rate of 6.5% was lower than the EU's 11.3%.

Sweden has 85.58% of FTTP coverage for all households after a progression of + 2.0% in 2024, still above the EU average of 69.24%. Sweden's growth rate of 2.0% was lower than the EU's 8.4%. For households in sparsely populated areas, Sweden's coverage was 65.22% in 2023 and 69.45% in 2024, both higher than the EU's 52.55% and 58.78% respectively. Sweden's growth rate of 6.5% was lower than the EU's 11.9%.

Sweden has 98.59% 5G coverage (2030 national target 100%) after a progression of + 9.2% in 2024, still above the EU's 94.35%. The country is on track according to its national trajectory. Sweden's growth rate of 9.2% outpaced the EU's 6.0%. For households in sparsely populated areas, Sweden's coverage was 67.03% in 2023, below the EU's 71.10%, but it jumped to 90.35% in 2024, exceeding the EU's 79.57%. Sweden's growth rate of 34.8% was higher than the EU's 11.9%.

Sweden's 5G coverage in the 3.4-3.8 GHz band for all households was 64.5% in 2023, above the EU's 51.06%, and it rose to 74.01% in 2024, still above the EU's 67.72%. Sweden's growth rate of 14.7% was lower than the EU's 32.6%. For households in sparsely populated areas, Sweden's coverage was 5.35% in 2023, below the EU's 15.86%, and it increased to 10.17% in 2024, still below the EU's 26.19%. Sweden's growth rate of 90.1% was higher than the EU's 65.1%. Sweden's 5G spectrum assignment for pioneer bands was 83.89% in both 2024 and 2025, in both higher than the EU's 73.4% and 74.63% respectively. Sweden had no growth between 2024 and 2025, while the EU's growth was 1.7%.

Sweden's broadband take-up indicators display a mixed performance compared to the EU average. In 2023, 93.42% of fixed broadband subscriptions in Sweden were at speeds of 100 Mbps or higher, surpassing the EU's 65.9%. By 2024, this figure rose to 95.22%, still ahead of the EU's 71.88%. However, Sweden's growth rate of 1.9% lagged behind the EU's 9.1%. For subscriptions at speeds of 1 Gbps or higher, Sweden's performance was lower than the EU's. In 2023, only 7.53% of Swedish fixed broadband subscriptions were at this speed, compared to the EU's 18.47%. In 2024, this increased to 9.82%, still below the EU's 22.25%. However, Sweden's growth rate of 30.4% outpaced the EU's 20.5%.

Sweden's 5G SIM card adoption rate was higher than the EU's. In 2023, 32.22% of the Swedish population had 5G SIM cards, compared to 21.7% of the EU. By 2024, this figure rose to 50.17%, ahead of the EU's 35.56%. However, Sweden's growth rate of 55.7% was lower than the EU's 63.9%.

VHCN and FTTP

Sweden's target as regards VHCN coverage is to achieve 98.5% as per the initial roadmap submitted in 2023. Sweden did not provide national trajectory points for 2024 for VHCN coverage or for FTTP coverage in its 2023 roadmap. Given the latest figures and measures in place, the target seems realistic though it falls short of the target of 100% coverage.

Sweden's digital infrastructure is robust, with high coverage rates in most areas. The broadband market is characterised by a few large network operators and a large number of local wholesale network providers; however, today only access to the network of the incumbent provider is regulated. The PTS is currently revising the regulation of the broadband market and expects to present its proposal to regulate the market later this year. Sweden used the Recovery and Resilience Plan to support the expansion of broadband connectivity in rural areas. The country is having a target of 66 100 buildings. The connection cost per household will continue to increase.

The copper switch-off process in Sweden started 20 years ago and is now in its final stage. An estimated 2 % of households remain on the copper network, but they are expected to be switched off by no later than the end of 2026.

5G

Sweden is on track to reach its 100% coverage target before 2030. The roadmap indicated that Sweden would already reach the target of 100% in 2025. Following the recommendation in the 2023 Digital Decade report to allocate the relevant 5G bands, the deployment of the 5G network has made substantial progress. The country's strong 5G coverage and spectrum assignment are notable strengths, but continued investment and innovation will be crucial to keep pace with the EU's advancements.

Satellite broadband accounts for only a small share of broadband subscriptions in Sweden. However, there has been a significant increase in subscriptions since 2022. In June 2024, the number of satellite broadband subscriptions reached approximately 2 700, more than doubling compared to the previous year. Most subscriptions have speeds exceeding 100 Mbps. No public data on the number of satellite subscriptions in December 2024 is yet available.

2024 recommendation on connectivity infrastructure: (i) Continue efforts to achieve full Gigabit coverage, starting with the implementation of the national broadband strategy which sets targets for 2025. Meeting the national targets will be a step towards meeting the Digital Decade targets by 2030; (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

In 2024, Sweden made some efforts to address the recommendations through new policy actions. Sweden has continued to deploy fibre. The country is currently preparing a national digitalisation strategy which is expected to provide targets on infrastructure coverage by 2030. Sweden used the Recovery and Resilience Plan to support its fibre deployment. The country is having a target of 66 100 buildings.

The PTS considers demand for 5G stand-alone core networks to be limited at the moment but expects it to pick up before 2030.

Semiconductors

In its roadmap, Sweden underlined the importance of its research environment in the production of semiconductors. In 2020, the semiconductor industry in Sweden employed a staff of 2 300 and had a turnover of EUR 420 million. Due to investments made in the 1980s and 1990s in electronics and edge computers, Sweden has an internationally strong position as regards innovation and production knowledge.

The Swedish Agency for Economic and Regional Growth reported in 2024 that Sweden may fall behind and lose its leading position if no further action is taken. Lack of public support, too few researchers in the future and increased international competition are listed as factors. The report argues that Sweden can maintain a strong position in certain targeted sectors in the production of semiconductors rather than having large-scale semiconductor factories that require major public support.

Edge nodes

Sweden continues to do well in deploying edge nodes. **It has deployed 63 out of the 2 257 edge nodes deployed in the EU.** This is an increase compared to the 34 edge nodes reported in the previous year.

Quantum technologies

Sweden supports the EU target for quantum computing through the Wallenberg Centre for Quantum Technology (WACQT) project, which is due to end in 2030. Chalmers University of Technology coordinates the project with the objective of developing a high-end 100-qubit superconducting quantum computer.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

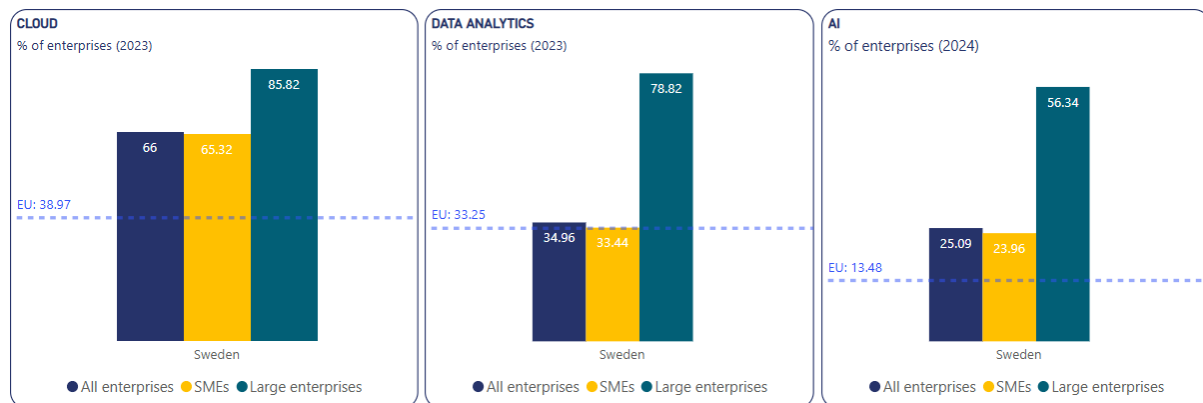
In 2023, Sweden asked an AI Commission to analyse and present proposals to make the best use of AI. The country is currently assessing the report, which was presented in November 2024.

SMEs with at least basic digital intensity

In Sweden, 86.56% of SMEs showed at least a basic level of digital intensity (2030 national target 95%) after only a very slight annual decrease - 0.2% between 2022 and 2024. As such, Sweden remained well above the EU average of 72.91%. Additionally, 53.87% of SMEs in Sweden achieved high or very high digital intensity, again far exceeding the EU average of 32.66%. Sweden thus continued to be a very strong performer, at EU level, in terms of the degree of digital intensity of its SMEs.

Sweden has established four European Digital Innovation Hubs (EDIHs) receiving funding from the European Commission's Digital Europe programme and five hubs with the status of Seals of Excellence (SoE) covering a large variety of sectors such as aeronautics, automotive engineering, healthcare, manufacturing and processing and smart city. Several of the EDIHs and some of the SoE in Sweden have been co-financed by the European Regional Development Fund (ERDF) and have been coordinated by the Swedish Agency for Economic and Regional Growth. Additionally, there is small but steady growth of collaboration and networking that strengthens the mediation between the positions of the EDIH stakeholders in Nordic and Baltic countries, where Swedish hubs are active.

Take up of cloud/AI/data analytics



According to the latest available data (2023), 73.06% of enterprises in Sweden used AI technologies, sophisticated or intermediate cloud computing services, or performed data analytics, comfortably ahead of the EU average of 54.7%. The uptake among SMEs was, at 72.34%, slightly lower, while large enterprises exhibited a higher engagement rate of 94%. This indicates a difference in uptake of 21.66 percentage points between SMEs and large enterprises in Sweden, which is lower than the EU-level gap of 32.97. Adoption of cloud computing, data analytics, and the three technologies together were not measured in 2024.

In April 2025, the Swedish Agency for Economic and Regional Growth presented a report on AI competence among SMEs in Sweden. The report concluded that Sweden's SMEs are fairly advanced compared to those of other countries; however, they are still very much in the process of exploring the technology. SMEs are also asking for policy measures to increase understanding of AI among its staff. AI needs to be a clear part of society at large – both for training and for work. Public authorities also play a role in supporting the private sector in taking up AI. The report concluded that there is a lack of long-term measures to support SMEs, that consultants are not yet able to meet the demand for AI services and that SMEs in general do not have the competences to take up AI. The report also made recommendations to address these points.

Sweden's adoption of cloud computing, data analytics, and artificial intelligence technologies exceeded EU averages, with the country demonstrating high uptake across all areas. Although large enterprises had higher adoption rates, particularly in AI and data analytics, SMEs showed strong engagement, particularly in cloud computing. The gap between SMEs and large enterprises, though narrower than the EU-wide disparity, was, though still notable, especially in data analytics. Nonetheless, with SMEs representing approximately 96% of enterprises with 10 or more employees, addressing this technological gap is crucial for fostering inclusive digital transformation and driving Sweden's continued economic growth.

2024 recommendation on AI/cloud computing/data analytics: (i) Maintain focus on encouraging the use of AI and big data analytics by enterprises in Sweden.

In 2024, Sweden made efforts to address the recommendations through new policy actions. Several studies have been prepared for the Government and for national authorities to analyse how to better use AI. Sweden has made good progress in the uptake of AI since last year.

- [Cloud computing](#)

The latest available data shows that, cloud uptake in Sweden was 66% in 2023, which is significantly higher than the EU average of 38.97%. More specifically, SMEs exhibited an uptake of 65.32%, while large enterprises had a higher adoption rate of 85.82%. This translates into a gap in uptake of 20.5 percentage points between SMEs and large enterprises in Sweden, which is lower than the EU-level gap of 31.68 percentage points.

- [Data Analytics](#)

34.96% of enterprises in Sweden used data analytics in 2023, slightly above the EU average of 33.25%. More specifically, use of data analytics among SMEs stood at 33.44% (approximately 1 out of 3), while the percentage at 78.82%, was higher for large enterprises (approximately 4 out of 5). This indicates a gap of 45.38 percentage points between SMEs and large enterprises, which is higher than the EU gap of 39.72 percentage points.

- [Artificial Intelligence](#)

In 2024, 25.09% of enterprises in Sweden were using AI technology, well above the EU average of 13.48% and an impressive increase compared to 2023, when AI uptake was 10.37%. While among SMEs the uptake rate was 23.96%, over half (56.34%) of large enterprises reported using AI technology. This corresponds to a gap of 32.38 percentage points between SMEs and large enterprises, above the EU gap of 28.53 percentage points. Overall, the country is on track according to its national trajectory.

Sweden has taken a number of actions to promote the use of AI. 30 government authorities are actively implementing AI in their work. Sweden has also been active in the discussions on a Nordic AI centre. The purpose of the centre will be to promote the use of AI and funding for common AI projects in the Nordic countries. AI Sweden, which is Sweden's national centre for applied artificial intelligence, will propose possible funding mechanisms. The Nordic Council of Ministers will then decide on the funding.

[Unicorns, scale-ups and start-ups](#)

Sweden has always had a large number of unicorns relative the size of its economy. The number of unicorns in Sweden increased from 14 in 2019 to 39 in 2024, while in the EU it grew from 108 to 286 during the same period. Sweden has already reached its 2030 national target of 37 unicorns.

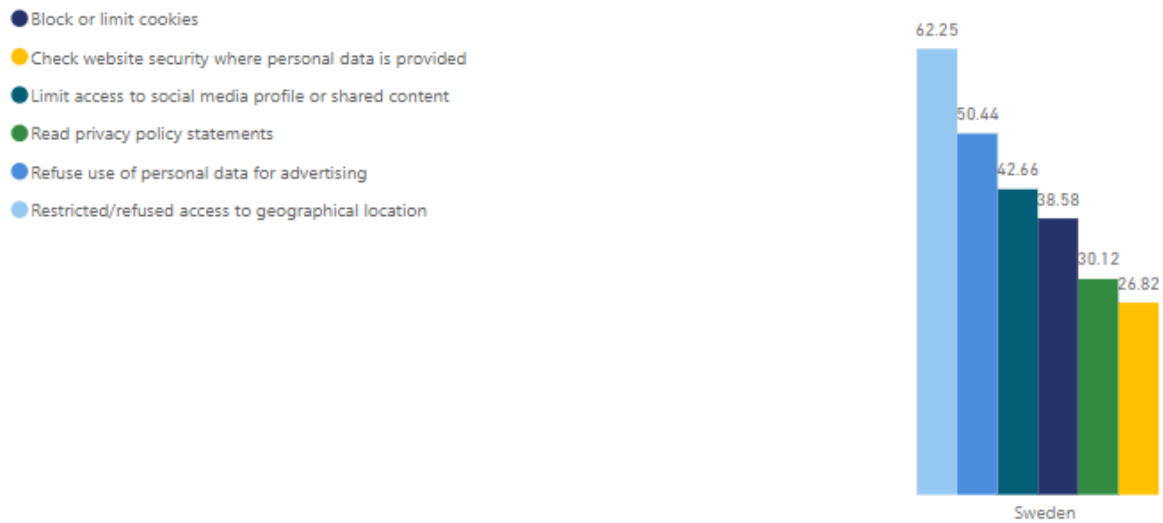
[Strengthening Cybersecurity & Resilience](#)

Cybersecurity is a priority for Sweden, as demonstrated by the creation of its National Cybersecurity Centre and the presentation of a new cyber security strategy in March 2025. Overall, the country performs above the EU averages for almost all indicators.

In Sweden, 77.42% of individuals reported taking at least one action to protect their personal data online, which was above the EU average of 69.55%. Significantly, about half of the population (49.45%) engaged in three or more actions (and could therefore be considered as having above-basic digital safety skills). The most common measure was restricting or refusing access to geographical location (62.25%), while checking whether websites where personal data was provided were secure was the least frequent (26.82%).

According to the Digital Decade Eurobarometer 2025, 83% of Swedes think that an improved cybersecurity, better protection of online data and safety of digital technologies would facilitate their daily use of digital technologies. This is a decrease of 10 percentage points compared to last year.

Type of activities to protect personal data online (% of individuals)



The proportion of enterprises that reported ICT security incidents leading to unavailability of ICT services due to attack from outside (e.g. Ransomware attacks, Denial of Service attacks) remained almost the same between 2022 and 2024, (3.77% in 2022 and 3.70% in 2024). It remains above the EU average (3.43%). However, Swedish enterprises are less prone to incidents related to hardware or software failures (16.09%) than their EU counterparts (17.97%).

In terms of measures, 92.65% of enterprises (close to the EU average of 92.76%) deployed some ICT security measures, but only 67.10% of enterprises made their employees aware of their obligations in ICT security-related issues, which is above the EU average (59.97%).

On the deployment of secure internet standards, by Q3 2024 Sweden lags below the EU average in the roll-out of Internet Protocol version 6 (IPv6) for end users (26%, EU average: 36%), but is above the EU average on the services side (33%, against 17% for the EU). IPv6 is an important protocol as it ensures the scalability, stability, and security of the Internet. The deployment of this new version is increasingly urgent, as traditional IPv4 addresses have long been depleted. Domain Name System Security Extensions (DNSSEC) is also an important standard to be rolled out as it introduces security features to DNS. In Sweden, the DNSSEC validation rate is 88% (Q3 2024), clearly above the EU average of 47%.

In March 2025 Sweden presented its strategy on cyber security for the years 2025-2029, replacing the previous strategy dating from 2017. The strategy underlines the importance of strengthening systematic cybersecurity efforts among all organisations, enhancing knowledge and competence in cybersecurity (including through strengthening research and innovation and addressing skills shortages), and improving the ability to prevent and manage cybersecurity incidents in Sweden.

The Swedish Agency for Economic and Regional Growth conducted in 2022-2023 a pilot project to increase SMEs' awareness and capacity regarding cyber security. This included making funding available for SMEs to buy IT services to increase their cyber security. In September 2024, the Swedish Agency for Economic and Regional Growth published an evaluation of the pilot project and concluded that it had increased cyber security and therefore that funding should continue.

In 2024 the Swedish National Coordination Centre for Research and Innovation in Cybersecurity (NCC-SE) had a call for proposals aimed at small and medium-sized companies for projects that could help strengthen Sweden's capacity and infrastructure in cybersecurity and preparedness. The Swedish node

Sweden

for accelerating innovation and research in cybersecurity ('the Cybernode') is growing and had over 300 members in February 2025.

Protecting and empowering EU people and society

Empowering people and bringing the digital transformation closer to their needs

In general, Sweden's population has a high level of basic ICT skills. In addition, it continues to achieve a high share of ICT graduates. Sweden is taking several measures to facilitate digital access to public services. However, little progress has been made on access to e-Health records and Sweden is therefore falling further behind the EU average.

According to the 2025 Eurobarometer, 95% of Swedes think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 85% consider it would improve their daily use of digital technologies, and 94% think public authorities should consider it important to ensure that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services.

Equipping people with digital skills

Basic Digital Skills

In 2023, a high proportion – 66.44% – of Sweden's population had at least basic digital skills, above the EU average of 55.56%. Although no data is available for 2024, an analysis of the figures across various demographics yields useful insights.

- **Gender Gap:** The gender gap in Sweden is narrow and in favour of women, with 65.76% of males and 67.15% of females equipped with at least basic digital skills. This equates to a 1.39 percentage-point (pp) advantage in favour of women, compared with the EU average of 2.23pp in favour of men.
- **Education Level:** The level of formal education has a positive correlation with digital skills; 82.38% of those with high formal education have at least basic digital skills, slightly above the EU average of 79.83%. At the lower end, only 48.88% of those with no or low formal education possess such skills, which creates a national gap of 17.56pp, lower than the EU's gap of 21.95pp.
- **Living Areas:** Urban residents in Sweden exhibit the highest levels of at least basic digital skills at 71.77%, which is significantly above the EU urban average of 62.55%. Rural areas show a score of 52.93%, above the EU average (47.50%). However, the disparity between the national average and rural areas stands at 13.51pp, which is more than the EU average gap of 8.06pp.
- **Age Groups:** In Sweden, 25 to 34-years olds are the most digitally skilled age group, with a proficiency level of 78.01%, which is above the EU average of 70.18% for the same age group. Remarkably, the youngest from the 16-24-year-old category have lower digital skills (67.57%)

than the 25-34, 35-44, and even 45–54-year-old categories. Meanwhile, the 65 to 74 age group shows a proficiency rate of 36.77%, which is higher than the EU average of 28.19%.

- **Digital Skills Index components:** Sweden stands above the EU average in all five domains of the Digital Skills Index. Significantly, the score for problem-solving skills is high, at 96.24%, well above the EU average of 82.53%. The area with the lowest score is safety skills, at 77.42%, although it is still well above the EU average of 69.55%.

In conclusion, Sweden stands out for its overall digital proficiency, particularly in problem-solving skills and among its middle-aged population. However, the gap in digital skills based on education levels indicates areas for potential improvement, especially among those with lower levels of formal education. The digital proficiency of the youngest may also be worth monitoring.

2024 recommendation on basic digital skills: Continue efforts to ensure that the population can improve basic skills, in particular, in rural areas.

In 2024, Sweden made progress in addressing the recommendation. The country has improved on this indicator. It has several ongoing measures to improve further, such as *Digitalidag*, a joint initiative guided by the public and private sectors and civil society, which remains an important platform for raising the level of basic digital skills.

ICT specialists

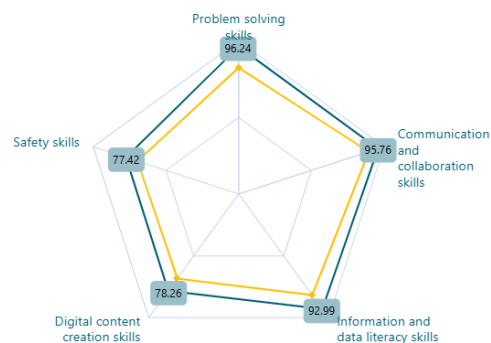
Sweden's performs above the EU average as regards ICT training provision and ICT specialists; however, the EU average is catching up. The country is lagging behind its national trajectory on ICT specialists.

In Sweden 8.6% of ICT specialists are in total employment. Although this figure decreased by-1.1% in 2024, it is still above the EU's 5.0%. However, the growth rate for ICT specialists in Sweden was significantly lower than the EU's 4.2%. This suggests that, while Sweden has a higher proportion of ICT specialists, its growth in this sector is lagging behind the EU.

Sweden performed very well as female ICT specialists are concerned. In 2023, 22.8% of ICT specialists in Sweden were women, higher than the EU's 19.4%. By 2024, this figure had increased to 24.0%, compared to the EU's 19.5%. The growth rate for female ICT specialists in Sweden was 5.3%, significantly higher than the EU's 0.5%. This indicates a strong trend towards increasing the representation of women in the ICT sector.

In 2022, 34.23% of Swedish enterprises with 10 or more employees provided ICT training, significantly higher than the EU's 22.37%. Although this figure had decreased to 30.83% by 2024, it was still above the EU's 22.29%. The annual growth rate for enterprises providing ICT training in Sweden was – 5.1%, which is lower than the EU's – 0.2%. This indicates that, while Sweden has a higher proportion of enterprises offering ICT training, the rate of decline in this area is more pronounced than in the EU.

Digital Skills Index components
% of individuals



Legend
— MS — EU

Demand from the labour market for ICT specialists continues to increase. Eurostat experimental statistics based on web scraping show that in Sweden, the profiles of ‘software and applications developers and analysts’ are the most sought after, representing 60.5% of online job advertisements for ICT specialists (58.0% at EU level). The demand for ‘Information and communications technology operations and user support technicians’ is also above the EU average of 10.4%.

2024 recommendation on ICT specialists: (i) finalise the discussions on a national strategy focussing on science, technology, engineering and mathematics (STEM); (ii) take action to ensure that more ICT specialists are women.

In 2024, Sweden made progress in addressing the recommendation. The country has improved on this indicator. In February 2025 Sweden presented a national strategy focussing on science, technology, engineering and mathematics (STEM). The strategy sets several long-term targets for the share of science students in secondary school and the number of STEM students.

[Key digital public services and solutions – trusted, user-friendly, and accessible to all](#)

Sweden’s digital public services for citizens and businesses, except access to e-Health records, perform strongly compared to the EU average. However, while Sweden generally maintains a strong lead in terms of absolute scores, the country’s growth rates in these areas lag behind the EU. The share of people using government internet websites or apps in Sweden remained almost unchanged from 2023 (96.44%) to 2024 (96.18%). It was still well above the EU average of 74.71% in 2024.

For digital public services for citizens, Sweden scored 85.94% (2030 national target of 90%) after a decline of – 7.9%, it was still above the EU’s 82.32%. In 2023, Sweden’s total score was 93.28%, significantly higher than the EU’s 79.44. The growth rate for total digital public services for citizens in Sweden was –7.9%, which is lower than the EU’s 3.6%. For cross-border digital public services for citizens, Sweden’s score was 91.29% in 2023 and 78.68% in 2024, compared to the EU’s 68.37% and 71.28%, respectively. Sweden’s growth rate of –13.8% in this category is also lower than the EU’s 4.3%.

For digital public services for businesses, Sweden scored at 90.43% (2030 national target of 90.5%) in 2024 after a decline of – 5.8%, still above the EU average of 86.23%. The growth rate for total digital public services for businesses in Sweden was – 5.8%, which is lower than the EU’s 0.9%. For cross-border digital public services for businesses, Sweden’s score was 94.44% in 2023 and 83.12% in 2024, compared to the EU’s 73.13% and 73.76%, respectively. Sweden’s growth rate of – 12.0% in this category is also lower than the EU’s 0.9%.

In terms of access to e-Health records, Sweden’s total score was 77.94% (2030 national target of 78.5%) in both 2023 and 2024, which is lower than the EU’s 79.12% and 82.7%, respectively. Sweden’s growth rate in this category was 0%, while the EU’s growth was 4.5%.

[e-ID](#)

Sweden is one of the highest users of e-IDs in the EU. In 2023, 92.86% of Swedish people have used their e-ID to access online services for private purpose in the last 12 months, which is well above the EU average (41.11%).

2024 recommendation on e-ID: Continue efforts to ensure that everyone has access to an e-ID.

In 2024, Sweden made progress in addressing the recommendation. Sweden continues to implement measures to increase the accessibility of e-ID schemes to ensure that all groups have access to an e-ID. One of these measures is the development of a government e-ID.

Digitalisation of public services for citizens and businesses

The country is on track according to its national trajectories. Digg (the Agency for Digital Government) presented a report to the government in February 2025 on the way forward to further digitalise public services. The report outlines how to develop the infrastructure called Ena to allow public services to share data and to provide better digital solutions for users. The government is currently assessing the proposals made in the report. The development of a government e-ID should also support measures strengthening access to digital public services.

e-Health

Sweden is on track according to its national trajectory; however, it continues to fall behind the EU average in online access to electronic health journals and is at risk of not meeting the EU target of 100% by 2030. Sweden indicated in its roadmap that, on the basis of current trends, it will not meet the target for everyone to be able to access their health records online by 2030.

Regions and municipalities are the primary healthcare providers in Sweden; however, their digital tools are not always interoperable. In December 2024 the government therefore asked Digg and the Swedish eHealth Agency to develop within Ena a coherent infrastructure for access rights and data exchange. Digg and the Swedish eHealth Agency will report back no later than December 2025.

2024 recommendation on e-Health. Increase efforts to ensure that everyone can access their health records online by 2030, in line with the requirements under the upcoming European Health Data Space Regulation. In particular (i) make the data type of medical devices/implants, available to citizens in all regions through online access services; (ii) ensure that all data types are made available in a timely manner; and (iii) implement technical functionality with the necessary legal basis for legal guardians and authorised persons to access electronic health data on behalf of others.

In 2024, Sweden made limited progress in addressing the recommendations. Sweden started work to improve this – such as Ena – to allow public services to share data and to provide better digital solutions for users. However, these measures have not yet been fully implemented.

Building a safe and human centric digital environment and preserving our democracy

In 2024, 12.71 % of people used the internet to participate in consultation, for voting or sharing opinions online. This share is below the EU average and is decreasing (15.56 % in 2022), in contrast to the trend observed at EU level (17.59% in 2022 and 20.45% in 2024).

Individuals encountering hostile and degrading online messages. In 2023, in Sweden, 45.47% of individuals encountered online messages that were considered to be hostile or degrading towards groups on the basis of factors such as political views or religion; this was well above the EU average of 33.5%. Young people (16–24) (57.2%) reported considerably higher exposure than adults (25–64) (47.5%), reflecting a significant age-related gap. Males (45.75%) and females (45.18%) reported nearly identical rates, showing balanced exposure across genders.

Individuals evaluating data, information and digital content. In 2023, 64.65% of individuals in Sweden declared having encountered untrue or doubtful information or content on internet news sites or social media, substantially higher than the EU average of 49.25%. Of those who came across such material, 38.11% checked its truthfulness, demonstrating that a significant proportion of individuals actively verified the accuracy of the content they encountered. Young people (16–24) (74.41%) reported more exposure than adults (25–64) (68.49%), with verification rates being significantly higher among young people (52.19%) than adults (39.66%). Males (66.19%) and females (63.06%) reported similar exposure levels, while verification rates were considerably higher among males (41.74%) than females (34.35%).

According to the Digital Decade Eurobarometer 2025, 95% of Swedes think public authorities should take urgent action to protect children online regarding the negative impact of social media on children's mental health. 96% of Swedes consider it urgent for public authorities to take action to protect children online regarding cyberbullying and online harassment. 90% of Swedes think it is urgent to put in place age assurance mechanisms to restrict age-inappropriate content.

The 2023 data on online interactions in Sweden reveals a concerning picture, with a high proportion of individuals encountering perceived hostile and degrading online messages and potentially misleading information online. However, the data also reveals a promising trend, with many Swedes, particularly the younger generations, actively engaging in fact-checking and verification of online content. To further increase this capacity, sustained efforts are needed to foster a culture of critical thinking and media literacy, empowering individuals to navigate the online landscape in a safe and informed manner.

The 2025 Eurobarometer shows that 92% of Swedes think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values. It is above the EU average (83%) that has also increased, reflecting the growing interest of the citizens at this respect.

Leveraging digital transformation for smart greening

Sweden's **Recovery and Resilience Plan (RRP)** is focused on the green transition, with specific reforms and investments primarily targeting carbon-intensive sectors. The **RRP** supports local and regional investments to reduce climate emissions, the transition of industry, energy efficiency in multi-dwelling housing, rail transport and biodiversity.

7.47 % of Swedes consider eco-design important when purchasing a device. This is below the EU average of 12.04 %.

According to the Digital Decade Eurobarometer 2025, 76% of Swedes consider digital technologies important to help fight climate change (standing slightly above the EU average of 74% and showing an increment of four percentage points since last year), while 90% of the Swedes think that ensuring that digital technologies serve the green transition should be an important action for public authorities (above the EU average of 80%).

2024 recommendations on smart greening: Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in the energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.

Monitor and quantify the emission reductions of the digital solutions deployed, following the relevant EU guidance and with the support of the methodology developed by the European Green Digital Coalition, with a view to developing future policy and attracting relevant financing.

In 2024, Sweden made limited progress in addressing the recommendations. Sweden has yet to start this work.

Annex I – National roadmap analysis

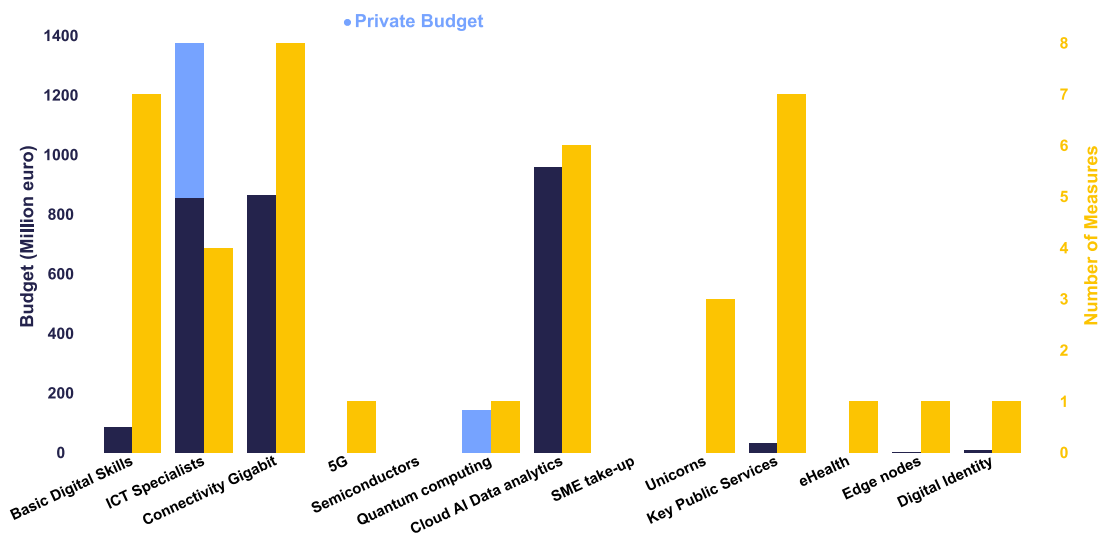
Sweden's national Digital Decade strategic roadmap

Sweden did not submit an adjustment to its national Digital Decade roadmap. An adjusted roadmap is expected later in 2025.

The initial roadmap is composed of 40 measures with a budget of EUR 3.5 billion, comprising EUR 2.8 billion from public budgets (equivalent to 0.5% of GDP).

The measures include EUR 288 million for extending VHCN 2025-2030, EUR 142.53 million to the Wallenberg Centre for Quantum Technology, EUR 40 million per year until 2029 for Strategic Innovation Programmes to support research and innovation on sustainable solutions.

Measures and budget in national roadmap⁶



In 2024, the Commission recommended that Sweden add to the national roadmap the missing targets for edge nodes and, where there are several trajectories for one target, select the most likely trajectory.

⁶ When referring to national roadmaps, the data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices between Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Sweden is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Sweden is not yet active in the Digital Decade's Best Practice Accelerator⁷.

EU funding for digital policies in Sweden

Sweden allocates 21% of its total **Recovery and Resilience Plan** to digital (EUR 674 million)⁸. In addition, under cohesion policy, EUR 230 million (representing 13% of the country's total cohesion policy funding), is dedicated to advancing Sweden's digital transformation⁹. According to JRC estimates, EUR 858 million directly contribute to achieving Digital Decade targets (of which EUR 650 million comes from the **RRF** and EUR 208 million from cohesion policy funding)¹⁰. Most of this funding is for the deployment of VHCN in sparsely populated parts of Sweden, with the country reporting having a target of 66 100 buildings in rural areas in the **RRP**. Moreover, a significant part of the EU funding is dedicated to raising basic digital skills and increasing the number of ICT graduates.

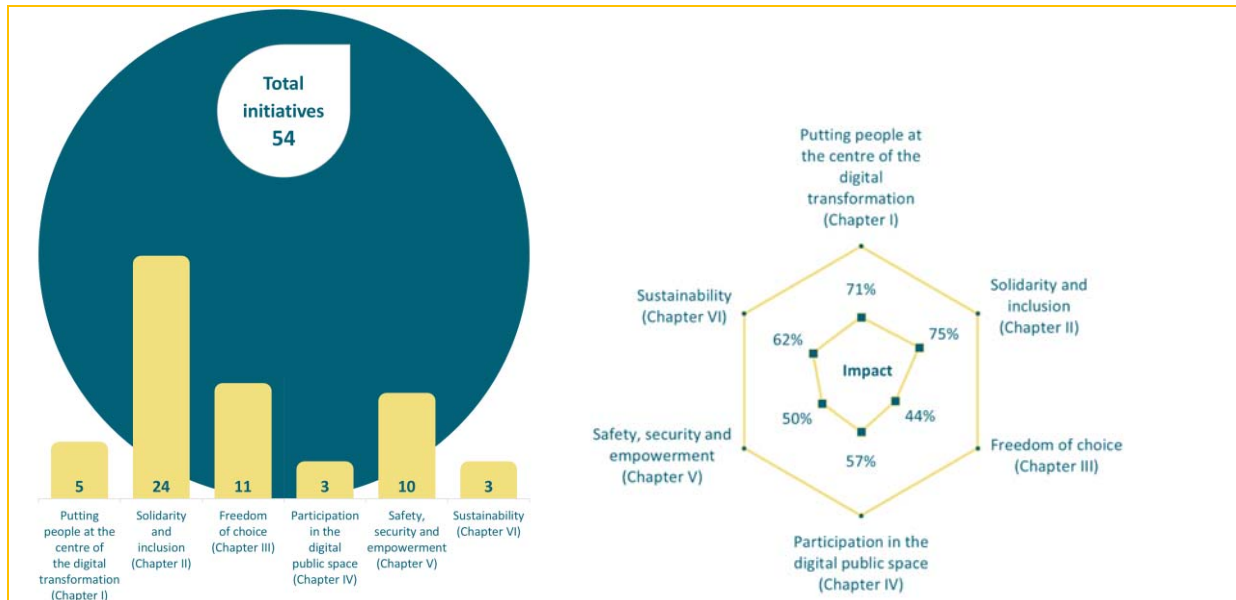
⁷ The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

⁸ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

⁹ This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

¹⁰ Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles¹¹



Activity on Digital Rights and Principles (figure 1)

Sweden has been relative active in implementing digital rights and principles, with 54 initiatives overall and 15 new initiatives launched in 2024, showing significant progress towards its commitments. Sweden is most active in the areas of Digital education, training and skills (II) and Interactions with algorithms and artificial intelligence systems (III). There is room for improvement, especially with regards to Fair and just working conditions (II) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Sweden (mainly national government) and how these are perceived by citizens.

The indicators suggest that Sweden is most successful in implementing commitments related to Solidarity and inclusion (II). Sweden should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Freedom of choice (III).

According to the Special Eurobarometer 'Digital Decade 2025', 48% of citizens in Sweden think that the EU protects their digital rights well (a 2% decrease since 2024). This is above the EU average of 44%. Citizens are particularly confident about getting freedom of assembly and of association in the

¹¹ Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available [here](#). For a more detailed country factsheet accompanying the study, click [here](#).

Sweden

digital environment (78%, above the EU average of 59%). They are most worried that their right to a safe digital environment and content for children and young people is not well protected (63%, above the EU average of 48%).