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COMMISSION STAFF WORKING DOCUMENT

Country Report Czechia 2020

Accompanying the document

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN CENTRAL BANK AND THE EUROGROUP

2020 European Semester: Assessment of progress on structural reforms, prevention and correction of macroeconomic imbalances, and results of in-depth reviews under Regulation (EU) No 1176/2011

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EXECUTIVE SUMMARY

Czechia's ability to diversify its economy will be crucial for maintaining a solid catch-up in living standards ([1]). The industry-intensive economy, underpinned by trade openness and foreign investment has allowed Czechia to steadily catch up with the rest of the EU. However, this growth model may have reached its limits. The direction of the economy will depend on its capacity to diversify and increase productivity and the value added of its products and services, while remaining an attractive destination for investment. Future growth also depends on Czechia's ability to face the challenges associated with population ageing, technological change and ensuring environmental sustainability. Factors such as: (i) the low investment in sustainable transport and in the transition to low-carbon energy sources; (ii) a moderate performance in domestic research and innovation; and (iii) acute labour and skill shortages, are a major structural obstacle to a successful socio-economic transition. Implementing these structural reforms would help Czechia achieve further growth in living standards and ensure a sustainable development.

Economic growth is set to slow down in the coming years. According to the Commission's Winter 2020 Forecast, real GDP growth continued to slow down in 2019 to 2.5%, reflecting international developments. A solid wage increase in a tight labour market continues to support consumer spending as the main driver of growth. The slowdown in foreign demand has led to a drop in private investment and a much lower increase in exports and imports. In the context of a stagnating industrial production, economic growth is expected to slow down further up to 2021.

There are no short-term risks to public finances but the long-term outlook is worsening due to ageing-related costs. In the short-term, public finances are expected to remain in balance and the public debt is expected to fall to around 30% of GDP. On the other hand, a lack of concrete action to deal with increasing ageing-related costs puts increasing pressure on the long-term sustainability of public finances.

The labour market remains strong, but labour and skills shortages and continuous increases in unit labour costs may hinder further growth. The employment rate reached 80% and unemployment is at a record low. However, persistent labour shortages are a cause for concern. Low unemployment levels pushed wages upwards, increasing the unit labour costs and potentially reducing overall cost-competitiveness. In the medium term, a continuous increase of wages above labour productivity growth could reduce the profitability of companies and adversely affect investment. Despite some improvements, the low skilled, older people and people with disabilities are still not fully integrated into the labour market, partly because active labour market policies are not well targeted and tailored. Female participation in the labour market is hindered by the lower availability of affordable childcare. The integration of foreign workers into the labour market is also a challenge.

Czechia has made limited progress in addressing the 2019 country-specific recommendations.

There has been some progress in:

- removing the barriers hampering the development of a fully functioning innovation ecosystem;
- increasing the quality and inclusiveness of the education and training systems, including by fostering technical and digital skills and promoting the teaching profession;
- supporting more quality-based competition in public procurement.

There has been limited progress in:

- focusing investment-related economic policy on transport, notably on its sustainability digital infrastructure, and low carbon and energy transition, including energy efficiency, taking into account regional disparities;
- adopting pending anti-corruption measures;

([1]) This report assesses Czechia's economy in light of the European Commission's Annual Sustainable Growth Strategy, published on 17 December 2019. In this document, the Commission sets out a new strategy on how to address not only the short-term economic challenges but also the economy's longer-term challenges. This new economic agenda of competitive sustainability rests on four dimensions: environmental sustainability, productivity gains, fairness and macroeconomic stability.

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- fostering the employment of women with young children, including by improving access to affordable childcare, and of disadvantaged groups;

- reducing the administrative burden on investment.

There has been no progress in:

- improving long-term fiscal sustainability of the pension and health-care systems.

Overall, Czechia performs well on the Social Scoreboard supporting the European Pillar of Social Rights. The employment rate is among the highest in the EU and the unemployment rate is the lowest. Yet, there is still scope to improve access to the labour market for women and vulnerable groups. The gender pay gap is also still one of the widest in the EU. While the share of people at risk of poverty or social exclusion is comparatively low, poverty remains high in some areas and for some population groups. The rate of early school leaving remains below the EU average. While levels of basic digital skills are higher than the EU average, further efforts to promote advanced digital skills will be needed to fully capture the benefits of the digital transformation.

Czechia has met, or is on track to meet national targets in most areas under the Europe 2020 strategy. This includes targets for poverty, social exclusion, employment, renewable energy, greenhouse gas emissions and higher education. However, the targets for public R&D spending and for early school leaving have not yet been reached.

Overall, Czechia is making progress on the United Nations Sustainable Development Goals. It has made at least moderate progress in all areas, particularly in eliminating poverty. However, more progress is needed on climate action (SDG 13) and gender equality (SDG 5) ([2]).

([2]) Within the scope of its legal basis, the European Semester can help drive national economic and employment policies towards the achievement of the United Nations Sustainable Development Goals (SDGs) by monitoring progress and ensuring closer coordination of national efforts. The present report contains reinforced analysis and monitoring on the SDGs. A new annex (Annex E) presents a statistical assessment of trends in relation to SDGs in Czechia during the past 5 years, based on Eurostat's EU SDG indicator set.

Key structural issues analysed in this report, which point to particular challenges for Czechia's economy, are the following:

- **There is a lack of action to ensure the long-term sustainability of public finances**. While the authorities acknowledge that long-term sustainability is an increasing problem and while they have discussed pension reform, the government recently decided not to link expected gains in life expectancy with the statutory retirement age for the next 5 years or to implement alternative measures. The projected rise in age-related spending on healthcare also puts the long-term sustainability of public finances at risk and there may be scope to increase the cost-effectiveness of health and care services.

- **Labour taxation remains high while property and environmental taxes are among the lowest in the EU.** Taxation of labour is high, particularly for people with low wages. Conversely, property and environmental taxes have remained low, despite the significant increase in house prices and the high carbon intensity of the economy.

- **Despite slowing down, rising house prices are making housing less affordable.** Various indicators suggest that the housing market is overvalued by 10-20%. Strong price growth is due to supply constraints coupled with an increasing demand for housing in large cities. A proposed new construction code may help simplify and accelerate construction-related procedures. Although the growth of the housing loan stock slowed in 2019, partly due to the implementation of the central bank's macroprudential recommendations, rising property prices may be a risk to financial stability in the medium term.

- **The social protection system shows some weaknesses.** Older people, the unemployed, single parents, and people with disabilities, are at a higher risk of poverty or social exclusion. Factors such as over-indebtedness, homelessness and a growing number of socially excluded areas contribute to poverty and inequality. The health, social and long-

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term care services are also not fully prepared for an increasingly ageing population.

- **Educational outcomes are negatively affected by the limited attractiveness of the teaching profession, and by socio-economic inequalities and low investment.** There is a shortage of teachers due to low job prestige, limited development opportunities and lower wages compared to other professions of similar qualification levels. Public spending per student at all education levels remains comparatively low. While early school leaving declined at the national level, regional disparities further increased. Socio-economic status continues to affect educational outcomes and access to higher education.

- **Progress in improving the transport infrastructure is sluggish, hampering private investment.** The level of public investment in transport infrastructure is below the EU average and, therefore, the transport network has significant gaps. Uneven development and connectivity primarily affect the south and the northeast of the country. The recently unveiled National Investment Plan is supposed to address some of these investment gaps. However, the plan does not sufficiently address sustainable mobility, given the increasing greenhouse gas emissions from transport. There are plans to use some innovative financing options, including public-private partnerships, but, so far, the country has limited experience in using this type of financial instrument.

- **Some barriers to entrepreneurship and competition point to a suboptimal allocation of resources.** The regulatory burden on professional services and professions is an obstacle to growth and competitiveness. Business dynamism is back to pre-crisis level, but remains weak. Fast-changing legislation and complex administrative procedures are seen by most firms as major obstacles to further investment, particularly in less-developed regions.

- **Domestic innovation is important for supporting a sustainable economic growth model.** Czechia remains a moderate innovator at EU level, despite some progress in recent years. Public investment is not underpinned by systemic reforms to improve research performance and cooperation between the private sector and academia. On the back of an insufficient number of graduates in science, engineering and computing as well as skills shortages, the innovation performance of domestic firms and the technology transfer remain rather low.

- **Support for innovative domestic firms remains limited.** The promotion and support of entrepreneurship remains low, hampering productivity growth. Foreign investment has been a major contributor to the country's growth but spillovers to the domestic firms have been limited. Czech firms are highly integrated in global and regional value chains but their main focus is still on low value added activities, particularly in manufacturing. While some successful innovative initiatives were brought to market, venture capital and equity capital remain very low. There are plans to increase financial support to innovative firms, particularly those delivering higher value added products and services. Improving the insolvency framework could also enhance economic efficiency.

- **New digital technologies provide opportunities for the economy to become more innovative.** As the automotive industry remains a backbone of the economy, Czechia is expected to be strongly affected by technological change. Driven by foreign investment, robotisation is already a significant component of the Czech economy. Recently, automation and artificial intelligence have also become major policy priorities, but progress remains to be seen. Adequate, efficient and sustainable investment in skills is needed to support and reap the benefits of a broader economic change.

- **Czech regions have different challenges.** While richer regions suffer from housing unaffordability and pressures on the suburban transport networks, the poorest areas face remoteness, demographic pressures, social exclusion, and an insufficient focus on

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important areas such as energy transition innovation, and digitisation.

- **Improving the performance of the public sector is crucial for economic change**. The professionalism of the civil service, the transparency of government and controlling corruption all fall below the EU average. Despite significant progress, so does e-government. Czechia also has one of the largest regional variations in terms of quality of governance. Although the public procurement framework is improving, it may warrant further fine-tuning. Some anti-corruption measures are still awaiting adoption.

- **Czechia is facing difficulties in reaching climate neutrality and in transitioning from solid fossil fuels.** The country still relies heavily on solid fossil fuels with high CO_2 emissions. The use of renewable energy is below the EU average, as the sector lacks the appropriate legal and institutional framework to support its further development. The transition away from coal is expected to impact the regions where the mining sector is still important. The use of low-carbon technologies can ease the transition, but the ambition to invest in them remains low. Identifying investment needs in green technologies and sustainable solutions, and securing adequate funding will be key to deliver on the climate and energy objectives and shape a new growth model. The Commission's proposal for a Just Transition Mechanism under the next multi-annual financial framework for 2021-2027, includes a Just Transition Fund, a dedicated just transition scheme under InvestEU, and a new public sector loan facility with the European Investment Bank. It is designed to ensure that the transition towards EU climate neutrality is fair by helping Czechia's most affected regions to address the social and economic consequences. The Just Transition Fund's key priorities, set up as part of the Just Transition Mechanism, are set out in Annex D. They build on the analysis of the transition challenges outlined in this report.

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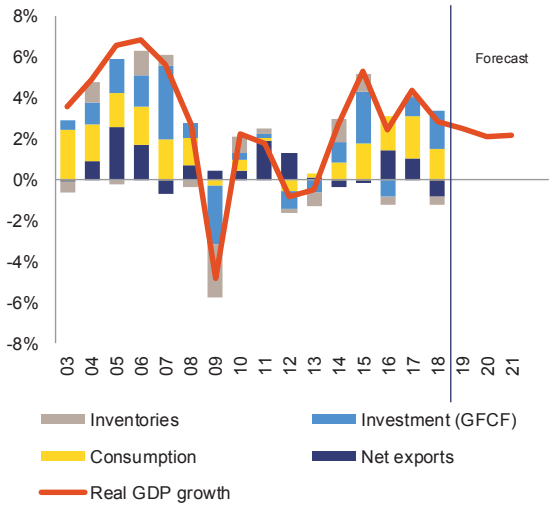
1. ECONOMIC SITUATION AND OUTLOOK

Economic growth

The economy continued to grow at a more moderate pace than in 2018, reflecting external developments. In 2019, the economy is estimated to have grown at 2.5% (Commission Winter 2020 Forecast), continuing the decelerating trend observed in 2018 (2.8%). Private consumption was the main driver of growth, supported by a continuous and strong wage increase in a tight labour market. By contrast, investment decelerated sharply in 2019. Net exports are estimated to have contributed to growth, but the slowdown in external demand and geopolitical uncertainties led to a lower increase in both imports and exports.

Graph 1.1: **Real GDP growth and its components**

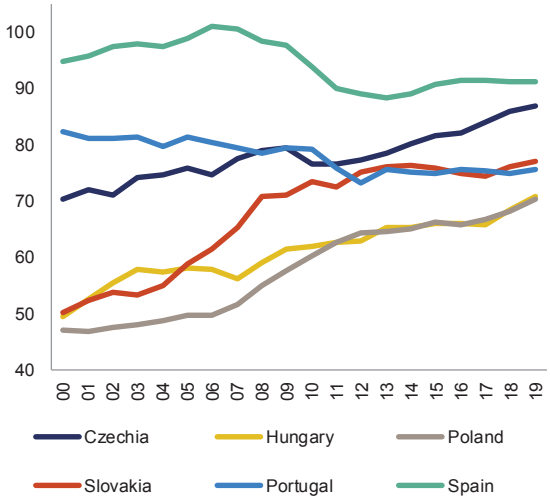


Source: AMECO, Commission Winter 2020 Forecast

An economic slowdown is expected in coming years, mirroring developments in main trading partners. In 2020 and 2021, the economy is projected to continue to grow at a slower pace, at 2.1% and 2.2% respectively (Commission Winter 2020 forecast). Domestic demand growth will moderate but is likely to remain the main growth driver. Investment is expected to decelerate in 2020. Czechia's exports and imports will continue to be strongly influenced by the economic developments of its main trading partners.

Global developments, trade uncertainties, a tight labour market and the transition to a greener economy pose challenges to growth. Ongoing geopolitical tensions are expected to reduce the demand from the main trading partners. This is particularly relevant for a small open economy like Czechia. The tight labour market and the resulting high wage growth can pose an increasing risk to the cost-competitiveness of exports. With the lowest unemployment rate in the EU and the highest job vacancy rate, the labour market risks overheating. The increase in real wages (5.3% in 2018) and unit labour costs (6.3% in 2018) and the subdued growth in productivity (with sector-specific variations) point in that direction. There were nevertheless signs of a slight ease in both labour shortages and wage growth in the first half of 2019. Finally, the green transition for a highly industrialised and carbon-intensive economy like that of Czechia may require significant investment.

Graph 1.2: **Gross National Income per person, in purchasing power standards (% of EU average)**

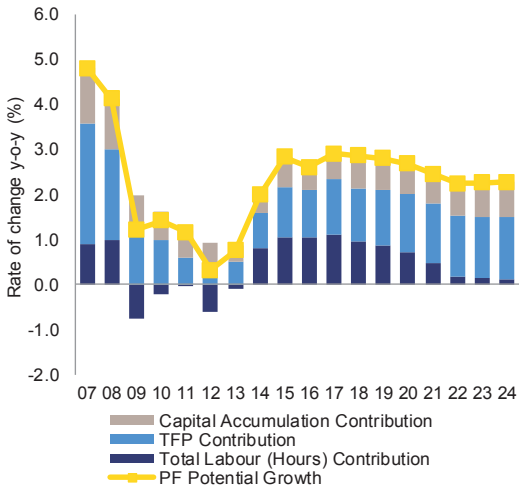


Source: AMECO

Economic convergence towards the EU average continues. Foreign direct investment, driven by geographical proximity and wage competitiveness, and the inflow of EU funds has been boosting productivity growth and employment since the 2000s. Convergence halted throughout the 2009 recession but since 2013 it has picked up again at relatively fast and constant rates, reaching 88% of the EU average, similar to some older Member States (see Graph 1.2). Looking ahead, growth rates are forecast to be around one percentage

point (pp.) above the euro area average, continuing the convergence process.

Graph 1.3: **Potential GDP and drivers**

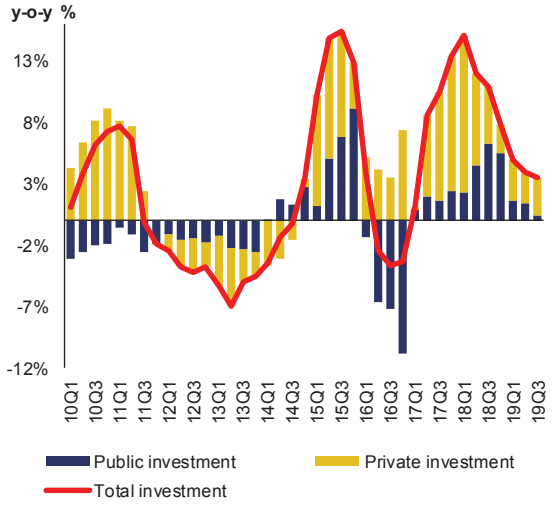


Source: European Commission

Potential output is set to slowly decline and converge towards real GDP growth. After remaining constant in 2017 and 2018 at 2.9%, potential growth is expected to decline to 2.5% by 2021, due to labour market developments (see Graph 1.3). This will translate into the closing of the output gap from 1.4% in 2018 to 0.3% in 2021. Slower employment growth, notably in terms of hours worked, and high but more moderate wage growth suggest that the business cycle may have reached its peak. This should reduce inflationary pressures. Looking ahead, population ageing will lead to a continued decline in the working-age population, putting additional pressure on potential growth. In this context, a further deepening of the capital stock and investments in intangible capital and high value-added technologies can help diversify the economy and improve potential growth.

Household consumption continues to be the main growth driver, but is set to slow down in coming years. High employment levels coupled with an increase of real wages and gross disposable income have boosted household consumption. While high employment and wage increases will continue to support consumption, global developments and increased trade uncertainty are expected to have a negative impact on production and confidence indicators, already reflected in some related indexes. Consumer confidence remains relatively high but has been decreasing since the beginning of 2019. Combined with potentially higher interest rates, this might encourage households to reduce consumption and increase precautionary savings, partly offsetting the wage effect.

Graph 1.4: **Private and public investment, quarterly profile**



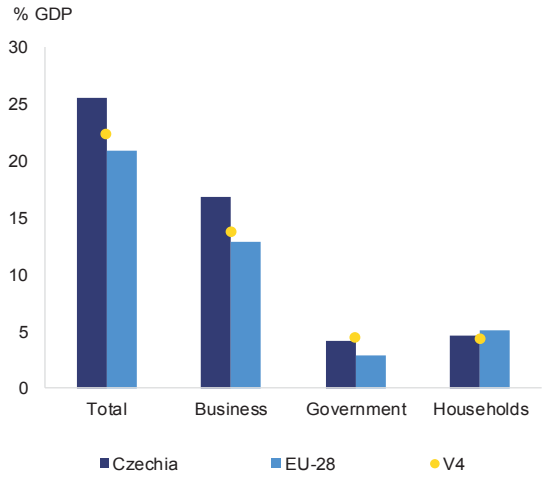
Source: Eurostat

After two very positive years, investment was more restrained in 2019. Following a growth of 3.7% in 2017 and 7.6% in 2018, investment is estimated to have increased by only 1.1% in 2019 and is projected to grow by 1% in 2020 (European Commission Autumn 2019 forecast). Private investment has decreased in 2018, particularly in machinery. The economic slowdown in the main trading partners and the global trade tensions translated into a decreasing number of orders and very weak confidence indicators. The manufacturing Purchasing Managers' Index (PMI) has decreased to the lowest levels in the last decade – from almost 60 points at the end of 2017, to below 45 at the end of 2019. Public investment, accounting for around 15% of total investment, grew solidly in 2018 due to an inflow of EU funds, but then significantly slowed down in 2019 (see Graph 1.4).

Investment activity remained above the EU average thanks to the manufacturing sector. In 2018, investment activity remained above the EU average: 25.5% of GDP compared to 20.9% (see Graph 1.5). It increased in most sectors, but

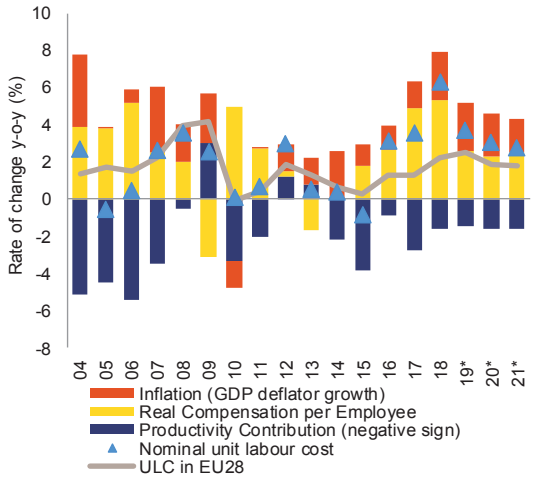
especially in manufacturing and construction. Labour shortages and wage increases have made investment in automation a priority for firms, particularly in manufacturing, to keep their competitiveness and counter the demographic and technological changes ahead.

Graph 1.5: **Investment by sector as a share of GDP**



Source: Eurostat

Graph 1.6: **Breakdown on the nominal unit labour cost**



Source: AMECO

Competitiveness and productivity

Low unemployment levels pushed wages upwards, potentially reducing overall cost-competitiveness. Nominal wages per employee increased by 8% in 2018 following a 6.3% growth in 2017, significantly above the EU average of 2.7%. The minimum wage was further increased in 2020 by CZK 1,250 to a total of CZK 14,600. As overall productivity growth lagged behind wage growth, unit labour costs increased by 6.3% in 2018, up from 3.6% in 2017 (see Graph 1.6), significantly higher than the EU average of 2.5%. A continuous increase of wages above labour productivity growth could reduce the profitability of companies, translating into higher consumer and export prices, and affect their investment behaviour in the medium term.

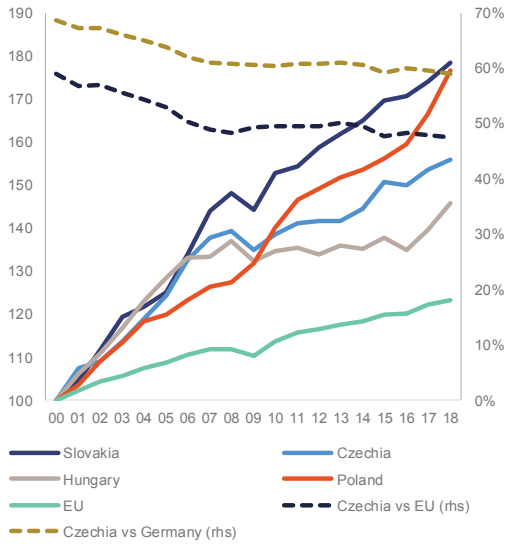
Increasing labour costs have not yet translated into a loss of export market share. Until 2018, Czechia has managed to keep and even increase its export market share, partly due to worsening world exports compared with Czech exports. In absolute terms, the growth of Czech exports is estimated to have gone down in 2019. The European Commission Autumn 2019 forecast points to a gradual worsening of the export market share as of 2019. At the same time, it predicts a slowdown in nominal wage growth to 5.2% in 2019 and 4.7% in 2020 as well as in unit labour costs (to 3.7% in 2019 and 1.1% in 2020).

Labour productivity has been increasing but the gap with other advanced economies persists. At 12.8%, the growth of the gross value added per hour worked between 2010 and 2018 has been above the EU average (8%), but below some neighbouring countries such as Poland (26.5%) or Slovakia (17%) More broadly, since 2000, it increased by 55.9%, compared to 23.2% in the EU. This equates to an average annual growth rate of 3.1%, significantly above the EU average of 1.2% (see Graph 1.7). The productivity gap between Czechia and the EU decreased from 59% in 2000 to 48% in 2018. Similarly the gap to Germany decreased from 69% to 59% but most of the catch-up took place before 2009.

The contribution of manufacturing to the economy remains very high. With one of the highest contributions of manufacturing to GDP (23.1%), Czechia ranks above the other Visegrad countries as well as the EU average (14.3% of GDP). The automotive sector is the largest branch of the Czech industry in terms of output. In 2017, it accounted for around 25% of gross total output, 18% of total value added, 13% of total employment and 35% of total exports in the

industry (Polish Economic Institute, 2019). Significant inflows of foreign investment boosted productivity growth and the automotive sector is now among the most productive sectors in manufacturing. However, it faces several challenges, including global trade uncertainties, labour shortages, revised CO2 standards and increasing global demand for electric cars. While not yet reflected in exports, which remain robust, these challenges place the industry at a critical juncture, calling for strategic changes and investment in equipment and automation to keep the sector competitive and/or create first-mover advantages.

Graph 1.7: **Evolution of labour productivity**

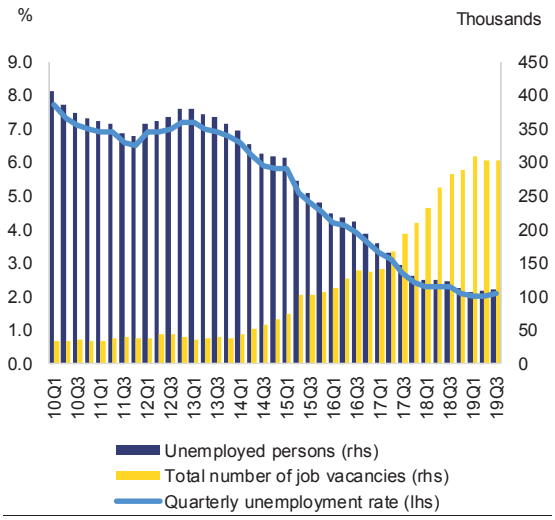


(1) calculated as GVA per hour worked in PPS
Source: Eurostat

Labour market

The strong labour market performance continues but may reach its limits. The employment rate of those aged between 20 and 64 reached 80.4% in Q3-2019, 6.3 pps above the EU average. The activity rate (82.1%) was also well above the EU average (78.8%). The unemployment rate dropped further to around 2%, making Czechia the best performer in the EU. The labour market expansion may have already reached its limits, in particular in Prague and the surrounding region. Despite slightly easing in 2019, the shortage of skilled labour persists, with many firms advancing automation and relying on foreign workers to fill their vacancies. The vacancy rate remains significantly high (see Graph 1.8). The employment rate of the low skilled is still lagging behind that of the medium and high skilled. Furthermore, gender inequalities in pay and employment remain high and there is further scope to improve the employment outcomes of people with disabilities.

Graph 1.8: **Unemployment and job vacancies**



Source: Eurostat

Inflation and monetary policy

Inflation increased in 2019 but is set to decline towards the 2% target by 2021. Consumer price inflation reached 2.6% in 2019. The increase, which took place mainly in the second half of the year, was mostly due to the rise in food prices and regulated prices. The trend is likely to continue in the first half of 2020, mainly due to new excise duties for alcohol and tobacco. In the second half it is expected to ease due to a slower growth of prices for food, electricity, imported goods and services. As a result, inflation is forecast to drop to 2.4% in 2020 and 2.0% in 2021 (Commission Winter 2020 Forecast).

The exchange rate has remained rather stable after the marked appreciation throughout 2017. The nominal effective exchange rate depreciated slightly throughout 2018 and the beginning of 2019. In January 2020 it witnessed a significant appreciation to the highest level since the end of the exchange rate commitment. The real effective exchange rate has also shown a similar trend. There are currently signs of currency

undervaluation, considering fundamentals, and the real effective exchange rate is expected to appreciate further in the medium term, as incomes catch up with the rest of the EU (IMF, 2019).

The policy rate was raised to 2.25%, significantly above the euro area. After seven hikes between July 2017 and November 2018, the policy rate was kept rather stable in 2019, with a single hike to 2% in May 2019. Somewhat against market expectations, in February 2020 it was raised to 2.25%. The rate is likely to remain rather stable in the coming quarters, but its movement will depend on future economic developments.

External position

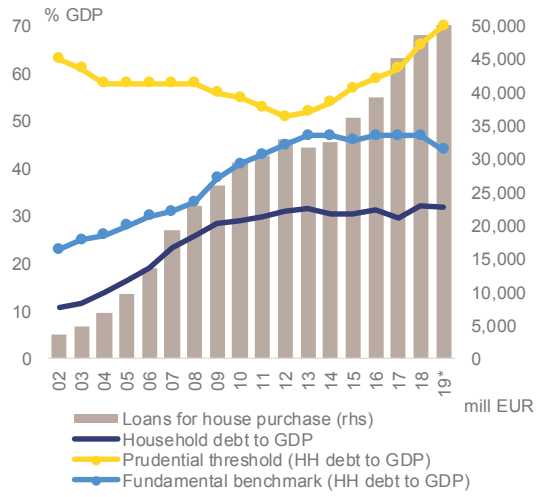
Czechia's trade balance remains high, despite a slight contraction. More dependency on energy imports and a lower goods surplus led to a contraction of the trade balance surplus to 6.3% of GDP in 2018, 1.3 pps lower than in 2017. This left the current account balance at 0.3% of GDP in Q3-2019, 0.2 pp above the fundamental benchmark ([3]). Weaker external demand, particularly in Germany and in other euro area countries, as well as geopolitical uncertainties and the continued appreciation of the real effective exchange rate throughout 2018 were the main factors behind the slowdown in exports. On the other hand, strong domestic demand led to an increase of imports of more than 5% (compared to the 4.4% increase in exports), further reducing the balance. Imports are nevertheless expected to drop significantly in the coming years due to a slowdown in production and investment, maintaining a positive external balance until 2021 (Commission Autumn 2019 forecast).

The net international investment position continued to improve. It reached -19% of GDP in Q3-2019, well above the prudential benchmark (-57%). It increased by 5.2% year-on-year, mainly due to nominal GDP growth and an improvement of the external liabilities from banks. This represents a sizeable increase compared to 2011 (-45% of GDP), largely driven by growth in reserve assets. External liabilities comprise mostly foreign direct investment (-50%). The net investment position without non-defaultable debt reached 32% of GDP in Q3-2019, 4 pps higher than in 2018, indicating that Czechia does not have a problematic debt profile.

Housing market and private indebtedness

Housing prices continue to grow, reducing affordability. Supply constraints and strong demand have been pushing house prices upwards, particularly in the biggest cities. Although price growth flattened off in 2019, it remains above wage growth, reducing affordability. Burdensome planning procedures continue to limit housing supply, which is not expected to meet demand in the near future, despite an increase in construction (see Section 3.2).

Graph 1.9: **Evolution of household debt and housing loans**



Source: European Central Bank and European Commission

Household debt is increasing but does not yet pose a systemic risk to the banking sector. Household debt as a share of disposable income increased to 61.4% in 2018, but remains significantly below the EU average (100.6%). Similarly, household debt to GDP remained below both the fundamental benchmark (44%) and the prudential threshold (70%), reaching 32% in the first half of 2019, significantly below the EU average (53%) ([4]). The total value of loans for

([3]) The benchmark is derived from reduced-form regressions capturing the main determinants of the saving-investment balance, including fundamental determinants (e.g. demography, resources), policy factors and global financial conditions. See also Coutinho, Turrini and Zeugner (2018).

([4]) Fundamentals-based benchmarks are derived from regressions capturing the main determinants of credit growth and taking into account a given initial stock of debt. Prudential thresholds represent the debt threshold beyond which the probability of a banking crisis is relatively high.

house purchase, which represent around three quarters of all loans to households, continued to increase throughout 2018 and the first half of 2019. However, the volume of new mortgages saw a marked decrease in 2019 (-16.9%), as a result of limited housing supply, reduced affordability, and the new macro-prudential recommendations put forward by the central bank (see Section 3.2). Rising property prices and the non-legally binding nature of the central bank macroprudential recommendations may still pose a risk to financial stability in the medium term.

Social developments

While the overall risk of poverty is low, some challenges remain. 12.2% of the population was at risk of poverty or social exclusion in 2018 (EU average 21.9%). Overall income inequality has remained low and stable in recent years. Nonetheless, there are some concerns about the affordability of housing, personal indebtedness and homelessness of certain population groups. Inequalities of opportunities for children persist (see Section 3.3).

Regional disparities

Regional disparities indicate a clear division between Prague and the rest of the country. Prague is a highly developed region whose GDP per capita is 187% of the EU average. Six regions are considered as moderately developed (between 73% and 84% of EU average), while one region (Severozápad) stands out as being poorer (63% of the EU average). While the growth rate in most regions has been above the EU average, the GDP per capita in Severozápad grew by only 0.16% between 2010 and 2017.

Productivity is converging to the EU average at different speeds. While productivity in Prague is around 50% higher than the national average, in Severozápad it is 23% lower. In all regions but Prague and Střední Čechy, labour productivity is less than half of the EU average. While, productivity growth has been above the EU average in all regions, in Severozápad and Moravskoslezsko the increase was more marginal (see Section 3.4).

Methodologies and proposals for updates are described in European Commission (2017 and 2018).

Public finances

Public finances are expected to remain in balance in the short term. The general government balance has been in surplus since 2016 due to a steady increase in revenues, mostly from indirect taxes. Value-added tax (VAT) collection, in particular, has benefited from improved compliance. New revenue measures are also likely to be put in place in the next years (see Section 3.1). Nonetheless, public expenditure is expected to grow more rapidly, mostly due to the continuous increase in public wages and pensions. Growth in public investment is also likely to remain robust, as the current programming period for EU funds enters its final years. In line with the shrinking general balance, the structural balance is expected to move into negative territory. By contrast, the debt-to-GDP ratio will continue to decrease, reaching around 30% of GDP by 2021 (Commission Autumn 2019 forecast).

The long-term sustainability of public finances remains a concern. The increase in pension expenditure is the main risk to long-term sustainability. Measures taken in recent years and changes in demographic projections have worsened the long-term budgetary outlook. Despite these concerns, the government recently decided not to increase the retirement age above 65 years or to link the retirement age with life expectancy gains (see Section 3.1).

Progress with Sustainable Development Goals

Overall, Czechia performs well with regard to the United Nations' Sustainable Development Goals. In the past 5 years it showed at least some moderate progress in all areas (Annex E). It is one of the top performing Member States in areas such as eliminating poverty (SDG 1) and reducing inequalities (SDG 10). The share of people at risk of poverty is significantly below the EU average, while the level of inequality (measured by the Gini coefficient) is among the lowest. The country is still lagging behind in terms of gender equality (SDG 5), as the gender gap in employment and pay is among the highest in the EU. Despite some progress in the past 5 years, Czechia also struggles in reaching the targets on climate (SDG 13), as its energy-intensive economy continues to emit some of the highest greenhouse gas emissions per capita in the EU.

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Table 1.1: **Key economic and financial indicators - Czechia**

	2004-07	2008-12	2013-16	2017	2018	forecast 2019	forecast 2020	forecast 2021
Real GDP (y-o-y)	6.0	0.2	2.5	4.4	2.8	2.5	2.1	2.2
Potential growth (y-o-y)	4.5	1.6	2.0	2.9	2.9	2.8	2.7	2.5
Private consumption (y-o-y)	3.7	0.5	2.4	4.3	3.2	.	.	.
Public consumption (y-o-y)	0.1	-0.2	2.0	1.3	3.4	.	.	.
Gross fixed capital formation (y-o-y)	7.4	-1.8	2.0	3.7	7.6	.	.	.
Exports of goods and services (y-o-y)	18.1	4.2	4.8	6.7	4.4	.	.	.
Imports of goods and services (y-o-y)	15.7	2.9	4.9	5.9	5.9	.	.	.
Contribution to GDP growth:								
Domestic demand (y-o-y)	3.9	-0.3	2.1	3.2	4.0	.	.	.
Inventories (y-o-y)	0.7	-0.5	0.2	0.1	-0.4	.	.	.
Net exports (y-o-y)	1.4	1.0	0.2	1.1	-0.8	.	.	.
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	0.5	-0.1	0.7	1.1	1.0	0.9	0.7	0.5
Capital accumulation (y-o-y)	1.0	0.7	0.5	0.6	0.7	0.7	0.7	0.7
Total factor productivity (y-o-y)	3.1	1.1	0.9	1.2	1.2	1.2	1.3	1.3
Output gap	3.3	-0.4	-1.4	1.3	1.4	1.1	0.6	0.3
Unemployment rate	7.2	6.4	5.6	2.9	2.2	2.1	2.2	2.3
GDP deflator (y-o-y)	2.0	0.9	1.6	1.4	2.6	2.6	2.3	1.8
Harmonised index of consumer prices (HICP, y-o-y)	2.3	2.7	0.7	2.4	2.0	2.6	2.4	2.0
Nominal compensation per employee (y-o-y)	6.0	2.3	2.3	6.4	8.0	5.2	4.7	4.4
Labour productivity (real, person employed, y-o-y)	4.6	0.3	1.5	2.8	1.5	.	.	.
Unit labour costs (ULC, whole economy, y-o-y)	1.3	2.0	0.8	3.6	6.5	3.7	3.0	2.8
Real unit labour costs (y-o-y)	-0.7	1.0	-0.8	2.1	3.8	1.1	0.7	0.9
Real effective exchange rate (ULC, y-o-y)	3.7	1.8	-2.0	5.8	8.0	0.4	1.3	0.8
Real effective exchange rate (HICP, y-o-y)	3.1	2.1	-1.5	3.9	4.3	0.4	0.9	0.1
Net savings rate of households (net saving as percentage of net disposable income)	6.4	6.9	6.4	4.4	6.0	.	.	.
Private credit flow, consolidated (% of GDP)	7.0	3.5	2.7	4.2	5.3	.	.	.
Private sector debt, consolidated (% of GDP)	51.3	67.3	70.5	67.3	70.8	.	.	.
of which household debt, consolidated (% of GDP)	18.2	28.8	31.0	29.7	32.3	.	.	.
of which non-financial corporate debt, consolidated (% of GDP)	33.1	38.5	39.6	37.6	38.4	.	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) [2]	.	.	.	2.5	1.9	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	-3.1	-1.2	-0.3	-1.1	-1.6	-1.1	-0.7	-0.7
Corporations, gross operating surplus (% of GDP)	29.1	28.9	30.2	29.9	28.0	27.9	27.7	27.6
Households, net lending (+) or net borrowing (-) (% of GDP)	1.6	2.3	2.0	0.3	1.4	1.9	2.6	3.1
Deflated house price index (y-o-y)	4.7	-1.0	3.8	9.1	6.2	.	.	.
Residential investment (% of GDP)	3.6	3.8	3.5	3.9	4.0	.	.	.
Current account balance (% of GDP), balance of payments	-3.2	-2.3	0.4	1.7	0.3	0.5	0.9	1.1
Trade balance (% of GDP), balance of payments	1.8	3.5	6.3	7.7	6.3	.	.	.
Terms of trade of goods and services (y-o-y)	-0.5	-0.7	1.0	-1.0	0.0	-0.2	0.2	0.2
Capital account balance (% of GDP)	0.3	0.9	1.5	0.8	0.3	.	.	.
Net international investment position (% of GDP)	-27.9	-43.8	-34.4	-25.0	-23.5	.	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) [1]	17.9	8.7	20.7	27.0	28.3	.	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) [1]	30.7	42.2	53.4	70.6	68.2	.	.	.
Export performance vs. advanced countries (% change over 5 years)	77.2	30.0	-1.0	5.6	9.7	.	.	.
Export market share, goods and services (y-o-y)	10.0	-0.9	1.7	1.6	1.7	0.9	-1.2	-1.3
Net FDI flows (% of GDP)	-4.8	-1.7	-1.1	-0.9	-1.7	.	.	.
General government balance (% of GDP)	-2.0	-3.7	-0.8	1.6	1.1	0.2	-0.1	-0.3
Structural budget balance (% of GDP)	.	.	-0.1	1.1	0.5	-0.3	-0.4	-0.4
General government gross debt (% of GDP)	27.9	36.7	41.0	34.7	32.6	31.5	30.7	30.1
Tax-to-GDP ratio (%) [3]	34.4	33.2	34.4	35.4	36.2	36.4	36.7	37.0
Tax rate for a single person earning the average wage (%) [4]	23.3	22.9	23.3	24.2	24.6	.	.	.
Tax rate for a single person earning 50% of the average wage (%) [4]	18.7	14.3	15.4	17.2	18.2	.	.	.

(1) Domestic banking groups and stand-alone banks, EU and non-EU foreign-controlled subsidiaries and EU and non-EU foreign-controlled branches.
(2) NIIP excluding direct investment and portfolio equity shares.
(3) The tax-to-GDP indicator includes imputed social contributions and hence differs from the tax-to-GDP indicator used in the Section on taxation.
(4) Defined as the income tax on gross wage earnings plus the employee's social security contributions less universal cash benefits, expressed as a percentage of gross wage earnings.
Source: Eurostat and ECB as of 4-2-2020, where available; European Commission for forecast figures (Winter forecast 2020 for real GDP and HICP, Autumn forecast 2019 otherwise)

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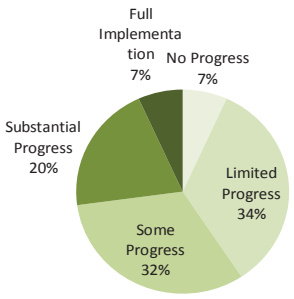
2. PROGRESS WITH COUNTRY-SPECIFIC RECOMMENDATIONS

Since the start of the European Semester in 2011, 59% of all country-specific recommendations (CSRs) addressed to Czechia have recorded at least 'some progress' ([5]). 'Limited' or 'no progress' has been made on 41% of the CSRs (see graph 2.1). In several areas Czechia made 'substantial progress' or reached 'full implementation'. For example, there has been substantial progress in fighting against tax evasion and strengthening the fiscal framework.

Graph 2.1: **Overall multiannual implementation of 2011-2019 CSRs to date**



(1) The overall assessment of the country-specific recommendations related to fiscal policy excludes compliance with the Stability and Growth Pact.
(2) 2011-2012: Different CSR assessment categories.
(3) The multiannual CSR assessment looks at the implementation since the CSRs were first adopted until the February 2020 Country Report.
Source: European Commission

In a multiannual assessment, Czechia has made limited progress in improving the long-term sustainability of public finances. Most measures focused on pension adequacy but lacked safeguards to ensure long-term fiscal sustainability. The Czech authorities now expect that public expenditure on pensions will increase up to 14.5% of GDP in 2059. The projected increase in age-related public expenditure on healthcare also puts pressure on the country's long-term fiscal sustainability. Still, a number of initiatives improved the efficiency of the healthcare system.

Some progress has been made in increasing labour market participation for underrepresented groups. The number of childcare facilities increased thanks to EU funds, supporting women's labour market participation. Due to ineffective targeting and a lack of tailored measures, progress in improving the effectiveness of active labour market policies was limited, preventing the underrepresented groups from benefiting from the favourable conditions of the labour market**.**

Czechia has made limited progress ([6]) in addressing the 2019 CSRs. No progress has been made in improving the long-term sustainability of public finances. Still, some limited progress in improving the health-care system was noticed. Progress with adopting the anti-corruption measures has been limited as some of the pending measures were not yet adopted by the government or approved by the Parliament. There was also limited progress in supporting the employment of women with young children and of disadvantaged groups.

There has been some progress in addressing the recommendations related to education, public procurement and innovation. Efforts to support quality-based competition have intensified and the professionalisation of contracting agencies increased. The recently adopted Innovation Strategy aims to remove barriers to the development of a functioning innovation ecosystem but progress remains to be seen. Automation and artificial intelligence have also become policy priorities for the government. Some progress was achieved on education, in particular in promoting the teaching profession and digital skills.

Progress on focusing investment-related economic policy and on reducing administrative burden was more limited. The recently approved National Investment Plan for 2020-2050 allocates a significant amount of investment to road and rail transport infrastructure. Investments in low carbon and energy transition are still rather low. Administrative burden remains a barrier but a new construction law is being developed and expected to become effective as of 2021.

([5]) For the assessment of other reforms implemented in the past, see in particular Section 3.

([6]) Information on the level of progress and actions taken to address the policy advice in each respective subpart of the CSRs is presented in the Overview Table in the Annex A. This overall assessment does not include an assessment of compliance with the Stability and Growth Pact.

Table 2.1: **Assessment of the 2019 CSR implementation in Czechia (*)**

Czechia	Overall assessment of progress with the 2019 CSRs: Limited progress
CSR 1: *Improve long-term fiscal sustainability of the pension and health-care systems. Adopt pending anti-corruption measures.*	**Limited progress** • No progress in improving long-term fiscal sustainability of the pension and health-care systems. • Limited progress in adopting pending anti-corruption measures.
CSR 2: *Foster the employment of women with young children, including by improving access to affordable childcare, and of disadvantaged groups. Increase the quality and inclusiveness of the education and training systems, including by fostering technical and digital skills and promoting the teaching profession.*	**Limited progress** • Limited progress in fostering the employment of women with young children, including by improving access to affordable childcare, and of disadvantaged groups. • Some progress on increasing the quality and inclusiveness of the education and training systems, including by fostering technical and digital skills and promoting the teaching profession.
CSR 3: *Focus investment-related economic policy on transport, notably on its sustainability, digital infrastructure, and low carbon and energy transition, including energy efficiency, taking into account regional disparities. Reduce the administrative burden on investment and support more quality-based competition in public procurement. Remove the barriers hampering the development of a fully functioning innovation ecosystem.*	**Some progress** • Limited progress on focusing investment-related economic policy on transport, notably on its sustainability, taking into account regional disparities. • Limited progress on focusing investment-related economic policy on digital infrastructure, taking into account regional disparities. • Limited progress on focusing investment-related economic policy on low carbon and energy transition, including energy efficiency, taking into account regional disparities. • Limited progress on reducing the administrative burden on investment. • Some progress on supporting more quality-based competition in public procurement. • Some progress on removing the barriers hampering the development of a fully functioning innovation ecosystem.

Source: European Commission

(*) The assessment of CSR 3 does not take into account the contribution of the EU 2021-2027 cohesion policy funds. The regulatory framework underpinning the programming of the 2021-2027 EU cohesion policy funds has not yet been adopted by the co-legislators, pending inter alia an agreement on the multiannual financial framework (MFF).

Upon request from a Member State, the Commission can provide tailor-made expertise via the Structural Reform Support Programme to help design and implement growth-enhancing reforms. Since 2016, such support has been provided to Czechia for 30 projects. In 2019, several projects have been delivered on the ground. The Commission, for example, assisted the authorities in simplifying the permit process in order to accelerate the building of the Trans-European Transport Network infrastructure, in the preparation of the SMEs Support Strategy 2021+, and in improving the administrative capacity for tax collection though e-services. In 2019, work started on reducing regional disparities in education outcomes, on increasing the affordability of housing across regions and on defining a national strategy for the Circular Economy.

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Box 2.1: EU Funds and programmes to address structural challenges and to foster growth and competitiveness in Czechia

Czechia is one of the countries that benefits most from EU support. The financial allocation from the EU Cohesion Policy funds ([1]) amounts to around €29 billion in the current Multiannual Financial Framework, equivalent to 2.2% of annual GDP. By the end of 2019, €23.8 bn (82% of the total amount planned) was allocated to specific projects, while €10.7 bn was reported to have been spent on the selected projects ([2]), showing a level of implementation below average. Current programmes allocated €4.3 bn for smart growth, €10.9 bn for sustainable growth and transport and €5.6 bn for inclusive growth. Following a performance review in 2019 ([3]), an additional €1.5 bn was made available for priority areas.

While reducing economic, social and territorial disparities to ensure a more even economic development, EU Cohesion Policy funding is helping to transform the Czech economy. European Regional Development Fund (ERDF) and Cohesion Fund (CF) projects promote growth and employment through investments in research, technological development and innovation, competitiveness of business, sustainable transport, employment and labour mobility. By 2019, a total of 1,082 km of roads were built or modernised at regional level and connected to the TEN-T network. 2,705 businesses, including 46 start-ups, received support, leading to the creation of 1,817 new jobs. The funds also helped reduce greenhouse gas emissions by over 76,000 tons of CO_2. European Social Fund (ESF) projects helped create social enterprises and increased labour market participation of the long-term unemployed and low-skilled people, including around 8,900 people belonging to minorities such as Roma and 8,000 people with disabilities. It also triggered structural reforms by providing childcare for 18,000 children up to the age of 6 and inclusive education in 6,000 participating schools.

Agricultural and fisheries funds and other EU funds and programmes also help address the country's investment needs. Alongside the €3.8 billion allocation from the European Agricultural Fund for Rural Development (EARDF) and the €41 million from the European Maritime and Fisheries Fund (EMFF), Czechia receives funding from various other EU programmes. The Connecting Europe Facility allocated €970 million to projects focused on strategic transport networks, while through the Horizon 2020 programme the country received funding totalling €341 million, including €51 m for 137 SMEs.

EU funding helps mobilise considerable private investment. The programmes under the European Structural and Investment Funds ([4]) mobilised additional capital, by allocating about €490 million in the form of loans, guarantees and equity.

EU funds already invest substantial amounts on actions to meet the Sustainable Development Goals (SDGs). In Czechia, European Structural and Investment Funds support 13 out of the 17 SDGs and up to 96% of the expenditure is contributing to those.

([1]) European Regional Development Fund, Cohesion Fund, European Social Fund, Youth Employment Initiative, including national co-financing.
([2]) https://cohesiondata.ec.europa.eu/countries/CZ
([3]) The performance review is regulated by Article 22 of the Regulation (EU) No 1303/2013, whereby 5-7% of overall resources allocated are released to performing priority axes of the operational programmes (the amount includes national co-financing).
([4]) European Regional Development Fund, Cohesion Fund, European Social Fund, European Agricultural Fund for Rural Development Fund and European Maritime and Fisheries Fund.

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3. REFORM PRIORITIES

3.1. PUBLIC FINANCES AND TAXATION

Taxation

Public finances remain in balance and the public debt continues to decrease. Due to the robust economic growth, 2019 is estimated to be the fourth consecutive year with a positive general government balance. However, the general balance is expected to turn slightly negative as of 2020. The general debt as a share of GDP has dropped to almost 30% - one of the lowest in the EU.

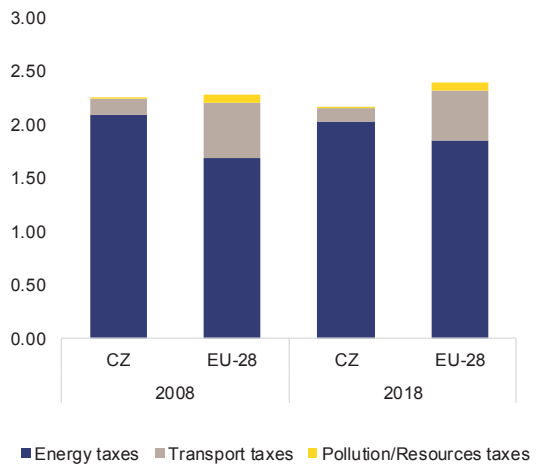
Tax revenues reached a new high in 2018 but remain below the EU average. Their level increased from 35.4% of GDP in 2017 to 36.1% in 2018. While the figure remains 3.1 percentage points (pps) below the EU average, the gap has narrowed (5 pps in 2009). Nonetheless, Czechia continues to have one of the EU's lowest shares of tax revenues as a share of GDP. The Commission Autumn 2019 forecast projects only a slight increase in tax revenues by 2021, pending the adoption of some new measures.

The contribution of direct taxes to total revenues remains significantly below the EU average. Whereas direct taxes in the EU in 2018 accounted for 13.4% of GDP and 34.3% of total tax revenue, in Czechia they only amounted to 8.0% of GDP and 22.2% of total tax revenue. Receipts from personal income tax are among the lowest in the EU, accounting for only 12% of total tax revenue (vs 24.2% in the EU in 2018), while receipts from corporate income tax (around 3.5% of GDP) are among the highest in the EU (EU average 2.7% of GDP). A possible personal income tax reform has been put on hold.

VAT collection has increased since the electronic registration of sales was introduced. At 7.7%, the share of VAT receipts in GDP was above the EU average of 7.1% in 2018 and 1 pp higher than in 2010. Tax evasion, as measured by the VAT compliance gap, is estimated to have declined to around 12% in 2018, 7 pps below the 2013 estimates and roughly in line with the unweighted EU average (Center for Social and Economic Research, 2019). The rollout of the final two phases of the electronic registration of sales in 2020 is expected to further boost the VAT revenue. In 2019, Czechia was authorised to apply the generalised reverse charge mechanism for VAT between 2020 and 2022 for transactions above €17,500.

The authorities plan to introduce a new digital services tax. Pending Parliament approval, the proposed 7% tax on selected digital services is supposed to apply to corporations that cumulatively have a global turnover of over €750 million, a turnover on the Czech market of over €4 million and more than 200,000 user accounts in Czechia. The taxable services will include advertisement campaigns, the use of multi-sided digital interfaces and the sale of user data. According to the authorities, it is a transitional measure to be applied until a general agreement on digital taxation at the global or European level is reached.

Graph 3.1.1: **Structure of environmental taxes (% of GDP)**



Source: Eurostat

Receipts from environmental taxes are very low and have been decreasing. Only €25 million in pollution and resources taxes were collected in 2018, one of the lowest amounts in the EU and only about half of the amount collected in 2010. Most receipts were from energy taxes, although these have seen a decrease in the share of GDP in the past 10 years (see Graph 3.1.1). Transport taxes are also very low and vehicle taxes is not based on CO2 emissions. Despite the high carbon intensity of the economy, there are no concrete plans to increase environmental taxes.

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Property taxes are among the lowest in the EU. While deemed less harmful to growth than other taxes, receipts in 2018 were only 0.6% of GDP (2.5% in the EU). Recurrent taxes on immovable property are particularly low at 0.2% of GDP (1.5% in the EU). Despite the significant increase in house prices (see Section 3.2), these taxes have remained constant since 2005.

Labour taxation for low wage earners is high. The tax wedge on labour costs for low wage earners is among the highest in the EU (3 pps above the EU average). Contrary to the overall trend in the EU, the wedge has slightly increased since 2009. It is relatively high for single people with children and relatively low for couples with a single earner. Combined with relatively high childcare costs, it can lead to lower labour market participation of low-wage and second earners (see Section 3.3). Meal vouchers provided to low-income earners somewhat compensate the high tax burden.

The self-employed continue to benefit from a lower assessment base for social contributions. The authorities are currently discussing the possibility of easing the cap for lump-sum expenses and increasing the pension contribution requirements but no concrete proposals have been presented yet. As any new proposal will most likely be voluntary, the contrast between employees and the self-employed will most likely continue.

Authorities plan to increase the digitalisation of the tax system. For certain types of taxes, the rate of electronic filing remains rather low. Significant progress has been made between 2015 and 2018 in the case of VAT, where the share of electronic forms increased from 45% to 85%, or in the case of corporate taxation where the share grew from 50% to 90%. By contrast, e-filing of personal income tax returns accounts for only 15% of all tax returns (up from 3% in 2014) and in the case of property tax it is just slightly above 5%. Authorities are currently discussing plans to further digitalise the filing system.

Tax compliance costs for businesses remain high. The time needed to prepare and pay taxes is still high and has not significantly improved in the past years (World Bank, 2019a). In particular, the recent reforms to combat VAT evasion may, as a side effect, increase the time needed to comply with consumption tax rules. In addition, some measures to be implemented in 2020, such as VAT exemptions for intra-community supplies of goods and, to a lesser extent, a lower VAT rate for certain goods and services, may also drive up compliance costs. It is nevertheless possible that these effects will be reabsorbed once businesses learn how to best deal with the new requirements.

Debt sustainability analysis and fiscal risks

The Czech Fiscal Council issued two reports on long-term sustainability and on compliance with the rules of budgetary responsibility. Based on an assessment done by the Ministry of Finance, the Fiscal Council concluded that local governments are compliant with the debt management rules imposed in 2017. Three municipalities did not meet their obligation but remedied the situation within the given timeline.

Short- and medium-term fiscal sustainability risks are low. The general government debt is expected to remain significantly below the 60% of GDP threshold, reaching around 30% in 2021. As a result, the medium-term fiscal sustainability risk indicator (S1) is at -2.9 pps of GDP (see Annex B).

The long-term sustainability of public finances remains a concern. Total ageing costs are expected to increase by 6.2 pps between 2016 and 2070, out of which 2.8 pps for pension expenditures, 1.1 pps for healthcare expenditures and 1.6 pps for long-term care expenditures, putting the long-term fiscal sustainability risk indicator (S2) at a medium risk. The increase in pension expenditure is the main risk to long-term sustainability. The statutory retirement age was capped at 65 years for both men and women and expected gains in life expectancy are not automatically taken into account by the system.

Recent policy measures have focused mostly on pension adequacy. The government has decided to increase pensions in 2020 above the standard indexation formula, generating an additional cost of 0.1 % of GDP. According to the Czech Fiscal Council, expenditure on pensions will peak in 2059 at 13.2% of GDP, 4.8 pps above the 2020 figure. By 2059, the number of old-age pensioners is estimated to increase by around one third.

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In 2019, the government decided to not increase the statutory retirement age for the next 5 years. In a report endorsed by the government in 2019, the Ministry of Labour and Social Affairs recommended to keep the 65 years retirement age cap. The report provides a baseline scenario based on the current system and an alternative scenario that links retirement age with life expectancy. In the former expenditure on pensions is expected to peak in 2059 at 14.5% of GDP, from the current 8%, while in the latter the expenditures would be around 1 pp lower. While the report recommends maintaining the status quo, it also recommends a greater focus on sustainability and finding alternative sources of funding. In 2019, the authorities created an advisory Commission for Fair Pensions, to provide recommendations on pension reform. The Commission, composed of various stakeholders, is currently discussing a strategic redesign of the pension system with a focus on transparency and simplification, adequacy and sustainability.

The projected increase in age-related public expenditure on healthcare also puts pressure on long-term fiscal sustainability. Public expenditure on healthcare is projected to increase by 1.1 pps of GDP by 2070, adding to the ageing costs. The use of Diagnostic Related Groups will be piloted for reimbursement on a limited scale in 2020, with the aim to further increase the scope in 2021. It still remains unclear when it will become the main payment mechanism of hospital services. The government also plans to reinforce outpatient emergency departments in hospitals to reduce unnecessary hospital admissions. Acute care bed density and average length-of-stay have fallen in the past 10 years, but are still above the EU average. The low occupancy rate (70% vs 77% in the EU in 2017), together with the comparatively high number of discharges (198 per 1,000 people vs 174 in the EU in 2017) point to overcapacity. This is partly due to financial incentives and the lack of political consensus on hospital network transformation.

Overconsumption and inefficient use of outpatient care are still prevalent in the system. While funding for outpatient care is high, avoidable hospital admissions for some common conditions (e.g. diabetes and congestive heart failure) are higher than the EU average. This points to weaknesses in the prevention of risk factors and the management of chronic conditions, and insufficient integration of healthcare services. Despite some initiatives, primary care doctors still do not play a gatekeeping role. Patients may consult specialists directly without any user fees, which partly explains the comparatively high number of outpatient consultations (8.0 contacts per person compared to an EU average of 6.2).

The cost-effective use of medicines, medical devices and equipment in hospitals and outpatient care is less than optimal. The full introduction of e-Prescription in 2019 has the potential to improve the use of pharmaceuticals and their related expenditure. Further developing and implementing health technology assessments together with centralised procurement procedures for pharmaceuticals and other medical and non-medical goods may generate savings to payers, while ensuring access to high-quality products in the health system.

Fragmented governance and financing structures hinder the adequate and efficient provision of long-term care services. Financial incentives still exist for prolonging the hospital treatment of patients in need of long-term care (see Section 3.3). The planned transformation of acute care into long-term care hospital beds is expected to increase transparency and save costs. A 40% increase in the reimbursement rate for home care services may reduce the length of hospital stays, but only as long as there is a sufficient provision of home care services.

3.2. FINANCIAL SECTOR

Financial sector

The Czech financial sector remains stable. The banking sector accounts for almost 80% of the financial sector's assets, with the rest divided between the insurance sector, pension funds and other financial intermediaries. Approximately 90% of the banking system assets are foreign-controlled. In terms of concentration, the share of assets of the five largest banks has grown slightly since 2014, reaching 65% at the end of 2018. Banks remain funded mostly by deposits and their assets are mostly in loans. The insurance sector is mostly foreign-owned and remains profitable, despite a drop year-on-year. The eight pension management companies active in Czechia are well capitalised and witnessed an annual increase in the number of participants in the funds in Q3-2019.

The banking system is well capitalised. Total banking sector capitalisation (with a total capital ratio of 18.7% in June 2019) has been steadily increasing for several years and is above the EU average. The common equity Tier 1 (CET1) ratio increased in the first half of 2019 to 17.3%. The Czech National Bank has been proactive in requiring banks to build up capital buffers. The countercyclical buffer introduced in 2017 was raised several times, reaching 1.75% as of January 2020 and 2% as of July 2020. With several banks having also a systemic risk buffer ranging between 1% and 3% of their capital, the central bank considers there are sufficient capital cushions to accommodate potential shocks to the sector, assuming reasonable dividend policies. Given the relatively good capital levels of banks, reaching the targets for minimum requirements for own funds and eligible liabilities is generally considered unproblematic ([7]). However, due to their deposit-based funding model, banks have issued few debt instruments and compliance with these requirements could entail higher costs.

Czech banks continue to be profitable. Return on equity has been stable and has remained in double digits for several years, reaching 15.2% in the first half of 2019 (annualised data). Income on interest remains the main source of profit, with the net interest margin (as a share of assets) at 1.9% in 2019. A lower cost-to-income ratio (47.1% compared to 48.3% in the first half of 2018) suggests that banks are aiming to improve profitability through increased efficiency. The loan-to-deposit ratio rose to 102.7% in the second half of 2019, from 99% in 2018, as Czech subsidiaries of the major foreign banks borrow abroad to lend domestically. Insurance companies are also well capitalised and most of them maintain stable profitability.

The non-performing loans ratio remains low, but some vulnerability risks might emerge. Following the strong growth of new loans, as well as the sale of non-performing loans, the ratio more than halved between Q2-2016 (4.6%) and Q2-2019 (1.8%). The coverage ratio has increased steadily in the last 2 years reaching 53.8% in Q2-2019. Private sector loans also grew year-on-year. To mitigate the potential build-up of a systemic risk in the financial sector, the central bank, as the macro-prudential authority, issued an official communication on the provision of retail loans secured by residential property. Among the recommendations put forward, the supervisor proposed limits on loan-to-value, debt service-to-income and debt-to-income ratios.

Various measures have been introduced to boost the development of the capital market. To reduce the economy's dependency on banks, while also increasing companies' financing options, authorities aim to develop the national capital market. To this end, several projects have been implemented with the support of the European Commission. Furthermore, the authorities together with the four largest private banks established a National Development Fund (see Box 3.4.1) to run as Qualified Investor Fund. The creation of the CEEplus Index ([8]) is another initiative that could create further opportunities for the capital market.

([7]) The methodology has been published by CNB and the individual targets will be communicated to banks in 2020.

([8]) The CEEplus Index has been published since 4 September 2019 based on the value of the portfolio of the largest and most liquid companies listed on stock exchanges from Central and Eastern Europe (Croatia, Czechia, Poland, Romania, Slovakia, Slovenia and Hungary)

Housing market

House prices continue to grow, albeit more moderately than in 2017 and 2018. House prices increased in real terms by 9.2% in 2017 and 6.2% in 2018, exceeding the price level seen in the 2008 house price peak by over 20%. In 2019, price growth appears to have levelled off at slightly more moderate levels (+5.6% in the third quarter), partly influenced by the central bank's new macroprudential rules.

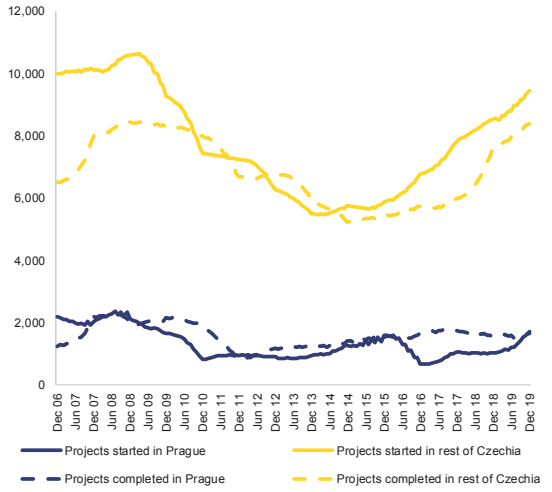
Valuation indicators of the housing market suggest a positive and increasing valuation gap. According to the European Commission's internal calculations, the housing market was overvalued by around 6% in 2018. The widest gap relates to the price-to-income ratio, which was 11.4% higher than the long-term average (+1.7 percentage points compared to 2017). Calculations from the Czech National Bank also suggested an increasing mismatch between transaction and fundamental prices in the housing sector of around 15-20% in mid-2019, mainly due to an undersupply of homes in cities. However, the increasing difference in recent months between growth in asking and purchasing prices for flats suggests that realized property prices could moderate in coming quarters.

Due to the sustained price increase, affordability has worsened further. Deflated house prices have steadily outpaced real wage growth at an average rate of 2.1 pps per quarter since 2014, which has lowered affordability even in a context of declining borrowing costs. Alternative metrics also suggest a worsening of affordability – according to Deloitte's House Price Index (Deloitte, 2019), Czechia has the lowest level of affordability in a sample of 12 EU countries, with 11.2 gross annual salaries needed to own a house, up from 7 salaries in 2015.

Affordability problems are most acute in Prague and other large cities. Czechia has a high variation in price growth between regions. In cities, an increase in demand due to internal migration and a strong demand for prime properties by foreigners are putting an upward pressure on prices, especially since cities are suffering from supply constraints. Prague's average offer price for new dwellings increased by 22.2% in 2018, significantly higher than the increase in the rest of the country (16.8% annual growth) (Deloitte 2019). Several sources also indicate that overvaluation is getting stronger in Prague (Andrle, M. and Plašil, M., 2019), which is particularly relevant as two thirds of the transactions in the country take place there. In parallel, the continued rise of Airbnb and other rental accommodation companies has been limiting supply, especially in the centre of Prague. Outside Prague, the city with the highest price growth was Ostrava, with a 30.3% rise in the price of flats in 2018.

Housing construction is expanding, which could ease supply constraints in the medium term. The total number of newly started homes country-wide has been increasing since 2014 at an average rate of 9.6%% annually, albeit it is still below pre-crisis peaks. In Prague, although the number of newly started homes stalled throughout 2018, construction levels have increased significantly since the beginning of 2019 (+65% year-on-year in the second half of 2019). This will likely somewhat ease supply constraints in the coming years, although, according to Prague's city council, construction levels should still increase threefold in order to satisfy demand.

Graph 3.2.1: **Number of started and completed housing projects (12 month moving average)**



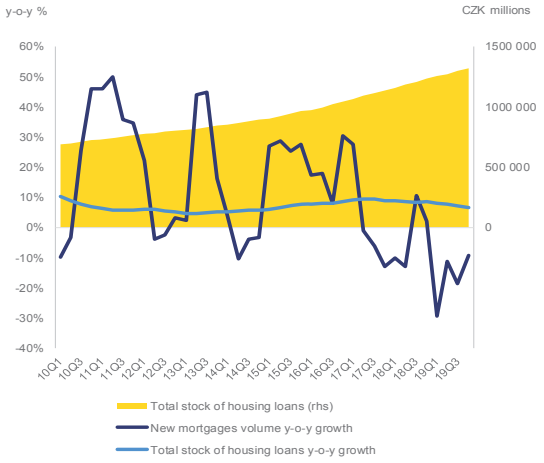
Source: Czech Statistical Office

Burdensome planning procedures continue to limit housing supply. According to the World Bank, 21 procedures need to be undertaken to receive a building permit in Czechia (OECD average is 12.5) (World Bank, 2019a). Some progress has been made in streamlining

procedures, but the number of building permits is still far below the historical average. Meanwhile, the number of second-hand apartments for sale is declining, further constraining supply (Deloitte 2019). With a change in the legislation process only expected to come into force in 2021, housing supply will likely remain below demand in the years ahead. The slow progress on the future Prague Metropolitan Plan has also contributed to housing shortages in the capital.

The total stock of housing loans continued to increase in 2019, although growth has moderated. The stock of housing loans has steadily increased over the past years, reaching a cumulative growth of 38% in 2019 compared to 2015. However, the annual growth rate has slowed in 2019 at 7.4%, down from 8.6% in 2018 and 9.3% in 2017. According to data by Hypoindex, the volume of new mortgages decreased by 16.9% in 2019 (Graph 3.2.2), partly affected by the new macroprudential recommendations by the central bank and the limited supply in the real-estate sector. Indeed, the number of new mortgages in Czechia decreased by 22% in 2019, fuelling this decrease in housing loan growth. Beyond mortgage growth, the average fixation period of new mortgages continued to increase, with more than 50% of new mortgages issued having a rate fixation period of more than 5 years. This could ease temporarily debt service requirements for households in the event of interest rate increases.

Graph 3.2.2: **Evolution of housing loans and mortgages**



Source: Hypoindex and Czech National Bank

The central bank issued macroprudential recommendations to protect against systemic risks building in the banking sector. It currently recommends that lenders should not provide retail loans secured by residential property with a Loan-to-Value (LTV) of over 90%, and should limit the provision of loans with LTVs of 80%-90% to 15% of new loans in each quarter. Lenders should also not exceed a debt-to-net income (DTI) ratio of nine annual incomes and a debt service-to-net income (DSTI) ratio of 45% (with the permitted exception of 5% of new loans for both indicators). These recommendations were introduced to avoid the development of a spiral between property prices and property purchase loans that could pose a risk to financial stability. Nevertheless, until a legislative amendment is adopted by the Parliament, the central bank still lacks the statutory powers to issue binding macroprudential recommendations, potentially limiting the effect of the current measures in the medium term (ESRB, 2019).

Banks have been broadly compliant with the new macroprudential recommendations. The share of loans with a LTV ratio between 80-90% remained below the 15% limit, at an aggregate share of 13.5% of loans in June 2019. Meanwhile, 3% of loans issued over the same period had an LTV higher than 90%, thus not complying with the recommendation and confirming the need to have legally binding limits. On the other hand, the limits for the DTI and DSTI were met by most banks. In the first half of 2019, the share of loans with a DSTI of over 45% was around 5%, while loans exceeding the DTI limit of 9 accounted for around 3%. Finally, the provision of loans that exceed all three limits was reduced.

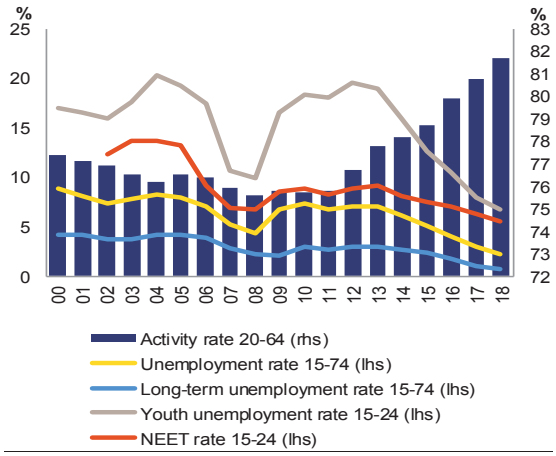
Overall, rising property prices can be a source of risk for financial stability. The European Systemic Risk Board (ESRB, 2019) issued a warning pointing to the medium-term vulnerabilities for financial stability stemming from the residential real estate sector. This is due to an overvaluation of house prices and high growth in housing credit up until 2019, coupled with loose lending standards and the non-legally binding nature of the macroprudential recommendations put forward by the central bank. Although the Czech National Bank sees the current limits as sufficient, continued growth in housing prices could warrant a reassessment of the limits.

3.3. LABOUR MARKET, EDUCATION AND SOCIAL POLICIES

Labour market

Labour market performance is far above the EU average. The employment rate of those aged 20-64 reached 80.4% in Q3-2019, 6 percentage points (pps) above the EU average. The activity rate (20-64) stood at 82.1% in Q3-2019, above the EU average of 78.8%. The unemployment rate dropped to 2% and is the lowest in the EU (see Graph 3.3.1). Employment is projected to increase, albeit by only 0.9% in 2019 suggesting that further labour market gains are limited. Labour shortages and demographics remain key challenges.

Graph 3.3.1: **Labour market developments**

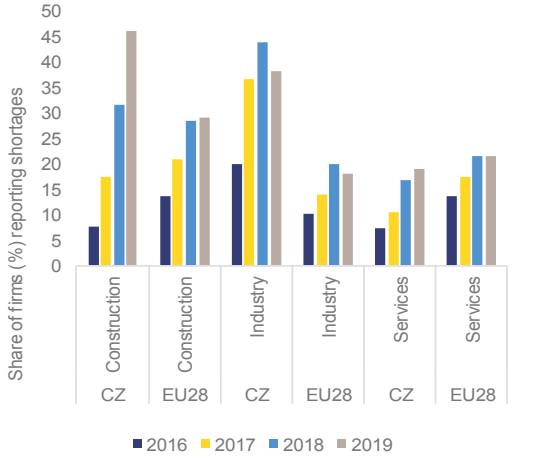


Source: Eurostat

Labour shortages are becoming a distinct constraint to further economic growth. Due to the high job vacancy rate, 39% of businesses cited labour shortages as the main factor limiting production in Q3-2019. Shortages are especially high in construction (47%) and industry (38%) but less pronounced in services (19%) which account for 55% of Czechia's employment (see Graph 3.3.2). Persistent labour shortages and demographic change have triggered a policy focus on automation and robotisation (see Box 3.4.2).

High demand for labour has improved the participation of underrepresented groups, but disparities remain. The youth unemployment rate (age 15-24) has decreased significantly (from 18.9% in 2013 to 4.8% in Q3-2019), and so has the long-term unemployment rate (from 2.4% in 2015 to 0.6% in Q2-2019). The participation and employment rates of older workers (age 55-64), grew from 55.5% in 2015 to 65.1% in 2018 (EU average: 58.7%). There are, however, significant regional differences. At 29.7 pps, Czechia has a higher than average employment rate gap between people with and without disabilities (24.2 pps in the EU in 2017) (ANED, 2018), partly due to the low general unemployment rate. There is therefore scope for improving the monitoring and targeting of active labour market policies, in particular for the most vulnerable groups. Measures to increase labour market participation of underrepresented groups would contribute to progress under Sustainable Development Goals 5 and 10.

Graph 3.3.2: **Evolution of labour shortages**

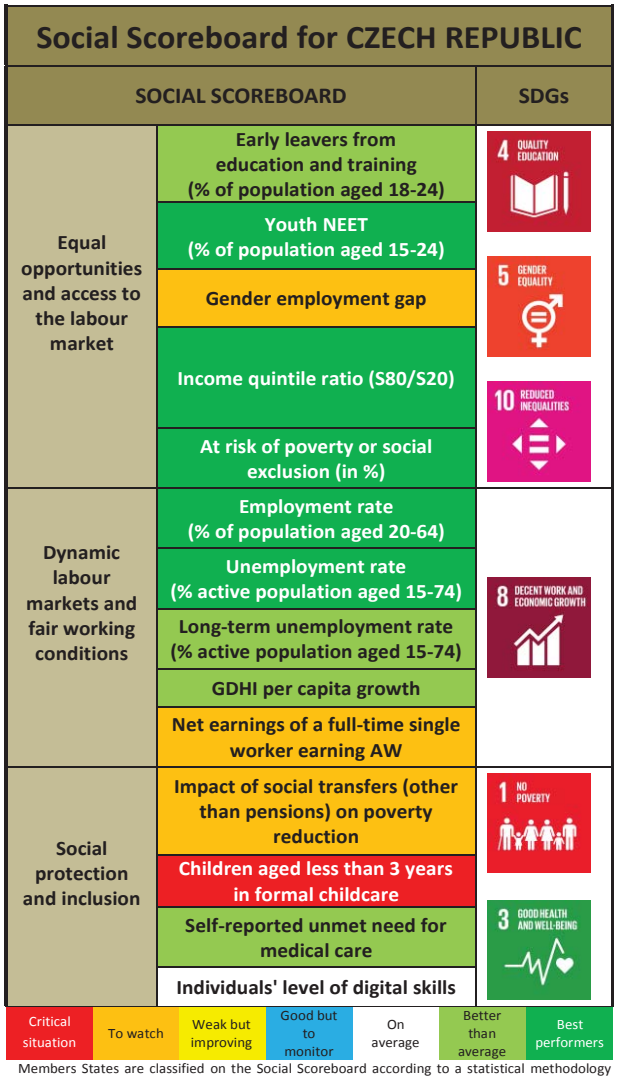


Source: EU Business and Consumer Survey

Women aged between 25 and 49 with small children continue to be underrepresented in the labour market. The negative impact of parenthood on female labour market participation continues to be high (34.2 pps compared to 9 pps in the EU). Despite the considerable increase in the number of childcare places created with the support of the European Social Fund (ESF), supply still falls short of demand. Thus, the participation rate in formal childcare for children under age 3 (9.1%) is below the EU average (35.1% in 2018). Authorities plan to amend the Children´s Groups Act by 2022 in order to harmonise the different rules and make childcare more affordable through increased resources, in particular for children under 3 for whom there is currently no legal entitlement to provide a place.

Box 3.3.1: Monitoring performance in light of the European Pillar of Social Rights

The European Pillar of Social Rights is a compass for a renewed upward convergence towards better working and living conditions in the EU. It sets out 20 essential principles and rights in the areas of equal opportunities and access to the labour market, fair working conditions and social protection and inclusion.



Members States are classified on the Social Scoreboard according to a statistical methodology agreed with the EMCO and SPC Committees. It looks jointly at levels and changes of the indicators in comparison with the respective EU averages and classifies Member States in seven categories. For methodological details, please consult the proposal for a Joint Employment Report 2020, COM(2019) 653 final; NEET: neither in employment nor in education and training; GDHI: gross disposable household income. Update of January 2020.

Czechia performs well on most indicators of the Social Scoreboard supporting the European Pillar of Social Rights, yet some challenges remain. The employment rate is among the highest and the unemployment rate among the lowest in the EU. Yet there is still scope for increasing the labour market participation of vulnerable groups, as well as women. The early school leaving rate has slightly declined and remains below the EU average, but regional disparities are still significant.

The high gender employment gap holds women back from advancing in their careers. The employment rate of women is 15.2 pps below that of men, against 11.5 pps on average in the EU. The gender pay gap is also significant, with men's average hourly wage being 22.5% higher than that of a women. This highlights the need for more progress on gender equality actions. Providing more quality and affordable childcare can also help improve labour market outcomes for women.

There is still scope for strengthening social protection and inclusion mechanisms. While the share of people at risk of poverty or social exclusion is comparatively low, poverty remains concentrated in some localities and some groups (notably single parents, the elderly, people with disabilities and Roma). This may be partly because social transfers (excluding pensions) are not yet fully effective at getting people out of poverty, including energy poverty.

New measures are in place to address over-indebtedness, one of the main factors behind poverty and social exclusion. Czechia has made changes to its legislation in order to prevent people from accumulating excessive debts – an issue that affected 9.7% of the population in 2018. High levels of household indebtedness are also among the factors behind placing children in institutional care. The new Civil Code defines the concept of usury, resulting in more predictable court decisions on adequate interest rates, penalty interests and contractual fines. There are also plans to set up an inter-ministerial working group on strengthening financial literacy. In addition, children are no longer liable for the debts of their parents and the advertising of high interest rate loans have been limited.

The gender gap in employment and pay remains high. The (unadjusted) gender pay gap stood at 21.1% in 2017, compared to the EU average of 16%. One of the main factors behind this wage gap is the long leave taken by women after childbirth, leading to a lower labour market participation of mothers (Cukrowska-Torzewska, E. and Lovasz, A., 2019). The government implemented a project called '22% to Equality', funded by ESF, to ensure equal pay for equal work. In 2019, an action plan was launched to raise awareness on this issue among employers and the general public, entailing media campaigns, studies, conferences and gender audits. However, its impact has been rather limited so far. A more flexible parental leave allowance to encourage the use of childcare was introduced on 1 January 2020. The strategy also proposes flexible working arrangements for which the legal framework should be in place by 2021.

Due to labour shortages, employers are attracting more foreign workers. According to the Ministry of Labour and Social Affairs, the number of EU and non-EU nationals working as employees in Czechia reached 606,483 by mid-2019 (37,807 more than in 2018). In the context of a thriving labour market, in 2019 authorities passed legislation to facilitate employment of non-EU nationals, in particular for skilled and qualified workers ([9]). The measure raised the quotas for a number of workers from selected countries and set minimum wages for foreign workers above the national minimum wage. The aim is to attract foreign talent, speed up the process and provide decent standards of living. Nonetheless, the increase in quotas may not be sufficient to reduce the illegal employment of foreign workers.

Undeclared work provided through temporary work agencies represents a challenge. According to the Ministry of Labour and Social Affairs, the labour inspectorates identified 4,583 illegal situations in 2018 (among all employers) with over 75% concerning workers from non-EU countries. The so-called "grey" agencies benefit the most from the strong labour market performance, hiring foreign workers, while ignoring official rules and procedures. Further measures may encourage legal employment of temporary workers and less fraud.

Current skills shortages are likely to increase in line with technological advances. There is currently a shortage of around 340,000 low and medium skilled workers across all sectors (European Commission, 2019a). This may be a particular challenge, considering the ongoing digital transformation that will require specialised technical and digital skills (see Box 3.4.2). The low-carbon transition could mitigate ongoing job polarisation resulting from automation by creating mid-level jobs in terms of wages and skills which could increase employment by 2030 (European Commission, 2019b).

The level of advanced digital skills is below the EU average. While the country is above the EU average in the share of population with at least basic digital skills (62% compared to an EU average of 58%), only 26% of people have above basic digital skills (EU average: 33%). The Work 4.0 Action Plan designed by the government in cooperation with social partners is being rolled out. It includes specific measures to adapt to technological change and develop workers' digital skills through two promising projects – 'Development of systematic support of digital literacy' and 'Development of the system of further education in the area of digital skills'.

A comprehensive national skills strategy encompassing initial education, lifelong and in-work training is not yet in place. The National Register of Qualifications, currently under development, should increase the supply of skilled labour through greater recognition of skills, including those obtained through non-formal learning. Whereas the vocational education and training (VET) qualifications are well covered, the validation system does not include higher education. In 2017, the ESF project 'Kompas' was launched to coordinate a reliable labour market barometer. Its results should be soon available and guide the future skills forecasting. The initiatives to define a single national skills, competences, qualifications and occupation framework remain scattered. This makes it difficult to create an effective system that can anticipate the skills

([9]) Under three programmes: Key & Scientific Personnel, Highly Qualified Employee and Qualified Employee.

needed by a labour market that is currently adapting to automation, digital transformation and a to a carbon-neutral economy.

Significant increases of the minimum wage also reflect the tightness of the labour market. The minimum wage increased by 9.4% in 2020. However, the labour market effects of this change are likely to be small at this stage, since only 4% of workers were earning around the minimum wage in 2017. Younger and older workers, the low-skilled and employees of small firms or with a short tenure are more likely to earn a minimum wage (Grossmann, J., Jurajda, Š. and Smolka, V. 2019). According to Eurofound, a higher share of Czech women compared to the EU average, earn the minimum wage. Czechia also has a system of seven additional minimum guaranteed wages that increase automatically in line with the minimum wage, with a potential impact on a larger population.

Reinforcing active labour market policies can improve demand-supply matching and address the specific needs of certain groups. The difficulties in setting up an efficient system to gather, analyse and process evidence on labour market developments by the public employment services limit the design of efficient active labour market policies (European Commission, 2019b). Efforts to address weaknesses in the implementation and monitoring of activation programmes have so far been limited. Support is insufficient for the most disadvantaged groups and current measures, such as the public work schemes, provide only short-term solutions. In 2019, Czechia announced an 'Employment Package' to improve the targeting and support of active labour market policies, particularly for the most vulnerable groups, but the scope of the announced measures remains limited.

Social partners are relatively well involved in policy design, but there is scope for further progress. Social partners participate in collective bargaining at national level on key labour market policies. However, the membership of Czech social partners' organisations is rather low. Further efforts to build up capacity of social partners, including their analytical capacity may help.

There is scope for greater involvement and more stable funding for the civil society organisations. Established consultation bodies support discussions with these organisations on key employment and social issues. However, they need more time to review policy, legal or programme proposals. In addition, the lack of stable funding often limits their capacity and influence.

Education and skills

Despite a good overall performance in education and the provision of basic skills, socio-economic inequalities persist. The performance of 15 year olds in the OECD's 2018 Programme for International Student Assessment (PISA) remained above the EU average for all three areas tested (reading, mathematics and science) and the proportions of low-achievers remained below the EU average. The proportion of low-achievers in reading decreased by 2.3 pps since 2009, while the share of top-performers increased by 3.1 pps. In reading, students from advantaged backgrounds outperformed by 105 score points the ones from disadvantaged backgrounds (up from 85 in 2009), equivalent to more than 2.5 grades, significantly above the EU average (95 points). The latest PISA results show that the percentage of 15 year-old students with a low socio-economic background who underperform in reading is 29.7 pps greater than for those with a high socio-economic background. Low-achieving students in reading are less much likely to attend the same schools as high-achievers than the EU average ([10]). The performance gap in reading between socio-economically advantaged and disadvantaged schools is comparatively high (see Graph 3.3.3). The future Strategy for Education 2030 aims to develop key competences and reduce inequalities, supporting teachers and school heads and transforming the content and methods of education**.**

Disparities in the rates of early leavers from education and training are increasing. Early school leaving declined in most regions in 2018. However, the highest regional rate in Severozápad further increased to 17.1% (see Section 3.4). The rate for Roma pupils was estimated at 57% in 2016 among Roma families that participated in the survey (FRA, 2016). The early school leaving gap

([10]) This is measured by the new 'isolation index' (OECD, 2020) See PISA Table II.B1.4.2.

between people with and without disabilities is also one of the highest in the EU (25.5 pps compared to an EU average of 10.1 pps in 2018). Policies to address disparities in the quality of teaching in schools and regions and to assign the most qualified and experienced teachers to the most challenging schools could help reduce existing gaps.

Graph 3.3.3: **Difference in reading scores between advantaged and disadvantages schools**

(1) A socio-economically disadvantaged (advantaged) school is a school in the bottom (top) quarter of the PISA index of economic, social and cultural status in a country.
(2) EU average does not include Spain.
Source: OECD, 2020

In 2019, Czechia adopted the second Action Plan for Inclusive Education. The 2019-2020 action plan seeks to address potential segregation challenges in schools with more than 50% Roma pupils, by introducing anti-bullying measures among others. The inclusive education reform has not substantially diminished the share of Roma children in special schools. There is no evidence of putting concrete desegregation measures into practice, including those recommended by the Czech Ombudsman ([11]). On the contrary, authorities adopted legislative measures that raise concerns about a potential negative impact on Roma inclusion. The implementation of the inclusive education reform has been adjusted and efforts are being made to apply it more consistently across the country. To increase the reform's impact, further teacher training to teach pupils with special needs, including those from disadvantaged backgrounds, may be needed.

Participation in early childhood education and care continued to rise. Overall, participation reached 92% in 2017. Regional participation rates vary between 85.5% in Severozápad and 96.1% in Střední Čechy. In 2016, only an estimated 34% of Roma children aged 4+ participated in this level of education (FRA, 2016).

School principals report teacher shortages. According to a 2019 national survey, 61.7% of schools face recurring difficulties in hiring qualified teachers (Ministry of Education, 2019). Shortages are most pronounced in primary education and for teachers of English, physics, information and communications technology (ICT) and mathematics (European Commission, 2019c). The teacher population is ageing, with 3 out of 8 teachers forecast to be replaced over the next decade (OECD, 2019a). PISA test results showed that the proportion of Czech students aged 15 that (strongly) agreed their teacher enjoy teaching is one of the lowest in the OECD (55% compared to the 74% average). Students also seemed to score higher when they perceived their teacher as more enthusiastic.

There is scope for further development of teachers' training in ICT skills. The TALIS survey reports a need for more training in advanced ICT skills for teachers. The ongoing revision of school curricula includes digital skills among the subjects to be strengthened. However, schools are not well equipped with digital technologies and teachers are not properly trained. Despite the targeted projects supported by funding by the ESF, the education system is not addressing fast enough the changes triggered by the digital transformation.

Despite pay rises, salaries of teachers and school principals remain relatively low. This has been reflected in comparatively low expenditure per student at all education levels over time (OECD, 2019b). Salaries are relatively low compared with both other tertiary-educated workers and by international standards. In 2018, the government announced that by 2021 teachers' average wages would increase by 150% compared to 2017. However, in 2017-2018 the increase was lower

([11]) 147 schools where Roma represent more than 34% of pupils and 70 schools where they represent more than 50%.

than for other public servants, further reducing attractiveness of the profession (OECD, 2018a). Many talented young teachers leave the profession early, often for financial reasons (Münich, D., 2017) but also because there is little room for career development.

Authorities adopted measures to improve the attractiveness of the teaching profession. New framework requirements for initial teacher education programmes increase the compulsory practical training for future teachers. An amendment to the Act on pedagogical staff, which will make a two-year induction period supporting new teachers compulsory, is currently pending approval. These measures seek to better prepare and integrate new arrivals and prevent early dropouts. However, their impact will depend on the conditions ensured for those mentoring future teachers (their pay, reduction in workload for other tasks and training).

Authorities want to improve the completion rate of tertiary education and reduce socio-economic disparities (European Commission, 2019c). Only 18% of children whose parents attained upper secondary or post secondary non-tertiary education as their highest qualification achieve tertiary education themselves. This is the lowest proportion among OECD countries (OECD, 2018a). According to PISA, socio-economic status strongly affects students' expectations to complete tertiary education, with 50.8% more of advantaged students expecting to do so compared with disadvantaged ones. The employment rate of recent tertiary education graduates remains high at 91.5% in 2018. The projected increase in population in the higher education age bracket may soon require additional funding and capacity.

The provision of vocational education and training is improving. In June 2019, Czechia approved a long-term plan for education (2019-2023) to improve the quality of vocational education and training (VET). The plan includes measures to better align the VET curricula with the needs of employers. Projects financed by ESF support this trend and take into account the specific needs of the regions, involving both schools and employers. The initiatives are positive step for higher quality VET (Cedefop, forthcoming), but their impact needs to be closely monitored.

Few unemployed adults participate in lifelong learning. Less than 10% of the unemployed participated in training in 2018. On the other hand, supported by ESF ([12]), the figures for continuous vocational training of the workforce are very high (83.7% compared to an EU average of 40% in 2015). Most of the continuous vocational training focused on developing technical job-specific skills. While adult learning is considered a key element for career development, most of the funding only comes from the EU.

Social policies

Poverty indicators show that Czechia performs better than the EU average, yet some challenges remain. The share of people at risk of poverty or social exclusion is 12.2% in 2018, below the EU average of 21.9%. In-work poverty is also low (3.4 in 2018)%. However, the share of older people (65 and over) at risk of poverty or social exclusion is rising steeply (from 10.1% in 2016 to 15.6% in 2017, see Graph (3.3.4)). People without employment and single parents are at a relatively higher risk of poverty (21.7% and 36.9% in 2018, respectively) ([13]). The proposal to compensate single parents with children that do not receive maintenance payments could reduce their poverty risks. The new Social Inclusion Strategy for 2021−2030 is being prepared to underpin the investment projects in the next programming period of EU funds. It will focus on issues such as indebtedness, access to housing and social exclusion.

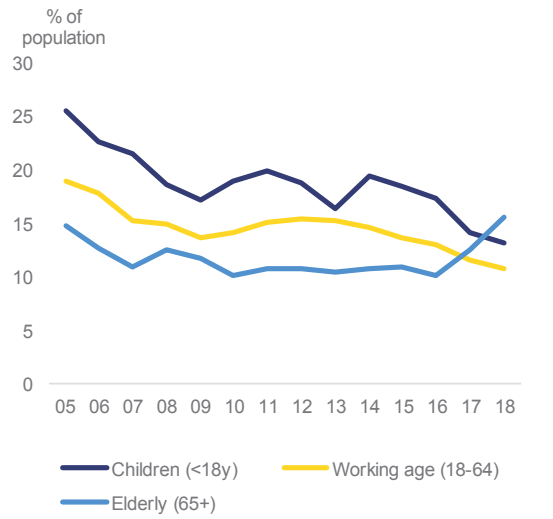
There are strong disparities in poverty and social exclusion rates between people with and without disabilities. People with disabilities face a higher risk of poverty and social exclusion (a gap of 13.5 pps in 2018 compared to an EU average of 9.5 pps according to ANED calculations based on Eurostat data). This is linked to higher education dropout rates, lower education attainment and lower employment levels. The impact of sickness and disability benefits on reducing poverty decreased in the last decade, but such benefits still have the highest impact on reducing poverty, in

([12]) European Commission calculations based on the Continuous Vocational Training Survey.

([13]) Statistics only consider income before debt deductions. Taking indebtedness into account generates higher levels of poverty, notably in more deprived regions.

particular for the most vulnerable groups (European Commission, 2019b).

Graph 3.3.4: **Groups at risk of poverty or social exclusion**



Source: European Commission

The number of excluded localities continues to grow. According to the national Roma monitoring report, in 2018 there were 830 excluded localities with 127,000 inhabitants, significantly higher than in 2015 (606 localities with 115,000 inhabitants). Under the EU-funded 'coordinated approach to the socially excluded localities', 103 municipalities are developing inter-sectoral strategies to improve coordination of relevant social services. However, the measures had a limited effect in stopping the growing exclusion. The design and targeting of future measures will benefit from the methodology for mapping social exclusion currently developed by the Agency for Social Inclusion.

There are many homeless people in Czechia and many more are at risk. There are around 68,500 homeless people (of which 21,230 adults and 2,600 minors are 'roofless' according to the 2019 census) and 119,000 are at the risk of becoming homeless, according to estimates of the Ministry of Labour and Social Affairs. In 90% of cases, the reason for homelessness is indebtedness. Around 37% of Czech children live in households suffering from housing problems (FEANTSA, 2018). With rising housing costs, an increasing number of elderly people are also experiencing similar problems. The current legislative framework puts the responsibility on municipalities to provide qualitative and affordable housing, as does the social inclusion strategy. Several national and EU ([14]) investment schemes are in place to enable municipalities to enlarge their social housing stock. However, the response from municipalities has so far been limited. After the social housing legislation was put on hold in 2018, the Ministry of Regional Development began in 2019 to work on an Affordable Housing Act.

Czechia has taken steps to address the growing consequences of indebtedness. These include changes in legislation to improve the debt relief procedure, and making it possible for the debtor to keep a significantly higher minimum amount of money after all their debts are deducted to encourage taking up better paid jobs. This should motivate debtors to pay their instalments rather than work in the grey economy. In addition, children can no longer take over the debts of their parents and the advertising of usury loans is being limited. Despite these measures, households with overdue liabilities in 2018 constituted about 5.1% of the Czech population with an average overdue debt of €1,580. The share of people in enforcement proceedings reached 9.7% in 2018 (some 863,000) with an average debt of around €11,000 per person. While an inter-ministerial group to strengthen financial literacy was set-up, more targeted support from education institutions and social services is still necessary, mainly for groups facing the greatest risks (e.g., the unemployed, pensioners, single parents and minorities).

Health status has improved but disparities remain. Life expectancy increased by 4 years between 2000 and 2017. However, Czechia still performs below the EU average in many areas related to health and healthcare. Notably, treatable mortality is higher than the EU average and there are substantial regional differences in health status, for example life expectancy at birth for both men and women can differ by more than 4 years (OECD, 2018a). Socio-economic issues are the main contributing factors, but also unhealthy eating and drinking habits. Furthermore, care needs associated with multiple chronic diseases are expected to increase with an ageing population.

([14]) See, for instance, ESF-funded projects such as ‚Rapid Re-housing in Brno' or ‚Social housing in Ostrava'.

There are differences in access to healthcare. While overall self-reported unmet needs are one of the lowest in the EU, there are regional disparities as regards the distribution of health care resources and health care personnel. The difference between the highest and lowest density of doctors is more than double and there are sometimes substantial differences in the provision of primary care. There are plans to increase provision between regions with combined practices providing primary care as well as other services. There are also challenges in providing healthcare to vulnerable groups, notably homeless people. A move away from hospital-centred care (see Section 3.1), complemented by a further expansion of primary care, the integration of care and the necessary infrastructure can help address gaps and disparities in healthcare provision and contribute to progress under SDG 3.

Population ageing is projected to increase pressure on long-term care services. The governance of long-term care, as well as palliative, health and social care remains an issue. One of the biggest challenges for the provision of long-term care is the integration of health and social services. Fragmentation and disparities in conditions for accessing care continue to undermine the effectiveness of the multiple support schemes. Around 20% of those needing long-term care reside in health or social care facilities, well above the EU average of 13% (EC-EPC 2018 Ageing Report) (European Commission, 2018b), which may indicate a lack of home-based services. Most people who need long-term care receive cash benefits, and their care is provided informally by people close to them (Ministry of Labour and Social Affairs, 2015), but there are rising concerns about the effectiveness and quality of such care. The care allowance is insufficient to cover professional social home care services. Costs and lack of information remain the two main barriers to the greater use of long-term care services. The current reliance on informal family care may not be sufficient and may have a negative impact on labour market participation.

The reform of the institutional care system has stalled, in particular due to its complex governance framework. The reform of psychiatric care, supported by EU funds, is promising. As for community-based social services, there are growing regional differences (e.g. in approach to institutionalisation of children under 3 years). Some social services, such as community-based services for adults and children with multiple handicaps or autism are missing. In addition, social services are often severely understaffed, and their current staff is unpaid (European Commission, 2019g).

There are plans for a systemic change of the social services. The 'Fundamental Principles for Systemic Modification of Funding and Other Proposed Changes in Social Services' announced by the Ministry of Labour and Social Affairs in 2019 aims to increase the mandatory national spending based on a multiannual framework and to set new governance mechanisms, new personnel, material and technical standards to reduce administrative burden for social services providers. These changes aim to address the non-systemic nature of the financial framework that impacts the availability of social services, including their staff. However, it is hard to predict its results at this stage. It is also crucial that the simplification of services does not go against clients' needs. The changes to financing must also be considered from the clients' perspective and include transparent quality criteria.

Czechia is among the Member States with the highest number of institutionalised children. It remains one of the few Member States that places young children and infants in institutions, such as orphanages. In 2018, about 7,800 children lived in 300 institutions, despite evidence showing that 99% of them are not orphans. While there were some attempts to change the situation in the past, no concrete plans are currently on the table. There is scope for greater focus on preventive social services and support to vulnerable families.

3.4. COMPETITIVENESS, REFORMS AND INVESTMENT

Productivity

Labour productivity growth slowed down in 2018 but remained above the euro area average. The slowdown in productivity growth from 2.3% in 2017 to 1.6% in 2018 was mostly due to disappointing outcomes in the manufacturing sector, while productivity continued to grow in the services sector. Total factor productivity also saw a drop in growth from 2.7% in 2017 to 1.1% in 2018, but was still above the EU average growth (0.7%). According to Davies, E. et al. (forthcoming), productivity developments in 2010-2016 were driven by the growth of the average enterprises, as the more productive enterprises grew significantly less, potentially driven by a suboptimal allocation of resources. They link this misallocation to barriers to doing business and to competition. The share of zombie enterprises (firms that would typically exit in a competitive market) is below 5% in both manufacturing and services, in line with the EU average. While productivity implications are less pronounced, the effects of these enterprises on employment and investment are higher when compared to the EU average (Bauer, P. et al., 2020).

There is a significant productivity gap between large and small enterprises, particularly in manufacturing. In 2017, the labour productivity of large enterprises was around 66% higher compared to microenterprises (down from 80% in 2014), and around 25% higher compared to small enterprises (35% in 2014). The gap between medium and large enterprises was smaller (15%, down from 20% in 2014). The gaps were significantly wider in the manufacturing sector, where larger enterprises are 50% more productive than medium ones and almost twice as productive as smaller ones. Additionally, the gap between the most productive and lagging enterprises has been increasing over the years (IMF, 2018). Since domestic SMEs provide the largest share of employment and value added, authorities aim to improve their productivity and competitiveness by developing a new SME Strategy and Implementation Plan for 2021–2027 with the technical support of the European Commission. The World Bank (2019b) also concluded an analysis on the SMEs policy mix and its alignment with the country needs, identifying actions to improve the effectiveness and coherence of the SME policy mix. It found gaps in improving management capabilities and adopting new digital technologies to catch up with more productive enterprises. There is also a resource misallocation across regions and sectors and a lack of synergy between instruments across agencies.

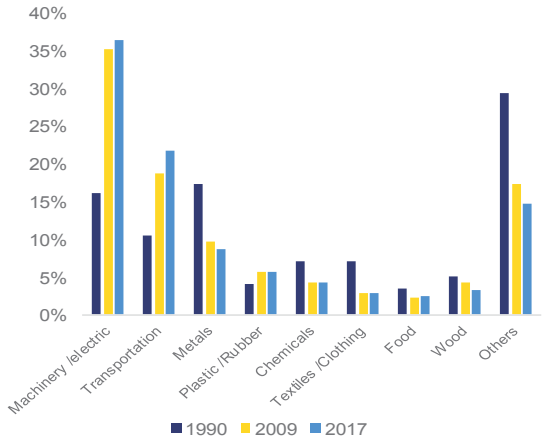
Promotion and support of entrepreneurship remains low, hampering productivity growth. The net business population growth has remained rather flat since 2015 and turned slightly negative in 2017. The churn rate - a measure of business dynamism – reached 17.5%, well above its 2008, but the lowest score among the Visegrad countries (for both birth rates and death rates of enterprises). In 2017, the three-year survival rate of enterprises was 61%, whereas the 5 year survival rate was below 50%. Attitudes to entrepreneurship are becoming less positive and the country ranks among the weakest performers in entrepreneurial education. In this context, authorities launched support programmes targeting technological start-ups like 'CzechStarter' that provides early-stage start-ups with mentoring and training. However, the provision of dedicated entrepreneurship support to young people, women, migrants or the unemployed is lacking. While new measures to introduce a legal definition of family business were announced, there is a lack of support for business transfers and generational change. Firms also invest a smaller share of value added in managerial organisational capital than most other advanced economies (OECD, 2016). Czech graduates generally possess good technical skills but less developed soft skills and large gaps exist in the perceived quality of management schools.

Innovation-driven high-growth enterprises are key to economic development and industrial renewal. These enterprises are responsible for a large share of job creation and productivity gains and can leverage efficiency and competitiveness gains in the sectors and regions where they are located (Hallak, I. and Harasztosi, P., 2019; Haltiwanger, J. et al, 2017; Monteiro, G., 2019). Many enterprises have successfully scaled up their operations in recent years and, by 2016, 4,241 enterprises were considered high growth

enterprises (11.3% of all enterprises with at least 10 employees compared to an EU average of 10.7%). The geographic distribution is fairly homogeneous, with a higher percentage in Prague, Severovýchod, Jihovýchod and Střední Morava (Flachenecker et al., 2020).

Czech enterprises are highly integrated in value chains but due to the productivity gap, focus mainly on low value added activities. According to the European Central Bank (2019), based on the World Input-Output Tables, Central and Eastern European countries have one of the highest participation in global and regional value chains. In fact, Czechia had the highest volumes of regional value chain trade in the EU in 2014 (Stöllinger et al., 2018), based on the strong bilateral links with Germany. Nonetheless, Czechia is positined more downstream in the global production chain (exports have a high import content – 38% in 2016 according to OECD data), as a large part of the economic activity is based on compiling and assembling processes. In 2016, the share of domestic value added in the total exports amounted to 62%, one of the lowest figures in the EU. In the car industry, the share was even lower at 46%, compared to 76% in Germany. A recent analysis showed that 9 out of 10 most important economic sectors by export volume are placed on the parts of the value curve with low value added (Deloitte, 2019b). Nonetheless, export composition has evolved in the last three decades, moving from metal products to machinery and electric products (see Graph 3.4.1).

Graph 3.4.1: **Composition of Czech exports, % of total**

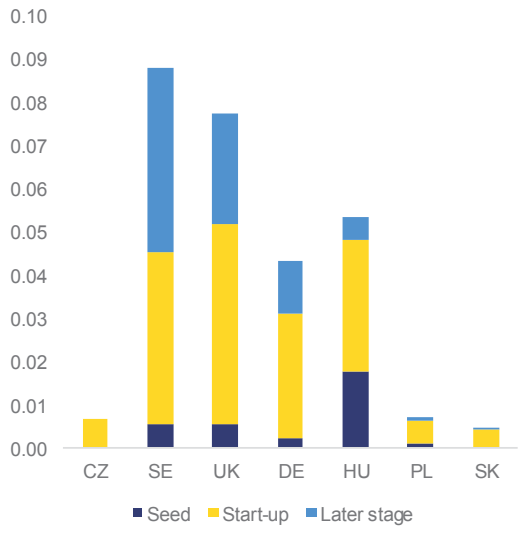


Source: Eurostat

Access to conventional finance is above the EU average but risk financing is less developed. Almost 90% of applying SMEs received the full amount of the bank credit they requested, one of the highest success rate at EU level. Borrowing costs are also relatively low. A majority of Czech SMEs (74%) also report they occasionally or regularly face problems with late payments (European Commission, 2019e). Risk financing remains underdeveloped. In a World Bank assessment, the domestic capital market cannot fully support the expected structural change of Czechia. Together with the private sector, the authorities decided to create a new National Development Fund (see Box 3.4.1).

Venture capital remains very low. Czechia ranks among the countries with the lowest funds raised through venture capital (see Graph 3.4.2). Funding is mostly concentrated in start-ups and almost non-existent in the seed and later development stages, especially for high-risk projects. Equity issuance is also negligible. In this context, the government approved in 2019 the National Strategy for the Development of the Capital Market 2019-2023. The early stage equity Fund of Funds financed from EU funds has also started operating.

Graph 3.4.2: **Venture Capital in 2018 as a share of GDP**



Source: Invest Europe, Eurostat, European Commission

Box 3.4.3: The National Development Fund

The Czech government and the four largest banks agreed to create the National Development Fund. The four commercial banks (all foreign-owned) signed a Memorandum with the Czech government in September 2019 and committed to make an initial contribution to the fund amounting to around CZK 7 billion (€275 million) for a 10-year period. Investments into the Fund remain voluntary and the government is currently in discussions with other private investors that may join later.

The sole owner of the Fund is the Czech-Moravian Guarantee and Development Bank (ČMZRB), the national promotional bank. The Bank plays an important role in the implementation of EU financial instruments as it has successfully contributed to the allocation of more than €350 million through its instrument for small and medium enterprises ('Expansion' soft loans and guarantees programme). The bank was also able to increase the volume of bank guarantees thanks to the counter-guarantee received from the European Investment Bank under the EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME). The management of the Fund will be a new activity of the Bank.

The Fund will operate as a Qualified Investor Fund. It will be set as a subsidiary of ČMZRB in the form of a Joint Stock Company with a Variable Registered Capital (SICAV). The Fund requires an operating license from the Czech National Bank and may start operations at the end of 2020. There are on-going discussions between the authorities and the national statistical institute on the possibility of recording the liabilities of the Fund outside the balance sheet of the government.

The Fund will combine various financial resources with mezzanine financing. It plans to provide a set of junior debt instruments and guarantee products with a higher degree of risk compared to the conventional products offered by commercial banks. The main investment instruments will be specific guarantees and loans, subordinated and convertible bonds, and capital participation. It will be possible to complement the Fund's allocations with guarantees from the InvestEU programme if the Czech authorities decide to make use of the Member State compartment under the future Cohesion Policy allocation.

Investments under the Fund will be linked to the National Investment Plan unveiled in December 2019. The plan lists over 20,000 projects planned in 2020-2050 with a total cost of around €315 billion (CZK 8 trillion or 150% of GDP at 2018 prices) that should be financed from different public, EU and private sources. Transport accounts for three quarters of the allocation, particularly road and rail transport. The energy sector, including the building of the new nuclear blocks, was allocated around 5%. Education, research and innovation and digitalisation account for only around 2%. Projects under the Fund will also take into account the priorities of the National Innovation Strategy, the Strategy for a Digital Czechia and other documents that will be part of the country's new economic strategy.

Investors will be able to decide which projects they want to fund. The Fund is expected to focus investment in areas like transport, digital and social infrastructure, healthcare, education, and energy and environmental infrastructure. Most of these projects would be implemented in public-private partnerships, despite the fact that Czechia has had a limited experience in using these financing instruments. The specific investment direction and strategy of the Fund will be led by the National Investment Council composed of nine members — a senior expert appointed as Chairman, four members nominated by investors and four members nominated by the government. The Fund will aim to provide a certain return on investment and maximise valuation to motivate other private investors to join.

Funding for innovative enterprises remains limited. Various public financial resources are distributed through individual entities, mostly in the form of direct support incentives, particularly grants and matching grants (Květoň and Benedetti-Fasil, 2020). Without other types of financial instruments or a vibrant entrepreneurial and financial ecosystem, innovation continues to be hampered. Authorities introduced an amendment to the Investment Incentives Act in 2019. The aim is to provide further financial support to innovative enterprises that draw more from R&D and, in particular, to projects with higher value added. Additionally, the Tax Incentives Act amended in 2019 is supposed to address some of the shortcomings of the R&D tax incentives scheme and to boost the uptake of R&D tax breaks for innovative enterprises.

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The EU supports investment in Czechia also through the European Fund for Strategic Investments (EFSI). By December 2019, total financing under EFSI amounted to €874 million, intended to trigger €4.7 billion in additional investments. €254 million went to infrastructure and innovation projects, whereas €621 million was allocated to financing SMEs. In total, almost 20,000 SMEs and mid-cap companies are expected to benefit from improved access to finance. The current experience with the EU financial instruments and the EFSI budgetary guarantee demonstrated a need for simplification, streamlining and better coordination of the EU's investment support instruments during the next 2021-27 programming period. By the end of 2020, EFSI and other EU financial instruments will come under the roof of the new InvestEU programme that promotes a more coherent approach to financing EU policy objectives and increases the choice of policy implementation options and implementing partners to tackle country specific market failures and investment gaps. In addition, under InvestEU, Member States can set-up a national compartment by allocating up to 5% of their structural funds to underpin additional guarantee instruments supporting the financing of investments with a higher level of local specificities. InvestEU will be policy-driven and focus on four main areas: sustainable infrastructure, research, innovation, and digitisation, small businesses, and social investment and skills. Beyond the European Investment Bank Group, other multilateral financial institutions and national promotional banks may have direct access to the InvestEU guarantee. At this stage, the Czech-Moravian Guarantee and Development Bank (ČMZRB) showed a preliminary interest in participating in the InvestEU programme.

Research and innovation

Home-grown innovation is crucial for supporting sustainable economic growth. Czechia remains a moderate innovator according to 2019 European Innovation Scoreboard (14th in the EU) but its performance has been gradually increasing. Business R&D intensity increased from 0.77 % of GDP in 2010 to 1.19% in 2018 (EU average 1.41%). A significant gap exists between the innovation performance of domestic firms and that of the large foreign-owned ones with a higher R&D spending (see 2018 country report). This gap could be narrowed through higher engagement of domestic enterprises in research and innovation in order to move up in the value chains.

Low returns, fragmentation, moderate scientific quality and low internationalisation lead to a modest performance. The total R&D expenditure has grown steadily since 2010, reaching 1.93% of GDP in 2018, slightly below the EU average of 2.11%. Public R&D expenditure also rose from 0.56% in 2010 to 0.73% in 2018, still below the 2020 target of 1% of GDP. Despite the substantial increase in public R&D funding, the quality of scientific outputs (top 10% most cited scientific publications at 5.1% in 2016) remains modest at around half the EU average. Although the research system is more internationalised (as measured by international co-publications, at 46.5% in 2018), Czechia still ranks low at the EU level. In addition, the high fragmentation of the public research sector results in R&D funding being thinly spread. Addressing these challenges would lead to further progress on reaching SDG 9.

Public R&D expenditure is not supported by systemic and comprehensive reforms. Although some measures have been adopted, and expenditure is increasing, it is still too early to assess their impact. The on-going Metodika 17+ reform is yet to be fully implemented by research organisations and higher education institutions (a comprehensive rollout is expected in 2020).

Links between academia and business are insufficient to support knowledge and technology transfer. A low degree of public-private scientific co-publications (2.9% compared to an EU average of 5.5%) suggests a weak public-private cooperation. Regulatory barriers persist for spin-off creation and cooperation is often informal. In the public sector, researchers' careers largely depend on their publications track record, discouraging them to work with the industry. Still, there are signs that knowledge flows may be improving, notably via increased researchers' mobility. The number of scientists in full time employment in the private sector has steadily increased to 3.9% in 2017 from 2.4% in 2010.

The effectiveness of the institutional governance of research and innovation policy remains limited. Competence for research and innovation

policy is shared between different authorities without an adequate coordination mechanism or synergies. A leading central institution with a cross-cutting coordination and practical overview role is lacking. Consequently, the decision-making bodies mostly work in silos. While research and innovation policy is supported by several strategies, these strategies lack coherence and coordination, leading to potential overlaps, uncertainties and lack of ownership by different entities. The Innovation Strategy 2019-2030, adopted in January 2019, supported by the majority of stakeholders, aims to move the country up the value chain and help it become an innovation leader by 2030. However, it remains to be seen how effective the shared ownership and implementation of the separate pillars of the strategy will be. The effectiveness of the strategy will depend on the successful implementation of the action plans prepared by the authorities.

Innovation is hampered by insufficient numbers of graduates in science, technology, engineering and mathematics. The share of tertiary educated people aged 25-34 has doubled since 2007 but at 33.3% in 2018, Czechia still ranks low at the EU level. The shortage of skilled labour is due to a lower number of graduates but also because of a mismatch in the fields of study (TACR, 2019). Figures for graduates in science and engineering (11.9%) and computing (2.8%) indicate a slight deceleration in these areas in 2017 ([15]). The lack of ICT specialists on the market can significantly hamper digital transformation of companies. Updating the curricula is a lengthy process and there seems to be a lack of proper understanding of what industry requires and consequently what gets included in the study programmes. The quality and relevance of graduates' training may therefore not fully reflect market demands, with detrimental effects in medium and high-tech industry.

Innovation performance varies considerably between the regions. The country harbours a few pockets of scientific and technological excellence. By hosting the majority of R&D stakeholders, Prague has a privileged position and is the only strong innovator region in Czechia. While a couple of the regions also start to emerge, others lag behind. For instance, Jihomoravský region has been very successful in knowledge transfer (over 20 spin-offs created) but also in tying businesses and academia together, principally through the work of South Moravian Innovation Centre. Czechia, being a country involved in widening participation, has the opportunity to coordinate activities financed under Horizon 2020 ([16]). Such projects that potentially lead to knowledge transfer enable cooperation with international and business partners and stimulate synergies between national, private and other EU funds. These projects to create centres of excellence will receive funding for up to 7 years after which the question of sustainability may arise.

Transport and digital infrastructure

New road infrastructure projects remain rather low. The latest available figures from 2016 indicate that only 55% of the TEN-T road network and 63% of the conventional rail network were completed (European Commission, 2019d). Partly due to a lack of proper strategic planning, essential parts of the TEN-T infrastructure have not yet been built or modernised. The number of completed kilometres of highways has been very low since 2014 (see Graph 3.4.3). In total, there are around 1,200 km of expressways and motorways in operation, but important cross-border links to Poland and Austria are still missing. Uneven development and connectivity primarily affect the south and the northeast areas (the unfinished D3 and D35 motorways). The National Investment Plan is supposed to address these investment gaps, but it remains to be seen whether the country will be able to deliver the projects it has set out to do.

Various procedural issues have lead to delays in infrastructure projects. Delays are mainly due to lengthy authorisation and public consultation procedures, difficulties in the settlement of property rights and deferred completion of public procurement procedures. New forms of public-private partnership financing could theoretically be part of the solution but the country has limited experience with these instruments.

The electric vehicle charging infrastructure is still in early development. Czechia has one of the lowest shares of electric vehicles in newly registered passenger cars. The number of public

([15]) Negative growth rates between 2013 and 2017 – science and engineering -1.5% and computing -2.5%.

([16]) E.g. ongoing projects such as RICAIP and CETOCOEN.

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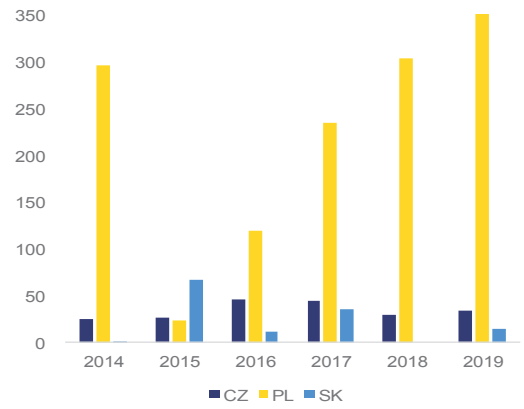
charging points per plug-in electric vehicle is below the EU average. Still, the number of new passenger cars using alternative fuels has increased ten-fold in 2011-2017. Measures for rolling out the required infrastructure fuels should be in line with the gradual uptake of clean vehicles.

Graph 3.4.3: **Completed km of highways**



(1) For Czechia, highways represent both new sections and the modernisation of D1. (2) For Poland and Slovakia, highways represent both motorways and expressways.
Source: European Commission

The target for fixed broadband full coverage was reached but mobile broadband is relatively expensive. Next generation access coverage has expanded and now exceeds the EU average. Czechia enjoys among the best 4G coverage (99%) but mobile broadband prices are almost double the EU average. This affects connectivity particularly in remote regions where the average wages are lower. An improved and affordable access to digital infrastructure can stimulate the provision of advanced digital services that require fast and reliable connectivity.

Czechia is committed to advancing new digital technologies. It made artificial intelligence and automation main policy priorities (see Box 3.4.2) and participates in initiatives such as the Coordinated Plan on Artificial Intelligence, the Electronic Components and Systems for European Leadership Joint Undertaking and the European Blockchain Partnership. The Digital Czechia programme's implementation plans were approved in 2019. Over 16 years (2009-2025), at least €2.35 billion are to be invested in digitalisation. On the other hand, Czechia remains below the EU average in the Commission's Digital Economy and Society Index. Furthermore, the country risks failing to meet the objectives of the European 5G Action Plan. Due to the delays in the auctions of frequencies, the country will probably not be able to launch fully commercial 5G services by 2020.

Small and medium enterprises have started to adapt to the new technological changes. The country is home to seven digital innovation hubs in Prague and three other regions that help introduce digital technologies in factories and businesses. SMEs are eager to adopt digital technologies but they lack the expertise to do so. Big data is one of the most popular technologies and SMEs expect public support in deploying state-of-the-art shared digital infrastructure. Czech enterprises also excel at e-commerce. The share of SMEs purchasing online has increased by 20% since 2011 (among the highest growth in the EU) and almost a third of Czech enterprises' turnover comes from online sales. (European Commission, 2019f).

Circular economy

Czechia is missing a circular economy strategy that could further boost economic growth. Performance under the monitoring framework on the circular economy is below average. The circular material use rate was 7.6% in 2016, up from 5.3% in 2010, but significantly below the EU average of 11.7%. Moving to a circular economy could improve resource productivity and the efficient use of natural resources and generate cost savings. The potential impact of increased circular economy activities is as much as 1 pp in additional GDP growth by 2030 compared to the baseline and 0.5 pp in additional employment (European Commission, 2018c).

Challenges remain in meeting the 2030 EU waste targets. There are pending challenges in reaching the 2030 EU targets for recycling 65% of municipal waste, recycling 75% of packaging waste and reducing landfilling to a maximum of 10% of municipal waste. The landfilling rate of municipal waste is above EU average but recycling remains relatively low. The ambitious goal to ban landfilling by 2024 was postponed to 2030 in light of the new waste legislation package adopted by the government in December 2019. The 90% collection target for plastic bottles by 2029 might be also be a challenge. Czechia is not yet considering introducing a deposit-refund system for single-use beverage packaging.

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Box 3.4.4: Automation and Artificial Intelligence in Czechia

Automation and artificial intelligence (AI) have become major policy priorities for the Czech government. To jump on board with 'the fourth industrial revolution', the Czech authorities have launched various national strategies on AI, innovation and digitalisation. These strategies are part of the larger overarching government plan called '*Czechia — The Country for the Future*' that, among other things, would make the country a leader in AI by 2030. Recently, authorities also issued a non-paper on the country's view on the development of the regulatory framework for AI at EU level. The country needs to undergo a significant catch-up process in the sector, as there is quite some distance to frontier EU countries (see Graph 1). Furthermore, in the 2019 Government AI Readiness Index, Czechia is ranked 31st among 194 countries and 3rd among newer Member States. Public funding for research and development in AI (around €10 million in 2017) is below EU average.

Czechia is among the countries that would potentially be more affected by technological change. Available research suggests that between 40% and 70% (depending on the methodology used) of the current jobs in the country may be at risk of being fully or partly automated in the next decades. The share is more pronounced in the automotive industry, in particular for jobs such as production workers or machine operators. The high potential for automation is in part related to the high importance of manufacturing in the economy (23.1% of GDP in 2018, 8.5 percentage points above the EU average). The automotive industry alone accounts for up to 10% of GDP and total employment when including all indirect suppliers. According to a 2018 study by the Czech government, in the short-term, the current AI technologies could substitute 50% of the work skills demands in 11% of professions. Over 30 years, automation could replace over 50% of skills in the vast majority of current professions, accounting for around 3.4 million employees. At regional level, the highest negative impact of automation on employment is expected in the Ústecký and Karlovarský regions, while the largest structural benefits will most likely take place around Prague.

Robotisation is already a significant component of the Czech economy. Acute labour shortages (80,000 job vacancies in Q3-2019) and high wage growth (over 30% cumulative growth since 2011) in the manufacturing sector have prompted most private companies to invest significantly in automation and robotisation. Data by the International Federation of Robotics indicates that the number of industrial robots increased from around 6,000 in 2011 to almost 16,000 in 2017. This accounts for around 40% of all robots installed in the Visegrád Four and puts Czechia in the top 15 at global level. More than half of the robots are used in car assembly plants, with the rest mostly installed in metal, plastic and rubber manufacturing. Nonetheless, robot density in manufacturing (105 robots per 10,000 employees) lags behind Germany (224), Spain (163) and Italy (156). In the automotive industry, the density reaches around 4,000 robots per 10,000 employees, compared to around 9,500 in Germany and 6,600 in Slovakia (see Graph 2). By contrast, less than 100 robots in total are used in education and R&D, compared to over 1,700 in Germany. According to Deloitte (2018), automation could double the potential growth of the economy to almost 4% by 2033, particularly due to productivity gains in the manufacturing and construction sectors.

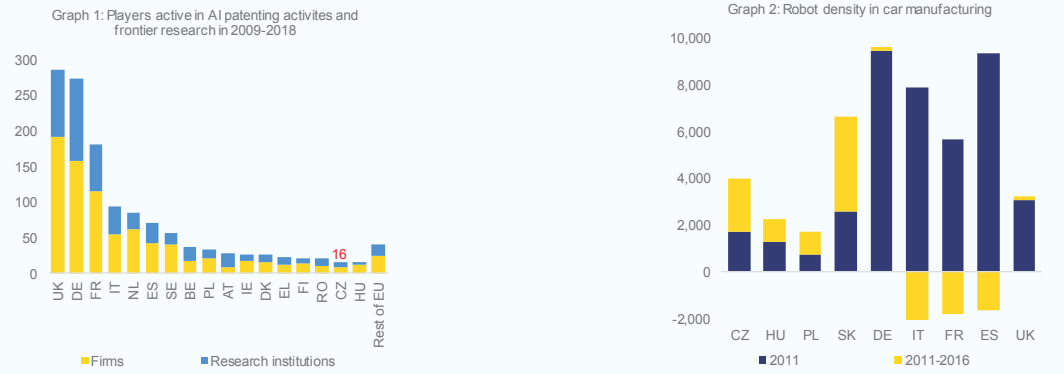
Digital transformation is on track but digital skills need to improve to support and reap the benefits of a broader economic change. Digital infrastructure is improving (broadband coverage now exceeds the EU average) but in order to become a leader in AI, more investment is needed in very high capacity networks (including 5G services where the country faces delays in the roll-out). There has also been some progress in terms of rolling out digital public services. The steady integration of digital technologies in Czechia increases the importance of advanced digital skills, but these remain relatively low (26% compared to an EU average of 33% and over 38% in Germany or Austria). The number of patent applications related to Industry 4.0 is also low, with only 33 applications submitted from Czechia by 2016, out of the total 13,229 applications in the EU. The authorities have therefore introduced a Digital Education Strategy that is being rolled out, supported by EU funds. A successful transition towards the digital economy will largely hinge upon the availability of skilled workers. The role of the education system and of on-the-job training on digital skills will therefore be essential.

There have been encouraging developments in the research and innovation of AI, mostly in Prague and Brno. The AI Center (AIC) and the Institute of Informatics, Robotics and Cybernetics (CIIRC), both attached to the Czech Technical University in Prague, conduct state-of-the-art research and aim to transform

Prague into a global AI hub. Similarly, Brno has established itself as a well-functioning regional innovation ecosystem with various centres of excellence in research, like the Brno Technical University, Masaryk University or the Central European Institute of Technology (CEITEC), focusing on the specialisation of the Jihomoravský region in areas such as cybersecurity, microscopy, nanotechnology and biotechnology. Smaller scale initiatives are taking place in Olomouc, Ostrava, Liberec and Pilsen. Currently more than 1,000 researchers in AI work with a funding of €250 million and according to the business environment, the Czech educational system offers more than 100 different masters programmes focused on AI. Consequently, Czech research teams, with the support of the government have officially expressed interest in hosting one of the European AI excellence centres. This may require further coordination activities among the Czech academia.

Increasing the country's entrepreneurial culture and developing its venture capital market are crucial for technological progress. Currently, there are only timid attempts to turn the existing AI research into domestic start-ups, particularly due to the low availability of venture capital. While some successful initiatives were brought to market, an increased entrepreneurial culture would help scale up the projects and increase the number of international venture capital investors. Until the private sector is fully mobilised, future EU financing schemes like InvestEU, Digital Europe or Horizon Europe may help. There is also scope to consider AI in other areas, such as healthcare, transport and public administration.

Graph 1: **Active players in AI and robot density in car manufacturing**



Source: Graph 1: Samoili et al (forthcoming).
Graph 2: Szabo (forthcoming) based on data from the International Federation of Robotics and EUROSTAT.

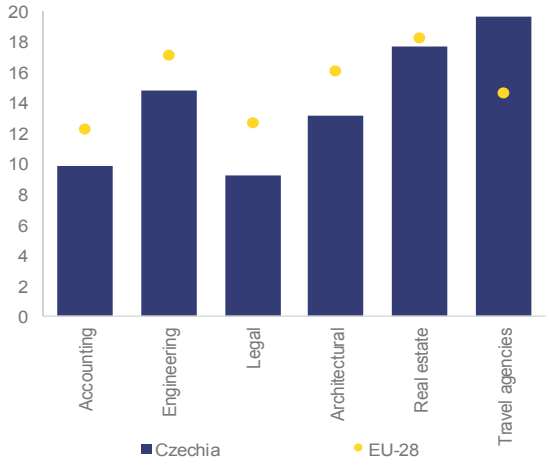
Single Market Integration

Czechia's enforcement of Single Market rules is average overall. The lag in turning EU legislation into national law has declined but the number of infringement cases, including those for incorrect transposition, has increased. Ineffective enforcement of single market rules increases uncertainty for businesses, reducing their incentive to make additional investments. There are potential trade benefits from improving compliance with Single Market goods legislation, as Czech small and medium enterprises are among the weakest performers in the EU in both intra-EU imports and exports of goods. estimated welfare gains (relative changes in real incomes) from the full transposition of the Single Market legislation amount to 1.12% of GDP, with an additional 1.55% from eliminating infringement proceedings (ESRI, 2019).

Market surveillance of non-food products is suboptimal. Retailers are the least likely in the EU to think their competitors comply with product safety and consumer legislations. Market surveillance of the Single Market for goods is essential to protect consumers and to ensure a level playing field for businesses. In Czechia, the responsibility for market surveillance of non-food products is spread over about a dozen authorities. Combined with a persistent lack of financial and material resources, this may pose challenges for coordination and strategic priority setting, but also effective implementation of surveillance activities.

The regulatory burden on professional services and professions is an obstacle to growth and competitiveness. The low business churn rate shows a relatively low dynamism and competition within regulated professional services present in these sectors in Czechia (see Graph 3.4.4). The European Commission restrictiveness indicator shows that a number of professional business services (i.e. architects, engineers, lawyers) are among the highly regulated in the EU. The high level of regulation in these professional services is also confirmed by the recently updated OECD product market regulation indicator. Regulatory restrictions (limitations to legal forms, multidisciplinary activities, shareholding requirements, voting requirements, and reserved activities) can be detrimental to the economic performance of the services markets. In general, labour and business regulations remain important barriers for investment in the country (EIB, 2019).

Graph 3.4.4: **Business churn in selected sectors in 2017**

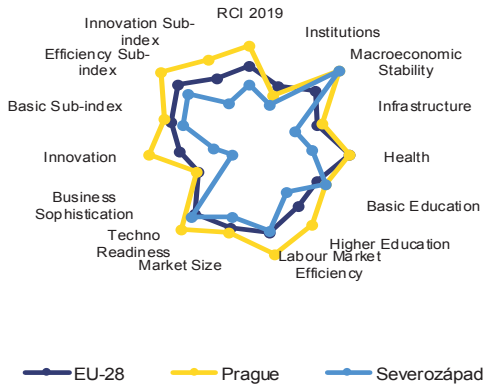


(1) Business churn: firm birth rate + death rate - percentage
Source: Eurostat

Regional dimension

Despite the increase in living standards, regional disparities are wide. The most striking is the gap between the capital city and Severozápad, an area located between Prague and Saxony (see Graph 3.4.5). In general, poorer areas show lower productivity, greater inequality, increasing homelessness, higher indebtedness and pressing demographic challenges. Conversely, richer regions achieve much better educational outcomes and have a greater innovation capacity, making them more attractive for private investment. This in turn means that Prague (with its adjacent areas) and the Brno metropolitan area also face much higher costs of living and a lack of affordable housing. The recently adopted Regional Development Strategy 2021+ has the potential to increase targeted investment and address the disparities. The strategy can make use of certain territorial instruments such as Integrated Territorial Investments and Community Lead Local Developments, combining various funds and programmes.

Graph 3.4.5: **Regional Competitiveness Index 2019**



Source: European Commission

Productivity and competitiveness vary in line with the economic structure of the regions. While the Jihomoravský, Pardubický and Olomoucký regions have a rather diversified economy, Moravskoslezsko and Severozápad have a very specific economic structure, dominated by coal mining and processing and usually another major sector (metal industry in Moravskoslezsko, chemical industry in Ústecký region and automotive industry in Karlovarský region). Consequently, productivity is evolving somewhat differently. The progress in overall convergence is mainly driven by the good performance of the capital city and the surrounding region. According to the 2019 Regional Competitiveness Index, Prague and Střední Čechy are among the 30% most competitive regions in the EU, at levels comparable to some German (e.g. Münster) or Austrian regions (e.g. Salzburg). The moderately developed regions stand in the middle of the EU ranking, while Severozápad is in the bottom 30%.

The quality of infrastructure and connectivity is relatively uneven. The existing parts of the backbone network have a poor connection between regions and lack quality. More than 87% of the population living within a radius of 120 km of Prague can reach the capital in less than 90 minutes. In Jihozápad and Severovýchod, this ratio is only 50%. The regional transport networks have low interoperability and multimodality of different types of transport systems. There is a high-speed broadband connectivity gap between urban (76%) and rural (59%) areas. Access to ultra-fast broadband is limited to 16% of the whole population. In 15% of municipalities there is no interconnection with high-capacity backhaul optical networks and only 10% of municipalities have access to more than one provider. While 64% of people use the internet for interacting with their public authorities in Prague, only 45% of individuals do so in Střední Morava. Vysočina is the only region that digitised its public administration and all regional facilities (including schools and hospitals) are interconnected by high-speed broadband. In some regions, digital innovation hubs connect relevant regional partners and coordinate the support to SMEs.

Regional differences in socio-economic indicators persist and new challenges emerge. While Prague, Vysočina and Jihovýchod have a life expectancy close to the EU average, Severozápad and Moravskoslezsko lag behind. The highest gap (3 years) is between Prague and Ústecký region. The highest share of people at risk of poverty is reported in Severozápad (19%) and Moravskoslezsko (16%) where it has been steadily increasing in the past 3 years. The lowest share (around 5%) is in Prague and Střední Čechy. In the more developed regions, overall population has been growing constantly since 2000 (+20% in Střední Čechy, the region with the highest gross immigration rate), whereas population declined in the poorer regions where migration has been low. In general, foreigners represent a large part of the population in cities like Prague (almost 15%), Brno, Pilsen and Mladá Boleslav. In other areas like Zlínský and Olomoucký regions and Vysočina, foreigners make up less than 2% of the total population. The uneven spread of foreign workers may cause new disparities and increase pressures on housing, healthcare and education (see also section 3.3).

Regional innovation distribution reflects the concentration of economic activity. The share of innovative firms in most regions is lower than the EU average. Nonetheless, Prague is a strong innovator, with an R&D intensity of 2.9% of GDP. Innovation has also strengthened in the Jihomoravský region, particularly in Brno, in sectors like cybersecurity, electron microscopy and space technologies and in Střední Čechy in life sciences, physics and materials. Ostrava and Olomouc also have solid scientific bases, whereas Liberec and České Budějovice excel in areas such as textile or biology. Jihozápad is a high performer in design applications, including Pilsen – an engineering success story. Conversely, R&D intensity is only 0.3% of GDP in the less developed region of Severozápad. The growing network of regional innovation centres providing business development support could generate positive spillovers to regions with potential (Zlínský region) or where the harvested fruits of innovation and smart specialisation are still limited (Vysočina region). Regional authorities also managed to strengthen their role in promoting and cultivating the business and innovation environment, despite the fragmented governance (World Bank, 2019b). At the same time, the current economic situation helps firms become less dependent on grants.

Educational performance lags behind in the less developed regions. While more than 57% of the Prague population aged 30-34 has a tertiary degree, in the less developed regions it drops below 30%, or even below 20% in Severozápad. The latter has a different education structure of the population (a higher percentage of basic education) and very limited research (least numbers of researchers per capita). There are relatively large regional differences in the level of support for regional schools and teachers' skills. The reform of financing the regional education, implemented since 1 January 2020, aims to reduce unjustified differences in the level of support for schools. Its impact to compensate for differences in regional socio-economic development remains to be seen.

Governance

Public sector performance and government effectiveness ranks below the EU average. According to international indicators, Czechia performs relatively well on access to government

information and the use of regulatory impact assessments in policymaking (despite a lower use since 2017). Weaker performance is observed in e-government, professionalism of the civil service, transparency of government and control of corruption (European Commission, 2018d). The efficiency of public administration is undermined by a weak inter-ministerial coordination at central level and large fragmentation at local government level. Czechia also has one of the largest variations between its regions in terms of quality of governance in the EU. Between 2010 and 2018, government performance improved slightly, whereas trust in government decreased. Strategic planning, e-government, public procurement, evidence-informed decision making and project management are other areas where performance still falls short of EU average. Innovation in public administration is also not generated systematically and intentionally. The application of the rules on conflict of interest has been subject to scrutiny. Audits by the European Commission on potential conflicts of interest in the context of EU funds are currently ongoing.

Starting a business remains difficult. According to the 2019 Doing Business Index, Czechia ranks 115th out of 190 economies. The 2018 product market regulation data confirms that the administrative burden on start-ups is problematic, particularly for licences and permits. This may be driven by distortions created by state involvement in the economy and barriers to domestic and foreign entry. Authorities, on the other hand, suggest that businesses can be started even in as little as one day.

Czechia performs relatively well in terms of giving second chances to reputable bankrupt entrepreneurs. The fear of failure rate is one of the lowest in the EU and the strength of the insolvency framework index is above the EU average. The time needed to resolve an insolvency case has fallen from 6.5 years in 2008 to 2.1 years in 2019. However, at 17% of the debtor's estate, the cost of resolving insolvency remains among the highest in the EU. Challenges connected with second chance include: (i) the ineffective measures to facilitate business transfers due to generational change; (ii) lack of equal treatment for honest bankrupt entrepreneurs; (iii) lack of 'fast-track' procedures to enable entrepreneurs to move on faster from bankruptcy processes; and (iv) lack of early warning mechanisms to potentially avert bankruptcy (European Commission, 2019f). A legislative amendment introduced administrative and financial simplifications in the liquidation process but the impact is yet to be assessed.

The lengthy and heavy procedures to obtain a construction permit continue to be an important barrier for investment. Czechia ranks 157th on the length of the permitting procedure according to the Doing Business Index. The length doubled between 2013 and 2016, stabilising at around 250 days. The recent legislative amendments to the Act on accelerating the construction of transport, water, energy and electronic communication infrastructure have been appreciated by the business community with respect to simplification and acceleration, but the impact is still to be assessed. Another legislative amendment to shorten the allowance process timeframe is under discussion. The subject proposal of the new construction legislation was approved by the government in 2019 but has faced criticism from certain public authorities and stakeholders for its potential negative effects on public finances, length of permitting procedures and public participation rights. Approval of the fully-fledged proposal is planned for 2020 and the entry into force by 2021.

Digital public services are becoming increasingly available. The country is implementing its e-government plan included in the Digital Czechia strategic paper. As of 2020 the country has a new 'digital constitution' that gives right to receive nearly all public services electronically. Nonetheless, only around 10% of municipalities offer an app or an online portal to communicate with the general public. The number of e-government users is growing at a slow pace, as only a small share of the population uses the eID card's digital features. At the same time, only half of those who needed to submit official forms to public administrations did so electronically. The Supreme Audit Office suggested recently that the digitalisation of public services is progressing rather slowly and remains below the EU average due to slow progress in legal changes, lack of experts and out-of-date information systems.

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The legal framework for public procurement is improving. Authorities usually adopt the strictest interpretation in areas such as contract modification or low tender assessment to avoid irregularities. An amendment to the Public Procurement Act is currently being prepared to address certain aspects that have proven to be problematic. Training is under way for most personnel dealing with procurement, including at regional level. Several thousand people were trained internally in 2019, with new courses being added (e.g. in healthcare). Procurement processes are electronic, running either on the state-owned platform or on one of the seven major private platforms. The government recently approved the update of the electronic infrastructure system.

The average speed of procurement review procedures is improving. In 2019, the procedure shortened from 37.7 to 29 days. The media tends to put considerable pressure on the Competition Office to make decisions quickly and transparently. Moreover, in November 2019, the Constitutional Court ruled that third party submissions for review should not be subject to fees. The Competition Office was also subject to a police investigation linked to its decisions in certain high-profile cases. The institution started providing guidance and training to reassure contracting authorities, in particular municipalities, about its interpretation of key legal matters.

Smart procurement practices are increasing and improving in quality. In general, there seems to be an increase in the use of new practices such as 'meet the buyer' events, transparent accounts to trace subcontractor payments, quality criteria or the best value methodology. On the other hand, the initiatives on green procurement are still negligible. Ministries act as central purchasing bodies for their subordinated bodies and external contracting authorities (e.g. municipalities) can also use central purchasing services. There new are initiatives on joint procurement led by the Ministry of Health for the state hospitals and by the Union of Towns and Municipalities for smaller municipalities. The Ministry of Labour and Social Affaires integrated social and responsible aspects in their procurement procedures.

The perception of the transparency of public procurement process is growing. While still seen as a serious issue by some stakeholders, error rates seem to be decreasing and are less blatant. The 2018-2022 Anti-Corruption Strategy and the action plans involve training courses to streamline anti-corruption measures. There are also plans to launch a public consultation on the functioning of the Competition Office's review procedures.

Despite improvements, corruption remains a concern for businesses and hinders economic activity. The World Bank's control of corruption indicator has been fluctuating in the past 5 years and Czechia now ranks in the 69.2 percentile worldwide, slightly down from 70.7 in 2017. Czechia's rankings in the Transparency International's Corruption Perception Index remained relatively stable in 2018 and 2019 but then dropped in 2020 ([17]). According to the 2019 Eurobarometer Survey on corruption, 32% of surveyed firms mentioned corruption as an obstacle to business (down from 51% in 2017).

Several anti-corruption measures are still pending. In December 2018, the government adopted the 2018-2022 Anti-Corruption Strategy, focusing on risk management and risk analysis, and in March 2019 it approved the related action plan. This focuses on four priority areas: (i) an effective and independent government; (ii) transparency and open access to information; (iii) efficient management of state property; and (iv) the development of civil society. The law on nominations to the state owned companies has

([17]) According to Transparency International's own methodology of compiling the Corruption Perception Index.

been adopted in late 2019. However, the bill on lobbying, pledged in previous action plans, is pending discussion in the Parliament. The bill on whistleblower protection is being prepared at ministerial level. Clear rules for parliamentarians on acceptance of gifts, on declaration of activities and assets, on incompatibilities, on interaction with lobbyists is missing. A revision of the law on public prosecution is currently under preparation. In 2019 the proposed amendment triggered concerns from key stakeholders regarding the independence of public prosecution, including from the side of the Supreme State Prosecutor.

Box 3.4.5: Investment challenges and reforms in Czechia

Macroeconomic perspective

Investment in Czechia has consistently been above the EU average since 2004, due to the high share of manufacturing, which requires high levels of investment in equipment. The average share of investment to GDP in 2004-2018 was 26.7%, one of the highest in the EU. Nevertheless, investment in R&D and other intangible assets like education and digitalisation remain rather modest. Public investment is expected to remain robust due to an increased absorption of EU funds up to 2023.

Assessment of barriers to investment and ongoing reforms

Public administration/ Business environment	Regulatory/ administrative burden	CSR	Financial Sector / Taxation	Taxation	
	Public administration			Access to finance	
	Public procurement /PPPs	CSR	R&D&I	Cooperation btw academia, research and business	
	Judicial system			Financing of R&D&I	CSR
	Insolvency framework		Sector specific regulation	Business services / Regulated professions	
	Competition and regulatory framework			Retail	
Labour market/ Education	EPL & framework for labour contracts			Construction	
	Wages & wage setting			Digital Economy / Telecom	CSR
	Education, skills, lifelong learning	CSR		Energy	CSR
				Transport	CSR

Legend:

	No barrier to investment identified		Some progress
CSR	Investment barriers that are also subject to a CSR		Substantial progress
	No progress		Fully addressed
	Limited progress		Not assessed yet

Despite relatively high investment, a number of challenges persist. Inadequate coordination among different layers of government is affecting the efficiency of public investments. The lack of predictability in business regulation and the administrative and regulatory burdens are particularly problematic. Labour and skills shortages are also perceived as main barriers, while modest investment in R&D and insufficient links between academia and businesses are limiting knowledge and technology transfers. Lengthy authorisation and public consultation procedures have weighed on investment in both transport infrastructure and housing.

Selected barriers to investment and priority actions underway

1. Relatively low quality transport infrastructure is one of the main barriers to investment in the country. Infrastructure investment in transport is below pre-crisis levels, leading to a reduced number of completed kilometres of road infrastructure since 2014. Lengthy administrative procedures for building new infrastructure also inhibit further investment. Some recently adopted amendments aim to simplify and accelerate the process, and a new construction code is currently under preparation.

2. Labour shortages and skill mismatches are perceived as one of the main barriers to investment by private firms. In light of the labour shortages, employers plan to attract more foreign workers. Meanwhile, firms do not invest as much in training employees as the EU average, particularly in the manufacturing sector. However, one sign of progress was the launch of the 2019-2030 innovation strategy.

3.5. ENVIRONMENTAL SUSTAINABILITY

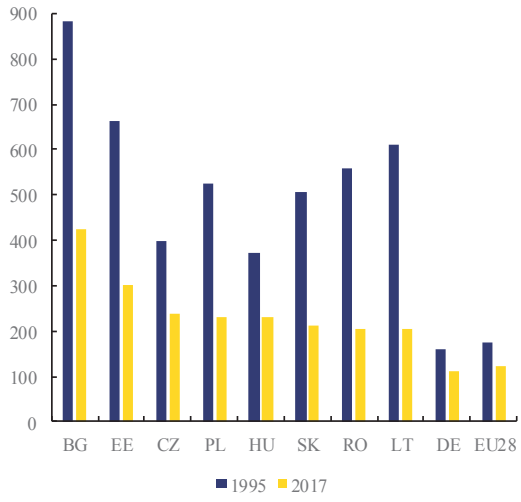
Czechia's carbon-intensive economy needs to overcome various challenges to move closer to climate neutrality. As a transit country with a high share of manufacturing in GDP, Czechia is currently witnessing some of the highest greenhouse gas emissions per capita in the EU. This is mostly due to a significant reliance on coal and a less than optimal level of energy efficiency. Coal production is a particularly important economic activity in three regions, which will need to undergo a socially-fair transition in a cost-efficient manner. According to the country's recently unveiled National Investment Plan, the costs of a full transition away from the use of fossil fuels by 2050 are expected to reach €25 billion (12% of GDP at 2018 prices). However, in a recent report, the Czech Supreme Audit Office (NKU, 2019) found that the motivation of the Czech general public to reduce energy consumption and increase environmental taxation is quite low. Furthermore, there are no effective and efficient tax measures in place to ensure climate transition, particularly in road transport.[18]

Climate change already affects Czechia through droughts, floods and damage to its forests, causing significant economic damages. A significant part of the economic losses is not insured, meaning that either the state (as an insurer of last instance) or the victims absorb the losses. Droughts and an expansion of the bark beetle population due to favourable weather conditions have caused significant economic damages (an estimated 20-25 millions m^3 of damaged wood in 2019). The increase of beetle-damaged wood has been exponential over the past years (from 1 million m^3 in 2014 to 5 million m^3 in 2017), to the extent that Czechia has lost its carbon sink. Forest land area in conifer forests cleared by salvage logging or affected by droughts increased almost threefold since 2016. Apart from a scheme to collect rainwater to change the landscape structure and restore wetlands, there are few effective adaptation measures put in place to address drought. Furthermore, in 2018, 79% of habitats and 64% of species covered by Natura 2000 network were in unfavourable conservation status. Also, only 19% of surface water bodies are in good or high status.

[18] The Commission will assess, in the course of 2020, the final National Energy and Climate Plan submitted by Czechia on 22 January 2020.

Energy intensity remains one of the highest in the EU, but there seems to be a low ambition to reduce it in the medium-term. Czechia is one of the most energy-intensive countries in the EU (see Graph 3.5.1). Final energy consumption has remained quite constant since the mid-1990s (around 25 Mtoe) but import dependency (for oil and natural gas) has been increasing significantly, reaching 37% in 2017 (the highest level since 1990). Energy consumption per capita in 2017 was 4.1 tonnes of oil equivalent per person (down from 4.7 in 1990), the highest among regional peers and above EU average (3.3). Both primary and final energy consumption increased since 2014 (40.4 Mtoe and 25.5 Mtoe, respectively). In the draft National Energy and Climate Plan submitted to the Commission, Czechia plans to reach 41.3 Mtoe of primary energy consumption and 23.7 Mtoe of final energy consumption by 2030. This represents a rather low level of ambition for primary energy consumption and only a modest contribution for final energy consumption.

Graph 3.5.1: **Energy intensity in selected countries**

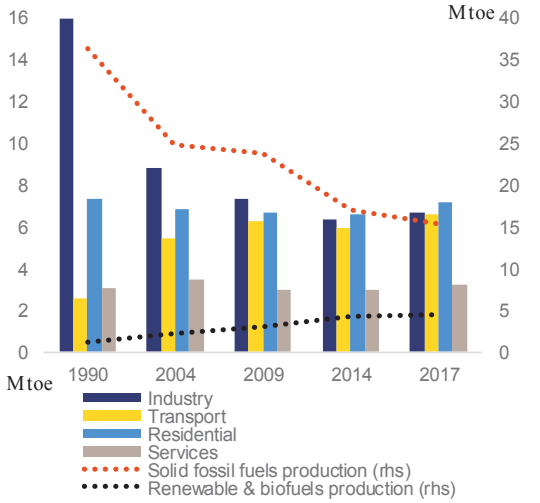


(1) kilograms of oil equivalent per €1,000
Source: Eurostat

Road transport is becoming on of the main consumer of energy, as the number of conventional motor vehicles has increased. The reduction of energy consumption in industry was counteracted by its increase in transport (see Graph 3.5.2). Between 2011 and 2018, the number of motor vehicles in Czechia increased by over 25% and now account for 127 grams of CO2 per km (NKU, 2019), far from the 2021 EU-wide target of

95 g CO2/km. While in 1995, transport accounted for only 11% of all energy consumption, by 2017 it had reached 27%, though this was still below the EU average of 31% (see Graph 3.5.2). Almost 95% of all consumption in the sector is due to road transport. This was caused by an uptake of more polluting vehicles coupled with low sales of zero-emission vehicles, and the absence of a supporting policy framework. Less than 4,000 passenger cars (0.4 % of the vehicle fleet) is fully electric or plug-in hybrid and there are only around 620 installed chargers (European Alternative Fuel Observatory data), suggesting investment in the recharging infrastructure remains low. More worrying, despite stricter rules imposed recently, 1 in 4 vehicles currently in circulation exceed the permitted emissions limits, according to an inspection carried out in 2019. The density of the rail network is very high, but only around a third of the lines are electrified and high-speed connections are missing. Consequently, Czechia has a much higher use of coaches than the EU average.

Graph 3.5.2: **Final energy consumption by sector and production by source**



Source: Eurostat

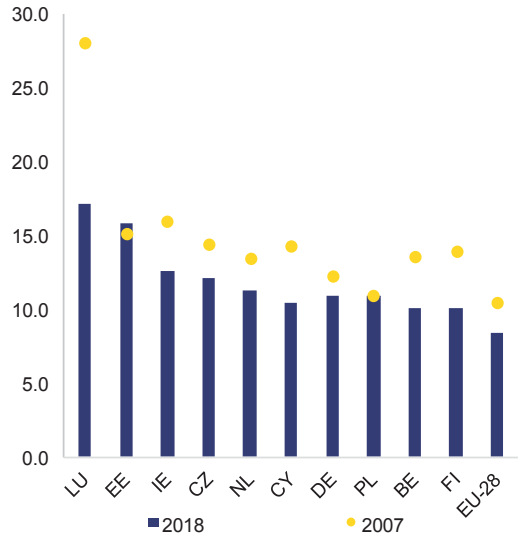
The use of renewable energy in Czechia is below EU average and the sector has been static in the past years. At around 15%, the share of renewable energy in final consumption is below EU average (18% in 2018) and has been static since 2014. The share is particularly low in the electricity sector (at 13.9%, it is almost 20 pps below the EU average), but also in transport. According to its draft National Energy and Climate Plan, Czechia aims for renewable energy sources to account for 22% of gross final consumption of energy by 2030, slightly below the 23 % recommended by the European Commission. It also aims to increase the share of nuclear energy. According to its 2015 Energy Policy, nuclear energy could account for a third of the total primary energy sources (excluding electricity) and a half of gross electricity generation by 2040.

A complete legal and institutional framework for supporting renewable energy is pending. The abolishment of support schemes for renewable energy in 2014 led to a static market. In this sense, authorities have been preparing legislative changes of the Renewable Energy Support Act with the aim of introducing a new support schemes. In addition, the administrative burden and various technical and legal obstacles to domestic energy generation from renewable resources persist (i.e. grid connection and charges, and the involvement of many authorities in the licensing process). Investment grants for distributed renewable energy are currently the only support instrument for new installations, but there are plans to introduce auctions for projects above 1 megawatt. Self-consumption, citizens' cooperatives and Power Purchase Agreements as enshrined in the new Clean Energy Package may help address negative perception and increase public acceptance of renewables in the country.

Despite some progress, the economy is still among the most carbon intensive in the EU. Czechia has one of the highest greenhouse gas emissions per capita in the EU (12.2 tonnes compared to an EU average of 8.5 in 2018) and progress since 2007 has been rather low (see Graph 3.5.3). Around 75% of the emissions are generated by energy, followed by industrial processes and product use (12%), agriculture (6%) and waste management (4%). Nonetheless, total emissions dropped by around one third since 1990, putting Czechia among the countries with the highest effort (in line with the other newer Member States in the region). In this context, the country is likely to meet the 2030 target in the sectors not covered by the EU Emissions Trading System (EU ETS), according to the projections of the draft National Energy and Climate Plan. According to national projections, greenhouse gas emissions generated by the energy industries under the scope of EU ETS are expected to drop by

around a quarter between 2020 and 2035, while emissions from transport are expected to drop by around 20%. Under the Effort Sharing regulation, most sectors are expected to reduce their emissions, except for agriculture, where a 10% increase is expected by 2030 (EEA, 2019). The 2017 Climate Policy foresees an emission reduction of 80% in 1990-2050. In the energy sector, the emissions should fall nearly to zero.

Graph 3.5.3: **Greenhouse gas emissions per capita**



Source: Eurostat; European Environmental Agency

Carbon prices in Czechia are too low to have a significant impact on mitigating climate change. Czechia does not have an explicit carbon tax. Thus, according to OECD (2018), the carbon pricing gap in Czechia, which compares actual carbon prices and real climate costs, estimated at €30 per tonne of CO2, was 70% in 2015, down from only 71% in 2012 ([19]). This is the highest gap among the Visegrad countries and significantly above the EU average. Consequently, for a cost-effective low-carbon transition, carbon prices would need to increase considerably.

There is a high reliance on solid fossil fuels with higher CO2 emissions. In 2018, solid fossil fuels represented more than one third of the total energy supply, down from two thirds in 1990 and one-half in 2000. Over 70% of the supply comes from brown coal (lignite). The country's 9 mines make Czechia the third largest coal producer in the EU (46 million tonnes produced annually) after Germany and Poland. Nonetheless, since 1989, mining production decreased by 56% for hard coal and 88% for brown coal. The latter is one of the sources with the highest emissions of CO2 – almost twice that of natural gas and almost 30% more than diesel or gasoline ([20]).

There is no final date for phasing out coal production but authorities are implementing a strategy for the coal-mining regions. The Czech coal commission is required to analyse options regarding an exit from coal production and propose recommendations to the government by September 2020. This date is important for Moravskoslezsko and Severozápad ([21]), which are among the 6 largest coal-mining regions in the EU ([22]). While both regions still strongly depend on the mining sector, they are at various stages of transition to a zero-emission economy. They are supported by a specific government resolution called the Strategic Framework for Economic Restructuring (RESTART) which outlines a broad variety of measures to be prepared for accompanying the transition. Given the challenges and needs, local commitment and a coordinated action at regional and national level are key to achieve structural change and carbon neutrality (see Annex D).

Air quality remains a problem in most Czech regions. Residential solid fuel combustion is the main source of particulate matter (PM2.5 and PM10), but Benzo[a]pyrene (BaP) and volatile organic compounds are also key sources. The emissions of SO2 mostly come from the industrial and power generation sectors, which account for a large share of the nitrogen oxides, volatile organic compounds, particulate matter and heavy metals in the air. Most large combustion plants still use the flexible arrangements under the industrial emissions directive to temporarily allow less strict emission limit values.

([19]) The OECD report measures carbon prices using the Effective Carbon Rate, which is the sum of three components: specific taxes on fossil fuels, carbon taxes and prices of tradeable emission permits.

([20]) https://www.eia.gov/tools/faqs/faq.php?id=73&t=11

([21]) Severozápad is a NUTS 2 region composed of two NUTS 3 regions (Karlovarský and Ústecký). Moravskoslezský is both a NUTS2 and a NUTS 3 region.

([22]) Czechia employs about 10% of the 185,000 coal sector workers in the EU, behind Poland, Germany and Romania (Alvez Diaz et al., 2018).

The transition from coal is expected to have significant consequences at regional level. The coal regions currently have higher levels of unemployment, poverty, indebtedness and early school leaving than the national average (see also section 3.3). The transition process is expected to affect local communities dependent on coal mining and the coal-fired energy sector encompassing over 21,000 employees. Certain jobs will disappear, while others may be relocated. The transition strategies are therefore expected to involve economic, technological and social measures to ensure the efficient phasing out of the coal-based economy. Tailored-made support for SMEs, start-ups, innovation ecosystems and technology development together with retraining and the creation of new job opportunities for affected groups will also be vital components. In view of the higher unemployment rate in the coal regions, reskilling workers is essential. The case of Karlovarský region demonstrates the need for an effective regional transition strategy, as the shift from the mining monoculture has significant negative socio-economic consequences.

The use of zero- and low-carbon technologies can ease the transition to a sustainable economy but the ambition to invest in them remains low. This is particularly true for road transport where the progress to move to zero-emission vehicles is rather low (see Section 3.4.3). Nonetheless, a support scheme for the construction of publicly accessible recharging and refuelling stations for vehicles running on alternative fuels is in place since 2017. The available national sources of funding do not necessarily prioritise investments focusing on sustainability (i.e. that minimise the effects of climate change or environmental destruction) or penalise projects that use solid fossil fuels. The country is also below the EU average on eco-innovation. Activities related to R&D in the area of energy are very low, representing only around 0.1% of GDP (down from 0.3% in 2011). Moreover, out of the €21 million invested in research in 2016, around half went to activities related to nuclear and fossil fuels (IEA, 2019).

A successful transition to a sustainable economy will also depend on the use of new digital technologies and applications. Developing and applying 5G networks, artificial intelligence processes, or low-power processors can facilitate a more efficient use of energy and resources across all sectors. Currently, however, there are a lack of initiatives to boost the resource and energy efficiency of the information and communication sector, as the authorities prioritise other aspects of the digital agenda, such as the development of the digital infrastructure, digital public services and cybersecurity. An increase in sustainability could also come from the cloud-computing strategy, currently under preparation.

Various other policies can ease the transition to a more sustainable economy but are not widely used. There is space to tighten environmental criteria of vehicle taxes to promote the use of cleaner vehicles (see Section 3.1). Furthermore, several tax exemptions reduce incentives to save energy or to switch to cleaner fuels. Initiatives on green public procurement and green budgeting are also still relatively limited. Pricing carbon could also help tackle climate change and air pollution cost-effectively, and help improve energy affordability. As an additional source of environmental revenue, Czechia can consider the cost-effective transfer of emissions allocations to other Member States. The country also lacks an overarching circular economy strategy that could help in the transition (see Section 3.4).

Improving energy efficiency can be an opportunity to increase competitiveness. The country achieved only 68% of the estimated cumulative energy savings for 2014-2017, far from the energy savings obligations under the Energy Efficiency Directive. An increased energy performance can reduce energy costs for households and businesses, as well as develop cleaner industries and help the economy move up the value chain. Authorities are implementing a scheme for the replacement of obsolete and inadequate local heating sources in households, supported by EU Funds. By 2019, 80,000 heaters were replaced out of the 100,000 foreseen by the end of 2020. Nonetheless, the implementation of energy efficiency policies remains split among several authorities. There is also a low awareness about the wider benefits of energy efficiency, coupled with a lack of motivation to draw available funding, due to long payback times and administrative burden.

There is an opportunity to increase investment in smart building systems. Appropriate methods

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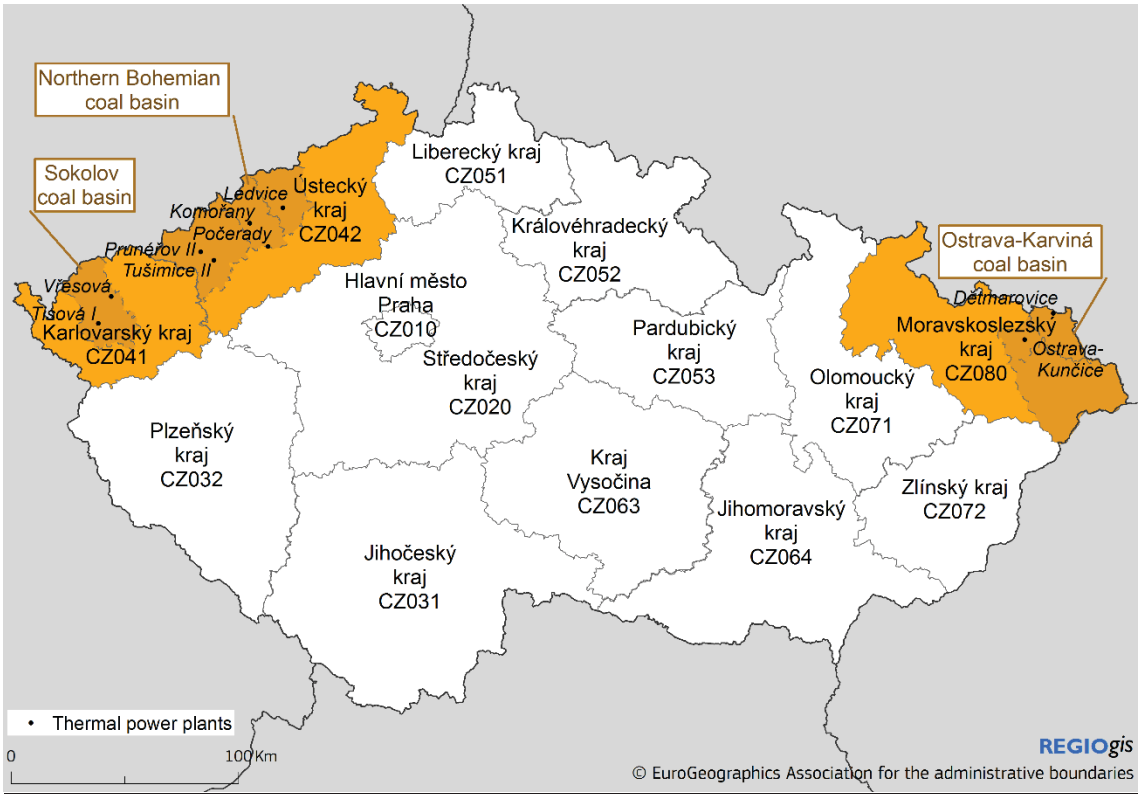
to invest in buildings, in line with the EU's Smart Finance for Smart Building Initiative, could be seen as an opportunity. The indicative milestones of the long-term renovation strategy have not yet been clearly defined. The milestones on the renovation of the national stock of residential and non-residential buildings into a highly energy-efficient and decarbonised building stock by 2050 need further details. Clearly defined milestones would enable Czechia to estimate the wider benefits that energy efficiency renovations can bring. Embedding the 'energy efficiency first principle' into the strategy would allow the country to harness energy savings.

Graph 3.5.4: **Coal regions in Czechia**



Source: European Commission

ANNEX A: OVERVIEW TABLE

	Summary assessment ([1])
2019 country-specific recommendations (CSRs)	
CSR 1: Improve long-term fiscal sustainability of the pension and health-care systems. Adopt pending anti-corruption measures.	Czechia has made **Limited Progress** in addressing CSR 1
Improve long-term fiscal sustainability of the pension and health-care systems.	• **No Progress** The process of a regular review of the statutory retirement age took place in 2019. The report concluded that an increase in expected expenditure on pensions up to 14.5% of GDP in 2059. After social and economic considerations, the government decided not to increase the statutory retirement age. Therefore, the long-term fiscal sustainability of the pension system remains problematic. There was some limited progress regarding the sustainability of the health-care system. A schedule for the reform of primary care was approved by the Ministry of Health in June 2019. The use of Diagnostic Related Groups will be piloted for reimbursement on a limited scale in 2020, with the aim to further increase the scope in 2021.. The system of ePrescriptions was fully implemented in 2019 and there are further developments in for instance eHealth and enhancement of the competences of general practitioners.
Adopt pending anti-corruption measures.	• **Limited Progress** Several pending measures are either not yet adopted by the government, or are not finally approved by the Parliament. These proposals include: extending the role of the Supreme Audit Office to the regions and municipalities, introducing legislation on protection of whistleblowers and on lobbying. The bill on whistleblower protection is currently prepared at ministerial level, with a view to adopt it in 2020. The law on nominations to the state owned companies was adopted by the Parliament in 2019.
CSR 2: Foster the employment of women with young children, including by improving access to affordable childcare, and of disadvantaged groups. Increase the quality and inclusiveness of the education and training systems, including by fostering technical and digital skills and promoting	Czechia has made **Limited Progress** in addressing CSR 2

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the teaching profession.	
Foster the employment of women with young children, including by improving access to affordable childcare, and of disadvantaged groups.	• **Limited Progress** Women aged 25-49 with small children continue to be underrepresented in the labour market. The negative impact of parenthood on female labour market participation continues to be above the EU average. Despite the considerable increase in the number of childcare places created with the support of the European Social Fund, supply still falls short of demand, leaving the participation rate in formal childcare for children under age 3 still significantly below the EU average. Authorities plan to amend the Children´s Groups Act by 2022 in order to harmonise the different rules and make childcare more affordable through increased resources, in particular for children below 3 years for which currently there is no legal entitlement for a place. High demand for labour has led to improvements in the participation of underrepresented groups. Still, Czechia has a higher than average employment rate gap between people with and without disabilities - 29.7 pps vs 24.2 pps in the EU in 2017. There are also significant regional differences. Targeting of active labour market policies to the most vulnerable is still not sufficient, including in the new measures announced (Employment Pack).
Increase the quality and inclusiveness of the education and training systems, including by fostering technical and digital skills and promoting the teaching profession.	• **Some Progress** Positive measures were adopted but still they seem insufficient to bring enough actual progress. Socioeconomic inequality of opportunities for children remains high. The latest PISA results show that the share of 15 year-old students with a low socio-economic background who underperform in reading is 29.7 percentage points greater than for those coming from a high socio-economic background. The reform to promote inclusive education has so far had a limited impact on Roma and the possible impacts of the amendment to the inclusive education reform are uncertain. Substantial progress to improve the educational outcomes of Roma still remains to be observed. Despite recent wage increases, teachers' wages in Czechia are among the lowest across OECD countries and consistently below those of tertiary-educated adults at all

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	levels of education. The teaching profession still has limited capacity to attract the best candidates. The ageing of the teaching workforce is a rising issue in Czechia, in particular at primary level, with raising concerns about potential shortages in the future. Despite some measures taken (for example Action Plan Work 4.0), the level of advanced digital skills is below the EU average. There is scope for further development of teachers' training in ICT skills. The initiatives implemented by Czechia are a step in the right direction towards higher quality vocational education and training, but their impact needs to be closely monitored. Also a comprehensive national skills strategy is still missing. The government has adopted the implementation plans for the Digital Czechia Programme. They include actions to improve digital skills through the support for life-long learning, upskilling employees in SMEs and freelancers, support of courses for job seekers, improving digital literacy of students and teachers or opening education to digital technologies. If properly implemented, these actions have the potential to address the country-specific recommendation in the area of digital skills.
CSR 3: Focus investment-related economic policy on transport, notably on its sustainability , digital infrastructure , and low carbon and energy transition, including energy efficiency , taking into account regional disparities. Reduce the administrative burden on investment and support more quality-based competition in public procurement. Remove the barriers hampering the development of a fully functioning innovation ecosystem.	Czechia has made **Some Progress** in addressing CSR 3
Focus investment-related economic policy on transport, notably on its sustainability	• **Limited Progress** Several large TEN-T railway projects are on-going, including to upgrade the Prague railway junction as well as the lines connecting to the Slovak and to the German borders. These projects experienced some delays and are planned for completion in the next 2 to 3 years. A number of development studies are also ongoing to further reinforce the rail network. Projects are underway in the road sector as well, including regarding the motorway connections to the Austrian and

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	Polish borders. The uptake of zero emission vehicles remains low. In 2019, only 0.5% of newly registered vehicles were battery electric or plug in hybrid vehicles. The deployment of recharging infrastructure follows the slow growth pass of zero emission vehicles. In December 2020, the Czech government approved a National Investment Plan that gives the utmost priority to transport, allocating around three quarters of the total sum. The plan foresees investment in transport infrastructure of CZK 6,000 billion by 2050, of which CZK 3,000 billion by 2030. The National Investment Plan assumes investments of CZK 782 billion in motorway construction, CZK 878 billion in railway modernisation and CZK 769 billion in the construction of high-speed railway lines.
, digital infrastructure	• **Limited Progress** 5G auction has been postponed suggesting that Czechia will likely not be able to reach the objectives of the EU 5G action plan. The national Innovation strategy aims to help companies use more digital technologies, support Industry 4.0 or build super-fast broadband infrastructure as a basis for online services. However, the government has not yet launched concrete initiatives to implement the strategy.
, and low carbon and energy transition, including energy efficiency , taking into account regional disparities.	• **Limited Progress** Czechia has made limited progress regarding the need to improve its legal framework and reduce administrative burden for investing in renewable energies. At around 15%, the share of renewable energy in final consumption is below EU average (18% in 2018) and has been static since 2014. Czechia has one of the highest greenhouse gas emissions per capita in the EU (12.2 tonnes compared to an EU average of 8.5 in 2018) and progress since 2007 has been rather low. The available national sources of funding do not necessarily prioritise investments focusing on sustainability (i.e. that minimise the effects of climate change or environmental destruction) or penalise projects that use solid fossil fuels. Road transport is becoming one of the main consumers of energy in Czechia, but the investments in low-carbon technologies and vehicles remain low. The long-term renovation strategy still lacks details on the steps to renovate and decarbonise buildings, while such details would allow the estimation of benefits

	from energy savings.
Reduce the administrative burden on investment	• **Limited Progress** The 2018 product market regulation (PMR) data confirms administrative burden on start-ups as a problematic area, particularly concerning licenses and permits. The result may also be driven by distortions induced by state involvement in economy and barriers to domestic and foreign entry. Complex, non-harmonised and unpredictable legislation discourage investors and undermine medium and long-term competitiveness. Ineffective enforcement of single market rules increases uncertainty for economic operators, reducing their incentives to undertake additional investments. Tax compliance costs for businesses remains high. The recent legislative amendments to the Act on accelerating the construction of transport, water, energy and electronic communication infrastructure have been appreciated by the business community with respect to simplification and acceleration, but the impact is still to be assessed. Work is currently underway on a new construction law, the aim of which is to reduce the administrative burden and speed up and streamline the permitting processes in all legislation that regulates or affects the construction law in Czechia (around 60 laws). However, the actual implementation is expected only after 2021.
and support more quality-based competition in public procurement.	• **Some Progress** Effort in supporting quality-based competition is noticeable. The Czech authorities put in place a well-structured training system and organised conferences and specialised events to increase the professionalisation level of contracting authorities. The contracting authorities also seem to genuinely focus more on quality criteria.
Remove the barriers hampering the development of a fully functioning innovation ecosystem.	• **Some Progress** The adopted Innovation Strategy of the Czechia aims to remove obstacles for the development of a functioning innovation ecosystem. Under the same axis, automation and artificial intelligence (AI) have become major policy priorities for the Czech government, part of the larger overarching government plan called ‘Czechia - The Country for the Future.’ If well implemented, the set up goals could contribute to the improvement of

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	this ecosystem.
Europe 2020 (national targets and progress)	
Employment rate target set in the NRP: 75%.	80.2% in the first half of 2019
R&D target set in the NRP: 1% of GDP for public R&D expenditures	1.93% of GDP total R&D expenditures in 2018 0.73% of GDP public R&D expenditures in 2018
National greenhouse gas (GHG) emissions target: - Maximum +9% in 2020 compared with 2005 (in sectors not included in the EU emissions trading scheme)	+4% in 2018, according to provisional data
2020 renewable energy target: 13%	+14.8% in 2017
Energy efficiency, 2020 energy consumption targets: Czechia's 2020 energy efficiency target is 39.6 Mtoe expressed in primary energy consumption (25.3 Mtoe expressed in final energy consumption)	40.4 Mtoe primary energy consumption in 2017 25.5 Mtoe final energy consumption in 2017
Early school/training leaving target: 5.5%.	6.2% in 2018
Tertiary education target: 32% of population aged 30-34.	33.7% in 2018
Target for reducing the number of people at risk of poverty or social exclusion, expressed as an absolute number of people: 1,466,000	1,264,200 in 2018

([1]) The following categories are used to assess progress in implementing the country-specific recommendations (CSRs):

No progress: The Member State has not credibly announced nor adopted any measures to address the CSR. This category covers a number of typical situations to be interpreted on a case by case basis taking into account country-specific conditions. They include the following:

- no legal, administrative, or budgetary measures have been announced

- in the national reform programme,
- in any other official communication to the national Parliament/relevant parliamentary committees or the European Commission,
- publicly (e.g. in a press statement or on the government's website);
- no non-legislative acts have been presented by the governing or legislative body;
- the Member State has taken initial steps in addressing the CSR, such as commissioning a study or setting up a study group to analyse possible measures to be taken (unless the CSR explicitly asks for orientations or exploratory actions). However, it has not proposed any clearly-specified measure(s) to address the CSR.

Limited progress: The Member State has:

- announced certain measures but these address the CSR only to a limited extent; and/or
- presented legislative acts in the governing or legislative body but these have not been adopted yet and substantial further, non-legislative work is needed before the CSR is implemented;
- presented non-legislative acts, but has not followed these up with the implementation needed to address the CSR.

Some progress: The Member State has adopted measures

- that partly address the CSR; and/or
- that address the CSR, but a fair amount of work is still needed to fully address the CSR fully as only a few of the measures have been implemented. For instance, a measure or measures have been adopted by the national Parliament or by ministerial decision but no implementing decisions are in place.

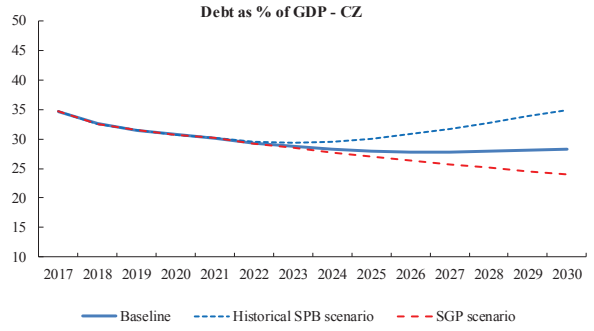
Substantial progress: The Member State has adopted measures that go a long way towards addressing the CSR and most of them have been implemented.

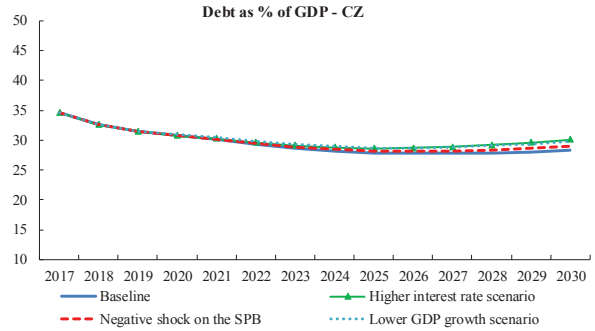
Full implementation: The Member State has implemented all measures needed to address the CSR appropriately.

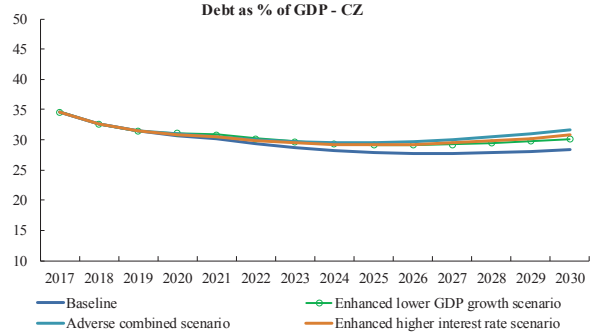
ANNEX B: COMMISSION DEBT SUSTAINABILITY ANALYSIS AND FISCAL RISKS

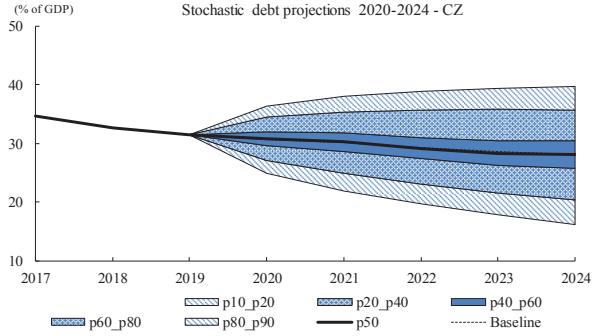
General Government debt projections under baseline, alternative scenarios and sensitivity tests

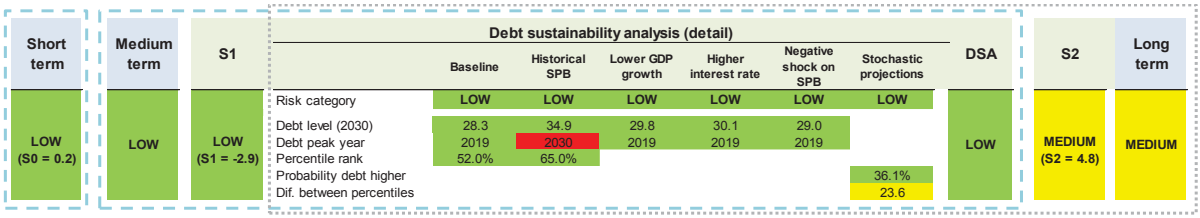
CZ - Debt projections baseline scenario	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Gross debt ratio	**32.6**	**31.5**	**30.7**	**30.1**	**29.3**	**28.7**	**28.2**	**27.9**	**27.8**	**27.8**	**27.9**	**28.0**	**28.3**
Changes in the ratio (-1+2+3)	*-2.1*	*-1.1*	*-0.7*	*-0.6*	*-0.8*	*-0.6*	*-0.5*	*-0.3*	*-0.1*	*0.0*	*0.1*	*0.2*	*0.3*
of which													
(1) Primary balance (1.1+1.2+1.3)	**1.8**	**0.9**	**0.6**	**0.4**	**0.3**	**0.1**	**-0.1**	**-0.2**	**-0.4**	**-0.5**	**-0.6**	**-0.7**	**-0.8**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***1.3***	***0.5***	***0.3***	***0.3***	***0.2***	***0.1***	***-0.1***	***-0.2***	***-0.4***	***-0.5***	***-0.6***	***-0.7***	***-0.8***
(1.1.1) Structural primary balance (bef. CoA)	*1.3*	*0.5*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*
(1.1.2) Cost of ageing					*0.1*	*0.3*	*0.4*	*0.6*	*0.7*	*0.9*	*1.0*	*1.0*	*1.1*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***0.5***	***0.4***	***0.3***	***0.1***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3)	**-1.1**	**-0.9**	**-0.6**	**-0.5**	**-0.5**	**-0.5**	**-0.6**	**-0.5**	**-0.5**	**-0.5**	**-0.5**	**-0.5**	**-0.5**
(2.1) Interest expenditure	*0.8*	*0.7*	*0.7*	*0.7*	*0.7*	*0.6*	*0.6*	*0.6*	*0.6*	*0.5*	*0.5*	*0.5*	*0.5*
(2.2) Growth effect	*-1.0*	*-0.8*	*-0.7*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*
(2.3) Inflation effect	*-0.9*	*-0.8*	*-0.7*	*-0.5*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*
(3) Stock-flow adjustments	**0.8**	**0.7**	**0.5**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**











Note: For further information, see the European Commission Debt Sustainability Monitor (DSM) 2019.

[1] The first table presents the baseline no-fiscal policy change scenario projections. It shows the projected government debt dynamics and its decomposition between the primary balance, snowball effects and stock-flow adjustments. Snowball effects measure the net impact of the counteracting effects of interest rates, inflation, real GDP growth (and exchange rates in some countries). Stock-flow adjustments include differences in cash and accrual accounting, net accumulation of assets, as well as valuation and other residual effects.

[2] The charts present a series of sensitivity tests around the baseline scenario, as well as alternative policy scenarios, in particular: the historical structural primary balance (SPB) scenario (where the SPB is set at its historical average), the Stability and Growth Pact (SGP) scenario (where fiscal policy is assumed to evolve in line with the main provisions of the SGP), a higher interest rate scenario (+1 pp. compared to the baseline), a lower GDP growth scenario (-0.5 pp. compared to the baseline) and a negative shock on the SPB (calibrated on the basis of the forecasted change). An adverse combined scenario and enhanced sensitivity tests (on the interest rate and growth) are also included, as well as stochastic projections. Detailed information on the design of these projections can be found in the FSR 2018 and the DSM 2019.

[3] The second table presents the overall fiscal risk classification over the short, medium and long-term.

a. For the short-term, the risk category (low/high) is based on the S0 indicator. S0 is an early-detection indicator of fiscal stress in the upcoming year, based on 25 fiscal and financial-competitiveness variables that have proven in the past to be leading indicators of fiscal stress. The critical threshold beyond which fiscal distress is signalled is 0.46.

b. For the medium-term, the risk category (low/medium/high) is based on the joint use of the S1 indicator and of the DSA results. The S1 indicator measures the fiscal adjustment required (cumulated over the 5 years following the forecast horizon and sustained thereafter) to bring the debt-to-GDP ratio to 60 % by 2034. The critical values used are 0 and 2.5 pps. of GDP. The DSA classification is based on the results of 5 deterministic scenarios (baseline, historical SPB, higher interest rate, lower GDP growth and negative shock on the SPB scenarios) and the stochastic projections. Different criteria are used such as the projected debt level, the debt path, the realism of fiscal assumptions, the probability of debt stabilisation, and the size of uncertainties.

c. For the long-term, the risk category (low/medium/high) is based on the joint use of the S2 indicator and the DSA results. The S2 indicator measures the upfront and permanent fiscal adjustment required to stabilise the debt-to-GDP ratio over the infinite horizon, including the costs of ageing. The critical values used are 2 and 6 pps. of GDP. The DSA results are used to further qualify the long-term risk classification, in particular in cases when debt vulnerabilities are identified (a medium / high DSA risk category).

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ANNEX C: STANDARD TABLES

Table C.1: **Financial market indicators**

	2014	2015	2016	2017	2018	2019
Total assets of the banking sector (% of GDP)[1]	124.8	122.6	127.1	144.8	137.6	144.0
Share of assets of the five largest banks (% of total assets)	60.9	62.5	63.9	63.7	64.5	-
Foreign ownership of banking system (% of total assets)[2]	91.3	93.1	92.8	91.7	91.4	92.0
Financial soundness indicators:[2]						
- non-performing loans (% of total loans)	-	-	4.0	2.8	2.1	1.8
- capital adequacy ratio (%)	17.0	17.6	17.7	18.1	18.3	18.7
- return on equity (%)[3]	11.4	11.3	11.9	13.0	13.3	15.2
Bank loans to the private sector (year-on-year % change)[1]	4.5	7.1	8.8	7.4	7.2	4.4
Lending for house purchase (year-on-year % change)[1]	5.7	8.2	9.2	9.1	8.6	7.1
Loan-to-deposit ratio[2]	78.9	81.8	84.3	94.9	101.9	102.7
Central bank liquidity as % of liabilities[1]	0.0	0.0	0.0	0.0	0.0	0.0
Private debt (% of GDP)	71.5	68.1	68.7	67.3	70.7	-
Gross external debt (% of GDP)[2] - public	13.3	15.5	16.5	16.4	13.1	14.1
- private	36.9	32.9	31.6	33.1	31.9	31.8
Long-term interest rate spread versus Bund (basis points)*	41.3	7.9	33.8	66.3	158.5	180.0
Credit default swap spreads for sovereign securities (5-year)*	47.2	44.9	38.7	37.0	34.7	38.0

(1) Latest data Q3 2019. Includes not only banks but all monetary financial institutions excluding central banks.
(2) Latest data Q2 2019.
(3) Quarterly values are annualized.
* Measured in basis points.
Source: European Commission (long-term interest rates); World Bank (gross external debt); Eurostat (private debt); ECB (all other indicators).

Table C.2: **Headline Social Scoreboard indicators**

	2014	2015	2016	2017	2018	2019 (5)
Equal opportunities and access to the labour market						
Early leavers from education and training (% of population aged 18-24)	5.5	6.2	6.6	6.7	6.2	:
Gender employment gap (pps)	17.5	16.6	16.0	15.8	15.2	15.0
Income inequality, measured as quintile share ratio (S80/S20)	3.5	3.5	3.5	3.4	3.3	:
At-risk-of-poverty or social exclusion rate(1) (AROPE)	14.8	14.0	13.3	12.2	12.2	:
Young people neither in employment nor in education and training (% of population aged 15-24)	8.1	7.5	7.0	6.3	5.6	:
Dynamic labour markets and fair working conditions						
Employment rate (20-64 years)	73.5	74.8	76.7	78.5	79.9	80.2
Unemployment rate(2) (15-74 years)	6.1	5.1	4.0	2.9	2.2	2.0
Long-term unemployment rate (as % of active population)	2.7	2.4	1.7	1.0	0.7	0.7
Gross disposable income of households in real terms per capita(3) (Index 2008=100)	100.9	104.9	108.2	109.9	114.9	:
Annual net earnings of a full-time single worker without children earning an average wage (levels in PPS, three-year average)	13,496	13,809	14,111	:	:	:
Annual net earnings of a full-time single worker without children earning an average wage (percentage change, real terms, three-year average)	-0.09	0.95	2.23	:	:	:
Public support / Social protection and inclusion						
Impact of social transfers (excluding pensions) on poverty reduction(4)	43.6	42.3	40.5	42.4	38.5	:
Children aged less than 3 years in formal childcare	4.4	2.9	4.7	6.5	9.0	:
Self-reported unmet need for medical care	1.1	0.8	0.7	0.5	0.3	:
Individuals who have basic or above basic overall digital skills (% of population aged 16-74)	:	57.0	54.0	60.0	:	:

(1) People at risk of poverty or social exclusion (AROPE): individuals who are at risk of poverty (AROP) and/or suffering from severe material deprivation and/or living in households with zero or very low work intensity.
(2) Unemployed persons are all those who were not employed but had actively sought work and were ready to begin working immediately or within two weeks.
(3) Gross disposable household income is defined in unadjusted terms, according to the draft 2019 joint employment report.
(4) Reduction in percentage of the risk of poverty rate, due to social transfers (calculated comparing at-risk-of poverty rates before social transfers with those after transfers; pensions are not considered as social transfers in the calculation).
(5) Average of first three quarters of 2019 for the employment rate, long-term unemployment rate and gender employment gap.
Source: Eurostat

Table C.3: **Labour market and education indicators**

Labour market indicators	2014	2015	2016	2017	2018	2019 (4)
Activity rate (15-64)	73.5	74.0	75.0	75.9	76.6	76.7
Employment in current job by duration						
From 0 to 11 months	9.7	10.0	10.1	10.5	9.9	:
From 12 to 23 months	7.0	7.5	8.5	8.1	8.6	:
From 24 to 59 months	16.1	15.1	15.4	16.7	18.2	:
60 months or over	67.1	67.3	65.9	64.5	63.2	:
Employment growth* (% change from previous year)	0.6	1.4	1.6	1.6	1.3	0.9
Employment rate of women (% of female population aged 20-64)	64.7	66.4	68.6	70.5	72.2	72.6
Employment rate of men (% of male population aged 20-64)	82.2	83.0	84.6	86.3	87.4	87.6
Employment rate of older workers* (% of population aged 55-64)	54.0	55.5	58.5	62.1	65.1	66.5
Part-time employment* (% of total employment, aged 15-64)	5.5	5.3	5.7	6.2	6.3	6.4
Fixed-term employment* (% of employees with a fixed term contract, aged 15-64)	9.7	10.0	9.7	9.6	8.4	7.8
Transition rate from temporary to permanent employment (3-year average)	33.5	35.1	36.5	39.6	42.9	:
Youth unemployment rate (% active population aged 15-24)	15.9	12.6	10.5	7.9	6.7	6.0
Gender gap in part-time employment	7.0	7.1	7.6	8.5	8.2	7.8
Gender pay gap(1) (in undadjusted form)	22.5	22.5	21.5	21.1	:	:
Education and training indicators	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Adult participation in learning (% of people aged 25-64 participating in education and training)	9.6	8.5	8.8	9.8	8.5	:
Underachievement in education(2)	:	21.7	:	:	20.4	:
Tertiary educational attainment (% of population aged 30-34 having successfully completed tertiary education)	28.2	30.1	32.8	34.2	33.7	:
Variation in performance explained by students' socio-economic status(3)	:	:	:	:	16.5	:

* Non-scoreboard indicator.
(1) Difference between the average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees. It is defined as "unadjusted", as it does not correct for the distribution of individual characteristics (and thus gives an overall picture of gender inequalities in terms of pay). All employees working in firms with ten or more employees, without restrictions for age and hours worked, are included.
(2) PISA (OECD) results for low achievement in mathematics for 15 year-olds.
(3) Impact of socio-economic status on PISA (OECD) scores. Value for 2018 refers to reading.
(4) Average of first three quarters of 2019. Data for youth unemployment rate is seasonally adjusted.

Source: Eurostat, OECD

Table C.4: **Social inclusion and health indicators**

	2013	2014	2015	2016	2017	2018
Expenditure on social protection benefits* (% of GDP)						
Sickness/healthcare	6.0	6.0	5.8	5.9	5.9	:
Disability	1.3	1.3	1.2	1.2	1.1	:
Old age and survivors	9.3	9.0	8.7	8.6	8.5	:
Family/children	1.8	1.7	1.6	1.6	1.6	:
Unemployment	0.7	0.6	0.5	0.5	0.5	:
Housing	0.3	0.3	0.3	0.3	0.2	:
Social exclusion n.e.c.	0.3	0.3	0.3	0.3	0.2	:
Total	19.6	19.1	18.4	18.3	18.0	:
of which: means-tested benefits	0.5	0.5	0.5	0.5	0.4	:
General government expenditure by function (% of GDP)						
Social protection	13.5	13.1	12.5	12.3	12.0	:
Health	7.6	7.6	7.6	7.4	7.5	:
Education	5.1	5.1	4.9	4.5	4.6	:
Out-of-pocket expenditure on healthcare	13.6	14.1	14.8	15.0	14.8	:
Children at risk of poverty or social exclusion (% of people aged 0-17)*	16.4	19.5	18.5	17.4	14.2	13.2
At-risk-of-poverty rate[1] (% of total population)	8.6	9.7	9.7	9.7	9.1	9.6
In-work at-risk-of-poverty rate (% of persons employed)	4.0	3.6	4.0	3.8	3.5	3.4
Severe material deprivation rate[2] (% of total population)	6.6	6.7	5.6	4.8	3.7	2.8
Severe housing deprivation rate[3], by tenure status						
Owner, with mortgage or loan	3.3	2.2	1.7	2.3	2.1	2.3
Tenant, rent at market price	10.6	8.9	8.8	9.2	7.0	7.3
Proportion of people living in low work intensity households[4] (% of people aged 0-59)	6.9	7.6	6.8	6.7	5.5	4.5
Poverty thresholds, expressed in national currency at constant prices*	98,561	99,553	102,238	106,735	110,989	115,847
Healthy life years						
Females	8.9	9.3	8.6	8.9	8.5	:
Males	8.5	8.5	8.0	8.4	7.6	:
Aggregate replacement ratio for pensions[5]	0.6	0.6	0.5	0.5	0.5	0.5
Connectivity dimension of the Digital Economy and Society Index (DESI)[6]	:	44.8	56.3	61.4	62.3	:
GINI coefficient before taxes and transfers*	46.0	46.9	46.2	46.1	44.7	:
GINI coefficient after taxes and transfers*	24.6	25.1	25.0	25.1	24.5	:

* Non-scoreboard indicator.
(1) At-risk-of-poverty rate (AROP): proportion of people with an equivalised disposable income below 60 % of the national equivalised median income.
(2) Proportion of people who experience at least four of the following forms of deprivation: not being able to afford to i) pay their rent or utility bills, ii) keep their home adequately warm, iii) face unexpected expenses, iv) eat meat, fish or a protein equivalent every second day, v) enjoy a week of holiday away from home once a year, vi) have a car, vii) have a washing machine, viii) have a colour TV, or ix) have a telephone.
(3) Percentage of total population living in overcrowded dwellings and exhibiting housing deprivation.
(4) People living in households with very low work intensity: proportion of people aged 0-59 living in households where the adults (excluding dependent children) worked less than 20 % of their total work-time potential in the previous 12 months.
(5) Ratio of the median individual gross pensions of people aged 65-74 relative to the median individual gross earnings of people aged 50-59.
(6) Fixed broadband take up (33%), mobile broadband take up (22%), speed (33%) and affordability (11%), from the Digital Scoreboard.
Source: Eurostat, OECD

Table C.5: **Product market performance and policy indicators**

Performance indicators	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Labour productivity per person[1] growth (t/t-1) in %						
Labour productivity growth in industry	-4.32	3.69	0.89	-0.43	7.72	0.00
Labour productivity growth in construction	3.73	6.84	4.40	-2.04	-2.66	3.26
Labour productivity growth in market services	1.15	2.42	5.42	1.98	1.98	2.83
Unit labour cost (ULC) index[2] growth (t/t-1) in %						
ULC growth in industry	5.39	-0.64	1.94	4.48	-0.64	7.00
ULC growth in construction	-8.31	-4.32	-0.26	5.62	6.84	4.62
ULC growth in market services	-1.32	0.11	-1.74	2.57	4.62	4.25
Business environment	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Time needed to enforce contracts[3] (days)	678	678	678	678	678	678
Time needed to start a business[3] (days)	30.5	30.5	30.5	24.5	24.5	24.5
Outcome of applications by SMEs for bank loans[4]	0.73	0.33	0.43	0.19	0.13	0.29
Research and innovation	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
R&D intensity	1.90	1.97	1.93	1.68	1.79	1.93
General government expenditure on education as % of GDP	5.10	5.10	4.90	4.50	4.60	:
Employed people with tertiary education and/or people employed in science & technology as % of total employment	37	38	37	38	39	39
Population having completed tertiary education[5]	18	19	20	21	21	22
Young people with upper secondary education[6]	91	91	90	90	89	90
Trade balance of high technology products as % of GDP	0.40	0.26	-0.91	-0.03	-0.44	-0.44
Product and service markets and competition	**2003**	**2008**	**2013**			**2018***
OECD product market regulation (PMR)[7], overall	1.88	1.50	1.39			1.30
OECD PMR[7], retail	1.03	1.23	1.56			1.24
OECD PMR[7], professional services[8]	2.77	2.48	2.36			2.42
OECD PMR[7], network industries[9]	2.96	2.45	2.01			1.23

*While the indicator values from 2003 to 2013 are comparable, the methodology has considerably changed in 2018. As a result, past vintages cannot be compared with the 2018 PMR indicators.
(1) Value added in constant prices divided by the number of persons employed.
(2) Compensation of employees in current prices divided by value added in constant prices.
(3) The methodologies, including the assumptions, for this indicator are shown in detail here: http://www.doingbusiness.org/methodology.
(4) Average of the answer to question Q7B_a. "[Bank loan]: If you applied and tried to negotiate for this type of financing over the past six months, what was the outcome?". Answers were codified as follows: zero if received everything, one if received 75% and above, two if received below 75%, three if refused or rejected and treated as missing values if the application is still pending or don't know.
(5) Percentage population aged 15-64 having completed tertiary education.
(6) Percentage population aged 20-24 having attained at least upper secondary education.
(7) Index: 0 = not regulated; 6 = most regulated. The methodologies of the OECD product market regulation indicators are shown in detail here: http://www.oecd.org/competition/reform/indicatorsofproductmarketregulationhomepage.htm Please be aware that the indicator values from 2003 to 2013 are comparable, however the methodology has considerably changed in 2018 and therefore past vintages cannot be compared with the 2018 PMR indicators.
(8) Simple average of the indicators of regulation for lawyers, accountants, architects and engineers.
(9) Aggregate OECD indicators of regulation in energy, transport and communications (ETCR).
Source: European Commission; World Bank — Doing Business (for enforcing contracts and time to start a business); OECD (for the product market regulation indicators); SAFE (for outcome of SMEs' applications for bank loans).

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Table C.6: **Green growth**

Green growth performance		2013	2014	2015	2016	2017	2018
Macroeconomic							
Energy intensity	kgoe / €	0.28	0.26	0.25	0.24	0.24	0.23
Carbon intensity	kg / €	0.82	0.78	0.75	0.74	0.71	-
Resource intensity (reciprocal of resource productivity)	kg / €	0.99	0.99	0.98	0.95	0.91	0.92
Waste intensity	kg / €	-	0.14	-	0.15	-	-
Energy balance of trade	% GDP	-4.8	-4.0	-2.4	-2.1	-2.6	-2.9
Weighting of energy in HICP	%	14.06	14.36	14.42	13.71	13.09	12.78
Difference between energy price change and inflation	p.p.	-0.1	-5.7	0.8	-1.1	-3.1	0.0
Real unit of energy cost	% of value added	21.3	19.8	19.9	20.1	-	-
Ratio of environmental taxes to labour taxes	ratio	0.12	0.12	0.12	0.12	0.12	-
Environmental taxes	% GDP	2.1	2.1	2.1	2.1	2.1	2.2
Sectoral							
Industry energy intensity	kgoe / €	0.13	0.12	0.12	0.11	0.11	0.11
Real unit energy cost for manufacturing industry excl. refining	% of value added	17.7	16.1	16.0	16.0	-	-
Share of energy-intensive industries in the economy	% GDP	12.55	12.86	12.74	12.30	12.42	11.77
Electricity prices for medium-sized industrial users	€ / kWh	0.10	0.08	0.08	0.07	0.07	0.07
Gas prices for medium-sized industrial users	€ / kWh	0.03	0.03	0.03	0.03	0.02	0.03
Public R&D for energy	% GDP	0.02	0.03	0.03	0.03	0.03	0.03
Public R&D for environmental protection	% GDP	0.01	0.01	0.01	0.01	0.01	0.02
Municipal waste recycling rate	%	24.2	25.4	29.7	33.6	34.1	34.5
Share of GHG emissions covered by ETS*	%	52.4	53.6	52.1	51.8	51.8	51.1
Transport energy intensity	kgoe / €	0.77	0.83	0.84	0.85	0.83	0.78
Transport carbon intensity	kg / €	0.87	0.94	0.95	1.02	0.99	1.02
Security of energy supply							
Energy import dependency	%	27.4	30.1	31.9	32.6	37.2	-
Aggregated supplier concentration index	HHI	33.5	27.2	30.4	32.6	33.4	-
Diversification of energy mix	HHI	26.3	25.6	25.5	25.7	24.7	24.6

All macro intensity indicators are expressed as a ratio of a physical quantity to GDP (in 2010 prices)
Energy intensity: gross inland energy consumption (in kgoe) divided by GDP (in EUR)
Carbon intensity: greenhouse gas emissions (in kg CO2 equivalents) divided by GDP (in EUR)
Resource intensity: domestic material consumption (in kg) divided by GDP (in EUR)
Waste intensity: waste (in kg) divided by GDP (in EUR)
Energy balance of trade: the balance of energy exports and imports, expressed as % of GDP.
Weighting of energy in HICP: the proportion of 'energy' items in the consumption basket used for the construction of the HICP.
Difference between energy price change and inflation: energy component of HICP, and total HICP inflation (annual % change).
Real unit energy cost: real energy costs as % of total value added for the economy.
Industry energy intensity: final energy consumption of industry (in kgoe) divided by gross value added of industry (in 2010 EUR).
Real unit energy costs for manufacturing industry excluding refining: real costs as % of value added for manufacturing sectors.
Share of energy-intensive industries in the economy: share of gross value added of the energy-intensive industries in GDP.
Electricity and gas prices for medium-sized industrial users: consumption band 500–20 00MWh and 10 000 -100 000 GJ; figures excl. VAT.
Recycling rate of municipal waste: ratio of recycled and composted municipal waste to total municipal waste.
Public R&D for energy or for the environment: government spending on R&D for these categories as % of GDP.
Proportion of GHG emissions covered by EU emissions trading system (ETS) (excluding aviation): based on GHG emissions. (excl. land use, land use change and forestry) as reported by Member States to the European Environment Agency.
Transport energy intensity: final energy consumption of transport activity including international aviation (kgoe) divided by gross value added in transportation and storage sector (in 2010 EUR).
Transport carbon intensity: GHG emissions in transportation and storage sector divided by gross value added in transportation and storage sector (in 2010 EUR).
Energy import dependency: net energy imports divided by gross inland energy consumption incl. consumption of international bunker fuels.
Aggregated supplier concentration index: Herfindahl index covering oil, gas and coal. Smaller values indicate larger diversification and hence lower risk.
Diversification of the energy mix: Herfindahl index covering natural gas, total petrol products, nuclear heat, renewable energies and solid fuels. Smaller values indicate larger diversification.
* European Commission and European Environment Agency - 2018 provisional data.
Source: European Commission and European Environment Agency (Share of GHG emissions covered by ETS); European Commission (Environmental taxes over labour taxes and GDP); Eurostat (all other indicators).

ANNEX D: INVESTMENT GUIDANCE ON JUST TRANSITION FUND 2021-2027 FOR CZECHIA

Building on the Commission proposal, this Annex ([23]) presents the preliminary Commission services' views on priority investment areas and framework conditions for effective delivery for the 2021-2027 Just Transition Fund investments in Czechia. These priority investment areas are derived from the broader analysis of territories facing serious socio-economic challenges deriving from the transition process towards a climate-neutral economy of the Union by 2050 in Czechia, assessed in the report. This Annex provides the basis for a dialogue between Czechia and the Commission services as well as the relevant guidance for the Member States in preparing their territorial just transition plans, which will form the basis for programming the Just Transition Fund. The Just Transition Fund investments complement those under Cohesion Policy funding for which guidance in the form of Annex D was given in the 2019 Country Report for Czechia ([24]).

The coal mining regions of Czechia include Moravskoslezský and Severozápad (the latter includes Karlovarský and Ústecký). Around 18,000 people work directly in coal mining activities. The transition process is expected to affect local communities dependent on the coal mining and coal-fired energy sector, which employ over 21,000 people and account for over 19,000 indirect jobs in the country (there are over 10,000 indirect jobs in coal-related activities in Severozápad, around 4,000 in Moravskoslezský and over 5,000 in other Czech regions). The impact of the transition could be deepened by the fact that these are already among the country's poorest regions.

The Moravskoslezský region is the biggest hard coal mining region in Czechia (28% of total land area is part of the Ostrava-Karviná coal basin). It has three active mines and is responsible for over 10,000 direct jobs in the coal sector.

In the Ústecký region where 80% of Czechia's lignite is extracted (Northern Bohemia coal basin), there are over 5,000 coal-related jobs, four coal mines, the largest Czech coal fired power plants (Prunéřov, Tušimice, Ledvice and Počerady) and a high concentration of chemical industry firms.

In the Karlovarský region (with two lignite mines and the lowest GDP per inhabitant in Czechia), the mining company located in the district of Sokolov (which records the highest number of socially excluded areas in Czechia) is the largest employer with around 3,000 jobs. A further over 1,000 jobs are related to power generation activities and related industry.

Based on this preliminary assessment, it appears warranted that the Just Transition Fund concentrates its intervention on these regions. The Moravskoslezský, Ústecký and Karlovarský regions are expected to experience substantial job losses, which realistically might not be entirely offset by the creation and development of SMEs. Exceptionally, and where necessary for the implementation of the territorial just transition plan, support to productive investments in large enterprises could therefore be considered.

The social challenges posed by an effective and just transition will require a diversification of the regional economies, creating new business opportunities and upskilling and reskilling of workers, as well as strengthened support for renewable energy, energy efficiency and the rehabilitation of contaminated sites.

To tackle these transition challenges, high priority investment needs have therefore been identified. The smart specialisation strategies provide an important framework to set priorities for innovation in support of economic transformation. Key actions of the Just Transition Fund could target in particular:

- Investments in the deployment of technology and infrastructures for affordable clean energy, in greenhouse gas emission reduction, energy efficiency and renewable energy;
- Investments in the creation of new firms, including through business incubators and consulting services;

([23]) This Annex is to be considered in conjunction with the EC proposal for a Regulation of the European Parliament and of the Council on the Just Transition Fund 2021-2027 (COM(2020)22 and the EC proposal for a Regulation of the European Parliament and of the Council laying down common provisions on the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund, and the European Maritime and Fisheries Fund and financial rules for those and for the Asylum and Migration Fund, the Internal Security Fund and the Border Management and Visa Instrument (COM(2020)23)

([24]) SWD(2019) 1002 final

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- productive investments in SMEs, including start-ups, leading to economic diversification and reconversion;
- Upskilling and reskilling of workers;
- Investments in regeneration and decontamination of sites, land restoration and repurposing projects.

To further support smart regional and local development, priority investment needs have therefore also been identified. Related actions of the Just Transition Fund could target in particular:

- Investments in research and innovation activities and fostering the transfer of advanced technologies;
- Investments in digitalisation and digital connectivity;
- Technical assistance.

Investment needs have further been identified for alleviating the environmental and socio-economic costs of the transition. Related actions of the Just Transition Fund could target in particular:

- Investments in enhancing the circular economy, including through waste prevention, reduction, resource efficiency, reuse, repair and recycling;
- Job-search assistance to jobseekers;
- Active inclusion of jobseekers.

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ANNEX E: PROGRESS TOWARDS THE SUSTAINABLE DEVELOPMENT GOALS (SDGS)

Assessment of Czechia's short-term progress towards the SDGs ([25])

Table E.1 shows the data for Czechia and the EU-28 for the indicators included in the EU SDG indicator set used by Eurostat for monitoring progress towards the SDGs in an EU context ([26]). As the short-term trend at EU-level is assessed over a 5-year period, both the value at the beginning of the period and the latest available value is presented. The indicators are regularly updated on the SDI dedicated section of the Eurostat website.

Table E.1: **Indicators measuring Czechia's progress towards the SDGs**

SDG / Sub-theme	Indicator	Unit	Czechia				EU-28			
			Starting		Latest		Starting		Latest	
			year	value	year	value	year	value	year	value
SDG 1 – No poverty										
Multidimensional poverty	People at risk of poverty or social exclusion	% of population	2013	14.6	2018	12.2	2013	24.6	2018	21.9
	People at risk of income poverty after social transfers	% of population	2013	8.6	2018	9.6	2013	16.7	2018	17.1
	Severely materially deprived people	% of population	2013	6.6	2018	2.8	2013	9.6	2018	5.8
	People living in households with very low work intensity	% of population aged 0 to 59	2013	6.9	2018	4.5	2013	11.0	2018	8.8
	In-work at-risk-of-poverty rate	% of population aged 18 or over	2013	4.0	2018	3.4	2013	9.0	2018	9.5
Basic needs	Population living in a dwelling with a leaking roof, damp walls, floors or foundation or rot in window frames or floor	% of population	2013	10.0	2018	7.7	2013	15.6	2018	13.9
	Self-reported unmet need for medical care	% of population aged 16 or over	2013	1.0	2018	0.3	2013	3.7	2018	2.0
	Population having neither a bath, nor a shower, nor indoor flushing toilet in their household	% of population	2013	0.4	2018	0.3	2013	2.2	2018	1.7
	Population unable to keep home adequately warm	% of population	2013	6.2	2018	2.7	2013	10.7	2018	7.3
	Overcrowding rate	% of population	2013	21.0	2018	15.7	2013	17.0	2018	15.5
SDG 2 – Zero hunger										
Malnutrition	Obesity rate	% of population aged 18 or over	2014	19.3	2017	20.5	2014	15.9	2017	15.2
Sustainable agricultural production	Agricultural factor income per annual work unit (AWU)	EUR, chain linked volumes (2010)	2012	17 325	2017	19 840	2012	14 865	2017	17 304
	Government support to agricultural research and development	million EUR	2014	40.7	2019	55.4	2013	3 048.6	2018	3 242.5
	Area under organic farming	% of utilised agricultural area	2013	13.5	2018	14.8	2013	5.7	2018	7.5
	Gross nitrogen balance on agricultural land	kg per hectare	2012	88	2017	101	2010	49	2015	51
Environmental impacts of agricultural production	Ammonia emissions from agriculture	kg per ha of utilised agricultural area	2012	17.9	2017	17.2	2011	19.7	2016	20.3
	Nitrate in groundwater	mg NO_3 per litre	2012	19.1	2017	17.7	2012	19.2	2017	19.1
	Estimated soil erosion by water	km^2	2010	976.1	2016	955.5	2010	207 232.2	2016	205 294.5
	Common farmland bird index	index 2000 = 100	N/A	:	N/A	:	2013	83.9	2018	80.7
SDG 3 – Good health and well-being										
Healthy lives	Life expectancy at birth	years	2012	78.1	2017	79.1	2012	80.3	2017	80.9
	Share of people with good or very good perceived health	% of population aged 16 or over	2013	59.7	2018	62.1	2013	67.3	2018	69.2
Health determinants	Smoking prevalence	% of population aged 15 or over	2012	29	2017	29	2014	26	2017	26
	Obesity rate	% of population aged 18 or over	2014	19.3	2017	20.5	2014	15.9	2017	15.2
	Population living in households considering that they suffer from noise	% of population	2013	14.9	2018	14.6	2013	18.8	2018	18.3
	Exposure to air pollution by particulate matter ($PM_{2.5}$)	$\mu g/m^3$	2012	19.2	2017	18.4	2012	16.8	2017	14.1
Causes of death	Death rate due to chronic diseases	number per 100 000 persons aged less than 65	2011	162.9	2016	135.0	2011	132.5	2016	119.0
	Death rate due to tuberculosis, HIV and hepatitis	number per 100 000 persons	2011	2.1	2016	0.9	2011	3.4	2016	2.6
	People killed in accidents at work	number per 100 000 employed persons	2012	2.40	2017	1.82	2012	1.91	2017	1.65
	People killed in road accidents	number of killed people	2012	742	2017	577	2012	28 231	2017	25 257
Access to health care	Self-reported unmet need for medical care	% of population aged 16 or over	2013	1.0	2018	0.3	2013	3.7	2018	2.0

(Continued on the next page)

([25]) Data extracted on 9 February 2020 from the Eurostat database (official EU SDG indicator set; see https://ec.europa.eu/eurostat/web/sdi/main-tables).

([26]) The EU SDG indicator set is aligned as far as appropriate with the UN list of global indicators, noting that the UN indicators are selected for global level reporting and are therefore not always relevant in an EU context. The EU SDG indicators have strong links with EU policy initiatives.

Table (continued)

SDG / Sub-theme	Indicator	Unit	Czechia				EU-28			
			Starting		Latest		Starting		Latest	
			year	value	year	value	year	value	year	value
SDG 4 – Quality education										
Basic education	Early leavers from education and training	% of the population aged 18 to 24	2013	5.4	2018	6.2	2013	11.9	2018	10.6
	Participation in early childhood education	% of the age group between 4-years-old and the starting age of compulsory education	2012	86.1	2017	92.0	2012	94.0	2017	95.4
	Underachievement in reading	% of 15-year-old students	2015	22.0	2018	20.7	2015	19.7	2018	21.7
	Young people neither in employment nor in education and training	% of population aged 15 to 29	2013	12.8	2018	9.5	2013	15.9	2018	12.9
Tertiary education	Tertiary educational attainment	% of the population aged 30 to 34	2013	26.7	2018	33.7	2013	37.1	2018	40.7
	Employment rate of recent graduates	% of population aged 20 to 34	2013	80.4	2018	89.6	2013	75.4	2018	81.7
Adult education	Adult participation in learning	% of population aged 25 to 64	2013	10.0	2018	8.5	2013	10.7	2018	11.1
SDG 5 – Gender equality										
Gender-based violence	Physical and sexual violence to women experienced within 12 months prior to the interview	% of women	N/A	:	2012	8	N/A	:	2012	8
Education	Gender gap for early leavers from education and training	percentage points, persons aged 18–24	2013	0.1	2018	0.3	2013	3.4	2018	3.3
	Gender gap for tertiary educational attainment	percentage points, persons aged 30–34	2013	5.6	2018	13.3	2013	8.5	2018	10.1
	Gender gap for employment rate of recent graduates	percentage points, persons aged 20–34	2013	14.4	2018	12.6	2013	4.4	2018	3.4
Employment	Gender pay gap in unadjusted form	% of average gross hourly earnings of men	2012	22.5	2017	21.1	2012	17.4	2017	16.0
	Gender employment gap	percentage points, persons aged 20–64	2013	17.2	2018	15.2	2013	11.7	2018	11.6
	Gender gap in inactive population due to caring responsibilities	percentage points, persons aged 20–64	2013	31.2	2018	37.0	2013	25.5	2018	27.1
Leadership positions	Seats held by women in national parliaments and governments	% of seats	2014	19.2	2019	20.6	2014	27.2	2019	31.5
	Positions held by women in senior management	% of board members	2014	3.5	2019	18.5	2014	20.2	2019	27.8
SDG 6 – Clean water and sanitation										
Sanitation	Population having neither a bath, nor a shower, nor indoor flushing toilet in their household	% of population	2013	0.4	2018	0.3	2013	2.2	2018	1.7
	Population connected to at least secondary wastewater treatment	% of population	2012	78.0	2017	82.3	N/A	:	N/A	:
Water quality	Biochemical oxygen demand in rivers	mg O_2 per litre	2012	2.79	2017	2.71	2012	2.06	2017	2.00
	Nitrate in groundwater	mg NO_3 per litre	2012	19.1	2017	17.7	2012	19.2	2017	19.1
	Phosphate in rivers	mg PO_4 per litre	2012	0.131	2017	0.131	2012	0.096	2017	0.093
	Inland water bathing sites with excellent water quality	% of bathing sites with excellent water quality	2013	76.4	2018	81.7	2013	76.5	2018	80.8
Water use efficiency	Water exploitation index	% of long term average available water (LTAA)	2012	11.5	2017	10.2	N/A	:	N/A	:
SDG 7 – Affordable and clean energy										
Energy consumption	Primary energy consumption	million tonnes of oil equivalent (Mtoe)	2013	40.9	2018	40.4	2013	1 577.4	2018	1 551.9
	Final energy consumption	million tonnes of oil equivalent (Mtoe)	2013	24.2	2018	25.3	2013	1 115.5	2018	1 124.1
	Final energy consumption in households per capita	kgoe	2013	691	2018	663	2013	605	2018	552
	Energy productivity	EUR per kgoe	2013	3.6	2018	4.3	2013	7.6	2018	8.5
	Greenhouse gas emissions intensity of energy consumption	index 2000 = 100	2012	82.4	2017	76.9	2012	91.5	2017	86.5
Energy supply	Share of renewable energy in gross final energy consumption	%	2013	13.9	2018	15.2	2013	15.4	2018	18.0
	Energy import dependency	% of imports in gross available energy	2013	27.4	2018	36.8	2013	53.2	2018	55.7
Access to affordable energy	Population unable to keep home adequately warm	% of population	2013	6.2	2018	2.7	2013	10.7	2018	7.3

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Table (continued)

SDG / Sub-theme	Indicator	Unit	Czechia				EU-28			
			Starting		Latest		Starting		Latest	
			year	value	year	value	year	value	year	value
SDG 8 – Decent work and economic growth										
Sustainable economic growth	Real GDP per capita	EUR per capita, chain-linked volumes (2010)	2013	14 980	2018	17 620	2013	25 750	2018	28 280
	Investment share of GDP	% of GDP	2013	25.1	2018	25.6	2013	19.5	2018	20.9
	Resource productivity	EUR per kg, chain-linked volumes (2010)	2013	1.02	2018	1.09	2013	1.98	2018	2.04
Employment	Young people neither in employment nor in education and training	% of population aged 15 to 29	2013	12.8	2018	9.5	2013	15.9	2018	12.9
	Employment rate	% of population aged 20 to 64	2013	72.5	2018	79.9	2013	68.4	2018	73.2
	Long-term unemployment rate	% of active population	2013	3.0	2018	0.7	2013	5.1	2018	2.9
	Gender gap in inactive population due to caring responsibilities	percentage points, persons aged 20–64	2013	31.2	2018	37.0	2013	25.5	2018	27.1
Decent work	People killed in accidents at work	number per 100 000 employed persons	2012	2.40	2017	1.82	2012	1.91	2017	1.65
	In-work at-risk-of-poverty rate	% of population	2013	4	2018	3.4	2013	9	2018	9.5
SDG 9 – Industry, innovation and infrastructure										
R&D and innovation	Gross domestic expenditure on R&D	% of GDP	2013	1.90	2018	1.93	2013	2.01	2018	2.12
	Employment in high- and medium-high technology manufacturing and knowledge-intensive services	% of total employment	2013	43.1	2018	44.6	2013	45.0	2018	46.1
	R&D personnel	% of active population	2013	1.19	2018	1.42	2013	1.15	2018	1.36
	Patent applications to the European Patent Office (EPO)	number	2012	232	2017	357	2012	56 772	2017	54 649
Sustainable transport	Share of buses and trains in total passenger transport	% of total inland passenger-km	2012	26.0	2017	26.7	2012	17.2	2017	16.7
	Share of rail and inland waterways in total freight transport	% of total inland freight tonne-km	2012	30.6	2017	26.9	2012	25.4	2017	23.3
	Average CO2 emissions per km from new passenger cars	g CO_2 per km	2013	134.6	2018	125.6	2014	123.4	2018	120.4
SDG 10 – Reduced inequalities										
Inequalities within countries	Relative median at-risk-of-poverty gap	% distance to poverty threshold	2013	16.6	2018	15.0	2013	23.8	2018	24.6
	Income distribution	income quintile share ratio	2013	3.4	2018	3.3	2013	5.0	2018	5.2
	Income share of the bottom 40 % of the population	% of income	2013	25.1	2018	25.1	2013	21.1	2018	21.0
	People at risk of income poverty after social transfers	% of population	2013	8.6	2018	9.6	2013	16.7	2018	17.1
Inequalities between countries	Purchasing power adjusted GDP per capita	Real expenditure per capita (in PPS)	2013	22 400	2018	28 000	2013	26 800	2018	31 000
	Adjusted gross disposable income of households per capita	Purchasing power standard (PPS) per inhabitant	2013	15 465	2018	18 857	2013	20 392	2018	22 824
	Financing to developing countries	million EUR, current prices	2012	171	2017	109	2012	147 962	2017	155 224
	Imports from developing countries	million EUR, current prices	2013	12 005	2018	21 336	2013	817 475	2018	1 013 981
Migration and social inclusion	Asylum applications	Positive first instance decisions, per million inhabitants	2013	33	2018	15	2013	213	2018	424
SDG 11 – Sustainable cities and communities										
Quality of life in cities and communities	Overcrowding rate	% of population	2013	21.0	2018	15.7	2013	17.0	2018	15.5
	Population living in households considering that they suffer from noise	% of population	2013	14.9	2018	14.6	2013	18.8	2018	18.3
	Exposure to air pollution by particulate matter ($PM_{2.5}$)	µg/m^3	2012	19.2	2017	18.4	2012	16.8	2017	14.1
	Population living in a dwelling with a leaking roof, damp walls, floors or foundation or rot in window frames or floor	% of population	2013	10.0	2018	7.7	2013	15.6	2018	13.9
	Population reporting occurrence of crime, violence or vandalism in their area	% of population	2013	13.9	2018	7.9	2013	14.5	2018	12.7
Sustainable mobility	People killed in road accidents	number of killed people	2012	742	2017	577	2012	28 231	2017	25 257
	Share of buses and trains in total passenger transport	% of total inland passenger-km	2012	26.0	2017	26.7	2012	17.2	2017	16.7
Adverse environmental impacts	Settlement area per capita	m^2	2009	623.6	2015	616.1	2012	625.0	2015	653.7
	Recycling rate of municipal waste	% of total waste generated	2013	24.2	2018	34.5	2013	41.7	2018	47.0
	Population connected to at least secondary wastewater treatment	% of population	2012	78.0	2017	82.3	N/A	:	N/A	:

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Table (continued)

SDG / Sub-theme	Indicator	Unit	Czechia				EU-28			
			Starting		Latest		Starting		Latest	
			year	value	year	value	year	value	year	value
SDG 12 – Responsible consumption and production										
Decoupling environmental impacts from economic growth	Consumption of toxic chemicals	million tonnes	N/A	:	N/A	:	2013	300.3	2018	313.9
	Resource productivity	EUR per kg, chain-linked volumes (2010)	2013	1.02	2018	1.09	2013	1.98	2018	2.04
	Average CO2 emissions per km from new passenger cars	g CO_2 per km	2013	134.6	2018	125.6	2014	123.4	2018	120.4
	Energy productivity	EUR per kgoe	2013	3.6	2018	4.3	2013	7.6	2018	8.5
Energy consumption	Primary energy consumption	million tonnes of oil equivalent (Mtoe)	2013	40.9	2018	40.4	2013	1 577.4	2018	1 551.9
	Final energy consumption	million tonnes of oil equivalent (Mtoe)	2013	24.2	2018	25.3	2013	1 115.5	2018	1 124.1
	Share of renewable energy in gross final energy consumption	%	2013	13.9	2018	15.2	2013	15.4	2018	18.0
Waste generation and management	Circular material use rate	% of material input for domestic use	2012	6.3	2017	8.1	2012	11.5	2017	11.7
	Generation of waste excluding major mineral wastes	kg per capita	2012	1 197	2016	1 214	2012	1 716	2016	1 772
	Recycling rate of waste excluding major mineral wastes	% of total waste treated	2012	58	2016	60	2012	55	2016	57
SDG 13 – Climate action										
Climate mitigation	Greenhouse gas emissions	index 1990 = 100	2012	67.8	2017	65.3	2012	82.1	2017	78.3
	Greenhouse gas emissions intensity of energy consumption	index 2000 = 100	2012	82.4	2017	76.9	2012	91.5	2017	86.5
	Primary energy consumption	million tonnes of oil equivalent (Mtoe)	2013	40.9	2018	40.4	2013	1 577.4	2018	1 551.9
	Final energy consumption	million tonnes of oil equivalent (Mtoe)	2013	24.2	2018	25.3	2013	1 115.5	2018	1 124.1
	Share of renewable energy in gross final energy consumption	%	2013	13.9	2018	15.2	2013	15.4	2018	18.0
	Average CO2 emissions per km from new passenger cars	g CO_2 per km	2013	134.6	2018	125.6	2014	123.4	2018	120.4
Climate impacts	European mean near surface temperature deviation	temperature deviation in °C, compared with the 1850–1899 average	N/A	:	N/A	:	2013	1.4	2018	2.1
	Climate-related economic losses	EUR billion, in 2017 values	N/A	:	N/A	:	2012	2 719	2017	2 649
	Mean ocean acidity	pH value	N/A	:	N/A	:	2013	8.06	2018	8.06
Support to climate action	Contribution to the international 100bn USD commitment on climate related expending	EUR million, current prices	N/A	:	2017	7.1	N/A	:	2017	20 388.7
SDG 14 – Life below water										
Ocean health	Coastal water bathing sites with excellent water quality	% of bathing sites with excellent water quality	N/A	:	N/A	:	2013	85.5	2018	87.1
	Mean ocean acidity	pH value	N/A	:	N/A	:	2013	8.06	2018	8.06
Marine conservation	Surface of marine sites designated under NATURA 2000	km^2	N/A	:	N/A	:	2013	251 566	2018	551 899
Sustainable fisheries	Estimated trends in fish stock biomass	index 2003 = 100	N/A	:	N/A	:	2012	110.0	2017	136.0
	Assessed fish stocks exceeding fishing mortality at maximum sustainable yield (Fmsy)	% of stocks exceeding fishing mortality at maximum sustainable yield ($F>F_{MSY}$)	N/A	:	N/A	:	2012	52.9	2017	42.7
SDG 15 – Life on land										
Ecosystems status	Share of forest area	% of total land area	2009	37.0	2015	37.7	2012	40.3	2015	41.6
	Biochemical oxygen demand in rivers	mg O_2 per litre	2012	2.79	2017	2.71	2012	2.06	2017	2.00
	Nitrate in groundwater	mg NO_3 per litre	2012	19.1	2017	17.7	2012	19.2	2017	19.1
	Phosphate in rivers	mg PO_4 per litre	2012	0.131	2017	0.131	2012	0.096	2017	0.093
Land degradation	Soil sealing index	index 2006 = 100	2009	101.6	2015	103.4	2009	101.7	2015	104.2
	Estimated soil erosion by water	km^2	2010	976.1	2016	955.5	2010	207 232.2	2016	205 294.5
	Settlement area per capita	m^2	2009	623.6	2015	616.1	2012	625.0	2015	653.7
Biodiversity	Surface of terrestrial sites designated under NATURA 2000	km^2	2013	11 062	2018	11 148	2013	787 766	2018	784 252
	Common bird index	index 2000 = 100	N/A	:	N/A	:	2013	94.7	2018	93.5
	Grassland butterfly index	index 2000 = 100	N/A	:	N/A	:	2012	72.2	2017	74.1

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Table (continued)

SDG / Sub-theme	Indicator	Unit	Czechia				EU-28			
			Starting		Latest		Starting		Latest	
			year	value	year	value	year	value	year	value
SDG 16 – Peace, justice and strong institutions										
Peace and personal security	Death rate due to homicide	number per 100 000 persons	2011	0.9	2016	0.5	2011	0.9	2016	0.6
	Population reporting occurrence of crime, violence or vandalism in their area	% of population	2013	13.9	2018	7.9	2013	14.5	2018	12.7
	Physical and sexual violence to women experienced within 12 months prior to the interview	% of women	N/A	:	2012	8	N/A	:	2012	8
Access to justice	General government total expenditure on law courts	million EUR	2012	462	2017	579	2012	48 381	2017	51 027
	Perceived independence of the justice system	% of population	2016	47	2019	51	2016	52	2019	56
Trust in institutions	Corruption Perceptions Index	score scale of 0 (highly corrupt) to 100 (very clean)	2013	48	2018	59	N/A	:	N/A	:
	Population with confidence in the EU Parliament	% of population	2013	45	2018	38	2013	39	2018	48
SDG 17 – Partnerships for the goals										
Global partnership	Official development assistance as share of gross national income	% of GNI	2013	0.11	2018	0.14	2013	0.43	2018	0.48
	EU financing to developing countries	million EUR, current prices	2012	171	2017	109	2012	147 962	2017	155 224
	EU imports from developing countries	million EUR, current prices	2013	12 005	2018	21 336	2013	817 475	2018	1 013 981
Financial governance within the EU	General government gross debt	% of GDP	2013	44.9	2018	32.6	2013	86.3	2018	80.4
	Shares of environmental and labour taxes in total tax revenues	% of total tax revenues	2013	6.1	2018	6.0	2013	6.4	2018	6.1

Source: Eurostat

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