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**COMMISSION STAFF WORKING DOCUMENT**

**Country Report Estonia 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**

{COM(2020) 150 final}

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# EXECUTIVE SUMMARY

**Estonia's economy is benefitting from the favourable labour market and business environment.** Economic growth has been strong across all sectors, boosted by public and private investment. Innovation has increased but has not led to any substantial rise in labour productivity. Skills shortages have emerged due to rapidly changing labour market trends and technological developments, putting pressure on firms' cost competitiveness. Ageing and the poor health of the population raise concerns about the adequacy of the pension and healthcare systems. Low resource efficiency and high energy and carbon intensity, in particular, due to Estonia's reliance on oil shale pose challenges in terms of achieving the country's binding decarbonisation targets under EU climate policy. Future growth and environmental sustainability will depend on how well the country mitigates those challenges while building an innovative economy ([1]).

**In 2020-2021, economic growth is expected to slow to above 2% due to weaker external demand and uncertainties in international trade**. Domestic demand is set to remain the key growth driver primarily due to the increase in real disposable incomes supported by moderating inflation. The employment rate and wage increases are forecast to weaken somewhat, but labour market participation is set to remain high. Wages have been growing faster than labour productivity for several years in a row, reducing cost competitiveness. Estonia's oil shale sector has scaled down production which has reduced GDP growth.

**Public finances remain in good shape.** Public debt was below 9% of GDP in 2018, by far the lowest in the EU. However, in recent years during the cyclical economic peak, the public deficit increased and government spending became pro-cyclical.

**Estonia has made some progress in addressing the 2019 country-specific recommendations.** There has been some progress in the following areas:

- addressing skills shortages and foster innovation by improving the capacity and labour market relevance of the education and training system;
- improving the adequacy of the social safety net; and
- taking measures to reduce the gender pay gap, including by improving wage transparency.

There has been limited progress in the following areas:

- ensuring effective supervision and the enforcement of the anti-money laundering framework;
- improving access to integrated social and health services; and
- focusing investment-related economic policy on sustainable transport and energy infrastructure, including interconnections, on fostering research and innovation, and on resource and energy efficiency, taking into account regional disparities.

**Estonia performs relatively well on most indicators in the Social Scoreboard supporting the European Pillar of Social Rights, but some concerns remain.** Estonia's labour market is one of the best performing in the EU. However, the proportion of people with unmet medical needs remains one of the highest in the EU. The share of young people not in education, employment or training has increased further. Social transfers are less effective in reducing poverty than on average in the EU and the indicator of people at-risk-of-poverty or social exclusion remains a point to watch.

**Regarding progress towards its national targets under the Europe 2020 strategy**, Estonia already met its employment rate target and its tertiary education target in 2015. It has also achieved a share of renewable energy corresponding to its 2020 target, and has made some progress towards improving energy efficiency and reducing

([1]) This report assesses Estonia'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

greenhouse gas emissions. However, Estonia is underperforming on reducing early school leaving and on reaching its national targets for reducing poverty and increasing investment in research and development. Estonia lags considerably behind its target for renewable energy in transport.

Estonia has performed particularly well with respect to SDG 4 "Quality of education", showing progress at all levels of education except the most recent trend for early leavers. The important issue to watch concerns SDG 13 "Climate Action", as Estonia is among the EU countries with the widest gap between its target and the likely greenhouse gas emissions in 2030.([2])

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

- **Skills shortages and mismatches persist, which limits productivity gains** Firms have had difficulties in finding people with adequate skills, including digital skills. While the education and training system performs well and is equitable, its capacity to respond to labour market needs is limited by elevated early school leaving and an insufficient labour market relevance of higher education. Participation in adult learning has increased, but the re- and upskilling of the workforce has not kept pace with labour market trends. One of the reasons is that businesses provide limited on-the-job training. The high share of ageing teachers is a long-term but ever more pressing challenge for the education system.

- **Serious challenges remain regarding the social safety net, especially access to social services for some groups.** The availability of affordable social services, including long-term care services, remains limited especially for elderly people and low-income earners. The provision of services is particularly difficult in some regions. The underlying reasons are the lack of an overall framework to provide social and health services in an integrated way and the high costs. Poverty and social exclusion have increased, mainly because the incomes of the poorest - the elderly and people with lower educational attainment - have, increased less than average wages.

- **Making the second pillar pension system voluntary raises fiscal and economic risks related to the adequacy of pensions.** The current first pillar pay-as-you-go system is set to provide relatively low pensions. Winding down the second pillar pension system implies less prefunding for pensions and is set to reduce the diversification of pension income in the long term. In light of population ageing, this aggravates the concerns about the long-term adequacy of the pension system.

- **R&D, including digitalisation, have not delivered economy-wide productivity gains.** Business investment in R&D remains low compared to other countries, posing a barrier to productivity growth. The transfer of knowledge from universities to companies and the commercialisation of research results are slow. The intermediaries able to support industrial innovation are not yet established or are not functioning at their full potential. While Estonia's overall innovation performance has improved, the levels of research-based innovation capacity and activity in the business sector remain low. The economy is becoming increasingly digitalised, but the take-up of information and communication technologies in manufacturing has been low.

- **Major investment needs persist.** Well-targeted investment in infrastructure, research and innovation, and in promoting resource efficiency would strengthen Estonia's long-term potential**.** Investments in education and skills, as well as in social inclusion, health and social services could foster sustainable and inclusive growth. Business investment has accelerated but investment in research and innovation and intellectual property assets is relatively low.

([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 Estonia during the past 5 years, based on Eurostat's EU SDG indicator set.

A high-quality and well-interconnected transport system remains a key for boosting Estonia's economic activities and deepening its integration to the single market. Public investments, including EU funds, have helped to address Estonia's investment needs.

- **Environmental sustainability remains a challenge due to high carbon and energy intensity.** Estonia is likely to miss its 2030 greenhouse gas emission targets. The sectors which produce the most emissions are transport and buildings. Both are energy-intensive, and transport in particular relies on carbon intensive sources. A major share of energy in Estonia is produced from oil shale, which plays an important economic and social role. It is however also a significant contributor to the country's high greenhouse gas emissions, and harms the environment. The government has implemented some measures to tackle these issues, but the results have been modest. Furthermore, there are no tax or other incentives for reducing $CO_2$ emissions. Reducing carbon intensity in transport and buildings, restructuring the oil shale sector and implementing circular economy business models could improve environmental sustainability. The Commission's proposal for a Just Transition Mechanism under the next multi-annual financial framework for the period 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 climate neutrality is fair by helping the most affected regions in Estonia to address the social and economic consequences. Key priorities for support by the Just Transition Fund, set up as part of the Just Transition Mechanism are identified in Annex D, building on the analysis of the transition challenges outlined in this report.

- **The Estonian banking sector is sound overall but money laundering risks remain.** Estonian banks are profitable thanks to high efficiency, good quality assets and low cost funding. Banks operating in Estonia have become less dependent on their parent banks and now largely fund themselves from domestic deposits and the wholesale funding market. While the share of non-resident deposits has declined and action has been taken against non-compliant banks, money laundering risks remain. Proposals to increase the level of sanctions are still to be adopted. The capacity of the financial supervisor has not yet been strengthened and the risk-based approach has not yet been fully implemented. Failing to address these issues could expose the economy to risks that may undermine competitiveness.

- **Measures to help the north-east and south-east regions catch up with the rest of the country have stalled.** Regional disparities are linked to past industrial restructuring, but differences in skills and labour supply have increased over time. The way local authorities are financed has not yet been reformed. In the absence of sustainable funding solutions, municipalities' room for manoeuvre to promote entrepreneurship and to attract people is limited. Despite investments in infrastructure, concerns about depopulation, low labour activity and access to health and social services have emerged, suggesting the need for a holistic regional development strategy.

- **The health system is facing major challenges.** Although life expectancy is increasing rapidly in Estonia, the number of healthy life years remains among the lowest in the EU and is decreasing, with large disparities by gender, region, education and income. Poor health outcomes can be linked to insufficient healthcare funding, shortages in healthcare staff and lifestyle-related risk factors. Self-reported unmet needs for medical care have further increased and remain one of the highest in the EU due to long waiting times for both primary and specialist care.

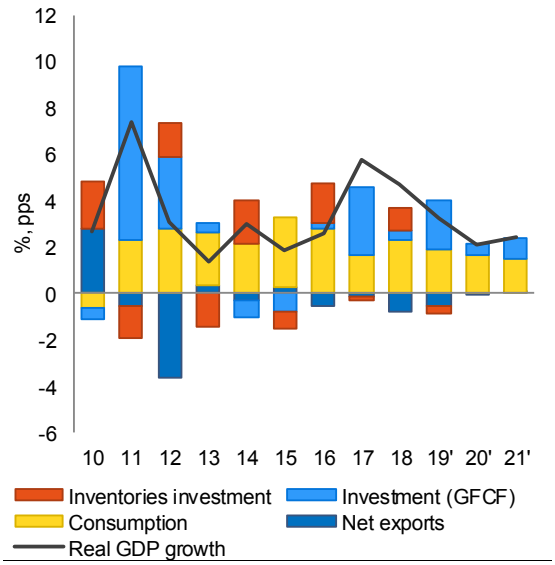
- **The gender pay gap remains among the highest in the EU.** Recent reforms of the parental leave and benefit system are helping women move back into work, but care responsibilities remain high for parents, especially for women. Estonia is developing information technology tools to help employers to increase pay transparency and is running a research project to address the unexplained part of the gender pay.

# 1. ECONOMIC SITUATION AND OUTLOOK

## Macroeconomic developments and outlook

**Estonia's real economic growth in 2019 was relatively strong reaching an estimated 3.8%** (see Graph 1.1). Domestic demand was the main growth driver, with key contributions coming from a recovery in investment and from private consumption, supported by high employment and increased real incomes. Economic activity was rather strong in most economic sectors, with the notable exception of mining and energy production, where activity decreased following the partial closure of Eesti Energia's generating capacity in north-east Estonia.

Graph 1.1: **Real GDP growth and contributions**

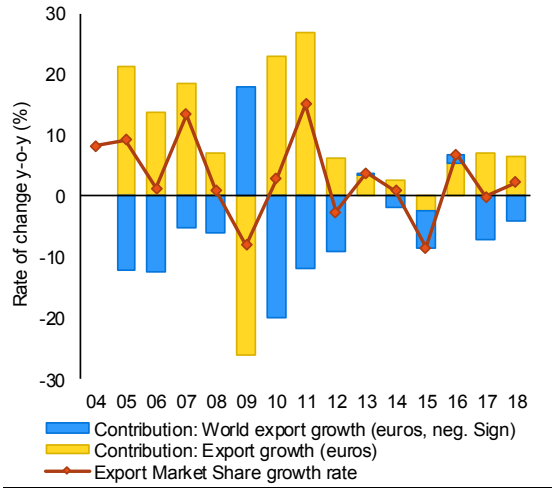



***Source:*** European Commission

**GDP growth is forecast to moderate further to just 2.2% in 2020 and 2.4% in 2021.** In line with cyclical developments affecting Estonia's main trading partners, export growth is expected to slow. Private consumption is forecast to ease somewhat, as the labour market is set to cool down, wages adjust and unemployment increase slightly. At the same time, investment is set to moderate more substantially given its high growth rate in 2019.

**The current account is projected to remain in surplus over the coming years.** Over the period 2012-2018, the Estonian economy became increasingly specialised in the export of services, notably of information technology services, where Estonian companies have developed a competitive advantage and have increased value added (European Commission 2019a; European Commission, 2018b). The current account surplus stood at about 2% of GDP in 2019. Exports were a major source of growth for traditional sectors such as paper, wood, plastics, pharmaceuticals, metal products, and machinery and equipment. Export growth is forecast to moderate in 2020 due to weaker external demand.

Graph 1.2: **Export market share, goods and services, nominal**

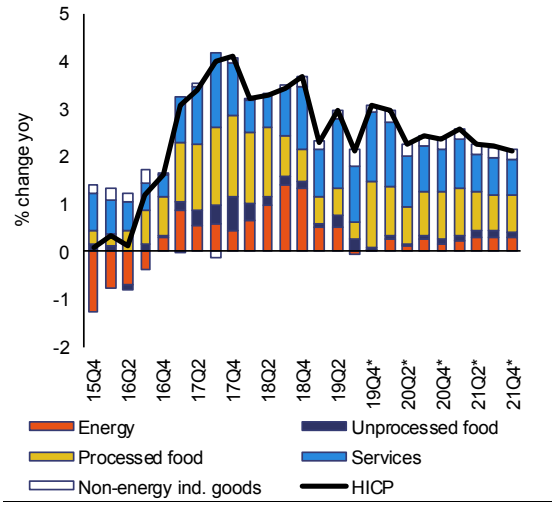



***Source:*** European Commission

## Inflation

**Inflation was set to decelerate to 2.3% in 2019 and to remain slightly above 2% over 2020 and 2021.** This trend is largely due to lower global energy prices (see Graph 1.3). The changes to consumption taxes will have a smaller inflationary impact than in the past, while the strong wage growth will exert inflationary effect on prices of services. Overall, inflation in Estonia is forecast to stay above the euro area average.

Graph 1.3: **HICP quarterly growth**




***Source:*** European Commission

## Financial sector and private debt

**The Estonian banking sector remains sound overall.** Banks are profitable and well-capitalised, and this limits risks to financial stability. Banking sector assets stand at around 110% of GDP. Concentration in the banking sector is relatively high, as the three largest banks hold 85% of banking sector assets and interest rates have been slightly higher than in the euro area on average. Some money laundering risks remain (see Section 3.2).

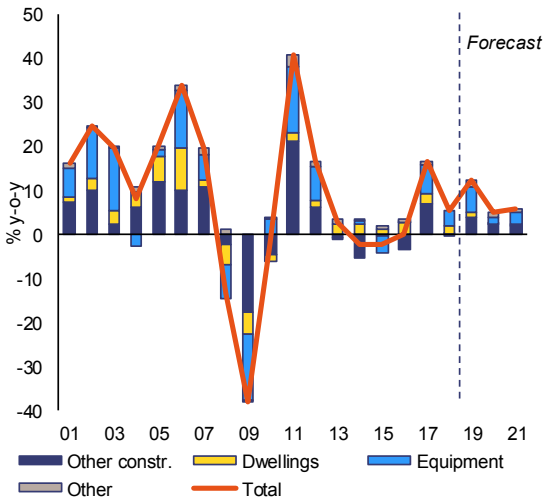
**Private sector deleveraging continued and private debt level appeared sustainable**. Private sector debt dropped to 102% of GDP in 2018, below its prudential threshold and fundamental benchmark ([3]). This is also true for the debt subcomponents, household debt and debt of non-financial corporations. Overall, vulnerabilities associated with private debt are assessed to be limited.

([3]) 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 above which the probability of a banking crisis is relatively high. Methodologies are described in European Commission (2017) and updates to the methodology have been subsequently proposed in European Commission (2018c).

## Investment

**Following a year of subdued growth, investment picked up robustly in 2019, and its share is projected to stabilise at around 25% of GDP.** The investment recovery was mainly driven by private investment, which is expected to have increased by over 15% in nominal terms. Investment increased in most sectors, with particularly high investment rates in machinery and equipment and in industrial manufacturing (see Graph 1.4) supported by favourable borrowing conditions and corporate profits. Investment's contribution to growth is set to moderate in 2020-2021, and the overall investment intensity is likely to level off at slightly above the EU average (see Section 3.4).

Graph 1.4: **Investment growth and contributions, %**

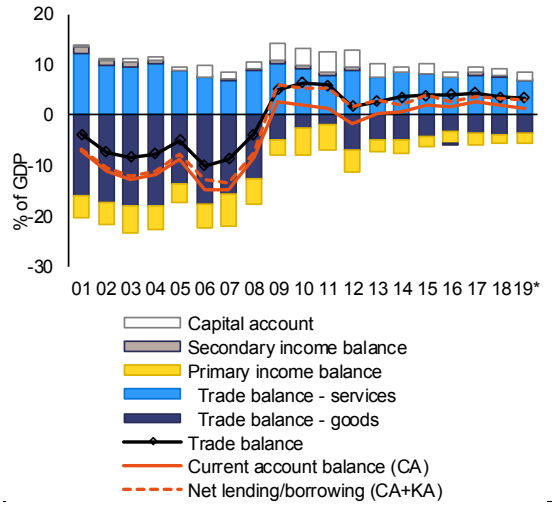



***Source:*** European Commission

## Construction sector and housing market

**Estonia's construction sector has recovered given the buoyant demand for housing.** Construction increased by more than 70% since 2010, peaking in 2018-2019, while profitability of this activity also picked up considerably. Demand for housing increased mainly in urban areas, and so far Estonia does not seem to face particular housing supply shortages (European Commission, 2019f), which helps to contain the upward pressure on house prices. House price increases have trended downwards to below 6% in the first half of 2019, with moderate growth in household debt (see Section 3.2).

Graph 1.5: **Breakdown of external position (current and capital accounts)**



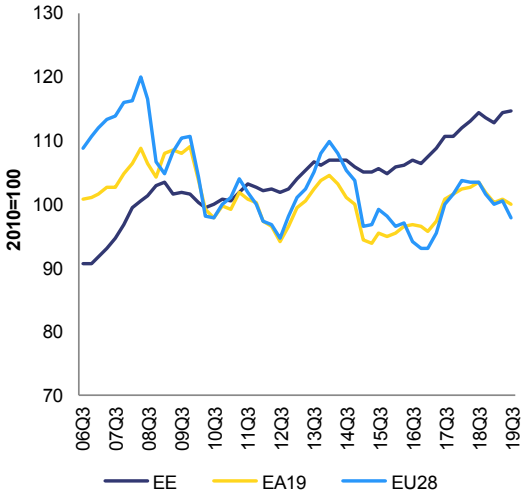

***Source:*** European Commission

## Cost competitiveness

**Cost competitiveness compared to the EU has declined since 2008 as incomes have continued to rise.** Income convergence continued throughout 2019 as wages increased significantly in both the private and public sectors. Income convergence is partly reflected by Estonia's improved labour productivity and has contributed to positive net migration in recent years.

**At the same time, structural labour and skills shortages have contributed to an erosion of cost competitiveness.** Wages have increased faster than labour productivity. Nominal unit labour cost growth accelerated to 6.5% in 2018 and its three-year average continues to breach the macroeconomic imbalances procedure threshold. The real effective exchange rate appreciation accelerated to 4.6% in 2018 but is projected to moderate substantially from 2019 onwards. Export market share is projected to decline, suggesting that cost competitiveness issues may increasingly weigh on export of Estonian firms ([4]). Still, the current account has been in a stable surplus and well above the level required to stabilise the external debt position (see Graphs 1.5 and 1.6), while the cyclically adjusted current account is even more positive, estimated at 4% of GDP in 2019.

Graph 1.6: **Real effective exchange rate based on unit labour cost**




***Source:*** European Commission

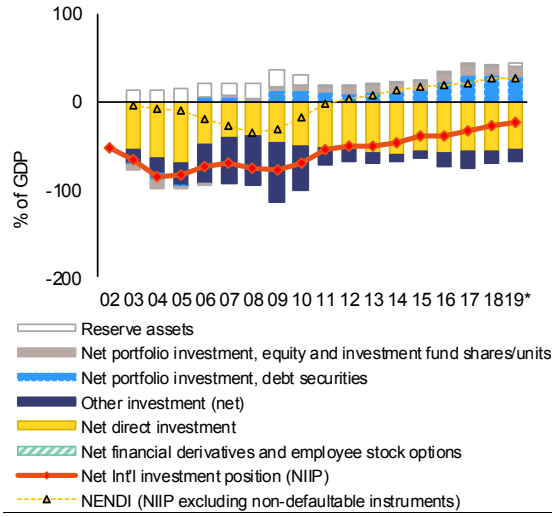
**Vulnerabilities associated with Estonia's net international investment position are limited and continue to diminish (**see Graph 1.7). The net international investment position is moderately negative, at -28% of GDP in 2018, and is forecast to improve going forward. It compares favourably to the prudential threshold but remains above the benchmark that fundamental drivers would suggest is sustainable. When excluding non-defaultable debt instruments, such as foreign direct investment and equity, Estonia's external position is even positive, suggesting that associated vulnerabilities are limited.

## Public finance

**The general government budget is expected to show a small nominal deficit over 2020-2021.** While the 2020 budget plans some expenditure restraint, slower economic growth will affect tax revenues. Given that the economy is forecast to grow below its potential rate in 2020 and 2021, the structural fiscal position is projected to improve from a deficit of around 1½% of GDP in 2019 to a deficit of ½% of GDP by 2021. Public debt is set to remain low at about 8% of GDP by 2021, by far the lowest level in the EU.

([4]) Bank of Estonia estimated that, overall, dependency on cost competitiveness varies across sectors (Eesti Pank, 2019).

Graph 1.7: **Components of the Net International Investment Position**

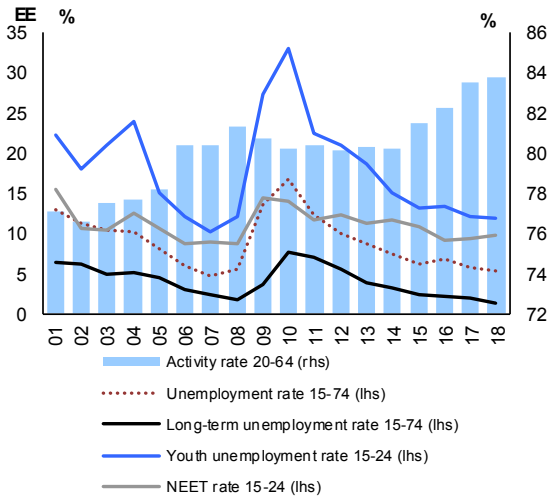



***Source:*** European Commission

## Labour market

**The labour market has continued to perform well.** Employment increased in 2018 and reached 79.5%, as demand for labour has been high in all sectors. Activity rates have increased since 2012, mostly on the account of positive return migration and higher activity of those who study and of the elderly. The unemployment rate decreased to just over 5% in 2018. 1.3% of the labour force were long-term unemployed and youth unemployment declined to 11.9% in 2018.

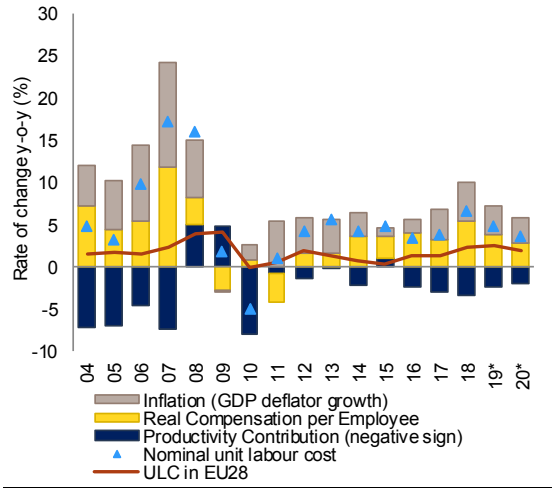
Graph 1.8: **Labour market indicators**




***Source:*** European Commission

**Demand for labour resulted in strong wage increases in 2018.** According to Statistics Estonia, the average monthly gross wage increased by 7.3% in 2018, to €1,310. While wage growth was broad-based, the rise was notably driven by the public sector, given the wage adjustment for teachers and medical personnel. Compensation per employee, which is somewhat broader measure than wages, increased by 10.2% and the nominal unit labour cost by 6.5% in 2018. Wage growth was relatively rapid in 2019 but still grow above what is expected based on the historical relationship with inflation, productivity and unemployment ([5]).

Graph 1.9: **Decomposition of rate of change of unit labour cost in (EA/EU) - Estonia**




***Source:*** European Commission

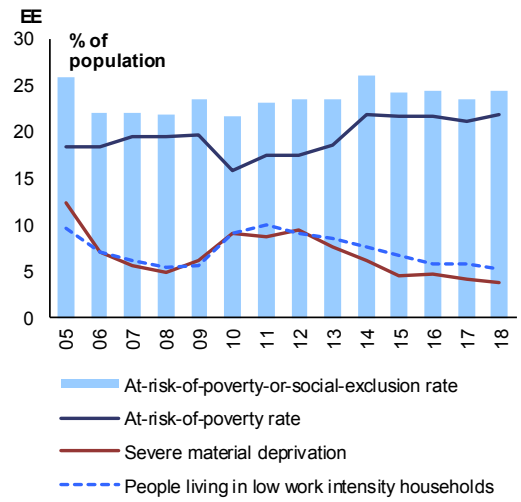
**The purchasing power of employees increased in recent years, but unevenly across different income groups of the population**. In 2018, real wages increased by 5.4%. Estonia's statutory national minimum wage is agreed by the social partners, the Estonian Employers' Confederation and the Confederation of Estonian Trade Unions,. At 37% of the average wage and 43% of the

([5]) This is a benchmark for wage growth consistent with internal and external labour market conditions. It is calculated as the wage growth predicted on the basis of changes in labour productivity, prices and the unemployment rate, and wage growth consistent with constant unit labour cost based real effective exchange rate (see Labour market and wage developments in Europe, 2018 and Arpaia and Kiss, 2015). However, the wage benchmark should be interpreted with caution in the case of Estonia, as after a sustained period of wage growth, the benchmark predicts a period of slower wage growth. This is because a period of correction was observed in past instances of above- or below-expected wage growth.

median wage in 2018, the minimum wage level was among the lowest in the EU. Overall, the share of full-time employees earning the minimum wage is around 7%. According to the labour market analysis, Estonia's minimum wage earners are likely to be employed in service, retail and unskilled jobs (Eesti Pank, 2018).

**The risk of poverty is increasing, but inequality is slightly below the EU average**. The at risk of poverty or social exclusion further increased above the EU average at 24.4% in 2018 due to the income of the poorest not keeping up with the average wage growth. The monetary poverty rate was the highest among people with lower educational attainment and older people. Since 2011, the share of people at risk -of -poverty has increased, while the share of people with severe material deprivation and people living in low-work intensity households has declined (see Section 3.3). Overall, income inequality decreased, as the relative income of the top 20% of households was five times that of the poorest 20%, which is just below the average income inequality ratio in the EU.

Graph 1.10: **At-risk-of-poverty and severe material deprivation rates**




***Source:*** European Commission

## Regional development

The socioeconomic urban-rural divide has reflected growing inequality in terms of social situation, employment and policy outreach. In 2017 ([6]), GDP per head in the capital region was 113%, while in the remaining four regions the income levels ranged between 45% and 57% of the EU average. Better skilled and educated workers ([7]) have moved to cities, leaving behind lower-income and older residents. The lack of qualified workforce and of good job opportunities has constrained the competitiveness and has had negative social effects. The gap in the at-risk-of-poverty-rate between rural areas and cities is high and growing (29.5% compared to 22.1% in 2018). In 2000-2018, the population decreased in all Estonian regions except Harjumaa, and almost one out of four people left Ida-Virumaa (see Box 3.4.2).

## Sustainable development goals

**Estonia performs relatively well overall in achieving the sustainable development goals (SDGs).** Over the past 5 years, Estonia has made progress in almost all areas, with the notable exception of environmental goals, in particular SDG 12 responsible consumption and production and SDG 13 climate action, where a number of indicators show deteriorating trends. While in social areas Estonia has performed relatively well, its performance has been persistently weak on SDG 3 'good health and wellbeing', namely in the areas of access to healthcare and the share of people with good health. The situation has remained challenging with respect to SDG 5 'gender equality' and SDG 8 'Decent work and economic growth' due to the wide gender gaps in pay and inactivity due to caring responsibilities. Estonia has performed well on SDG 16 'peace, justice and strong institutions' and SDG 17 'partnerships for the goals'.

([6]) Using Eurostat nomenclature of territorial units for statistics (NUTS 3) level.

([7]) The share of population with tertiary education in rural areas decreased to 27%, while it cities it reached 44.7% in 2018.

Table 1.1: **Key economic and financial indicators _ Estonia**

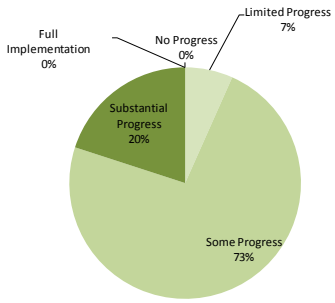
| | 2004-07 | 2008-12 | 2013-16 | 2017 | 2018 | forecast 2019 | forecast 2020 | forecast 2021 |
|---|---|---|---|---|---|---|---|---|
| Real GDP (y-o-y) | 8.4 | -1.6 | 2.2 | 5.7 | 4.8 | 3.8 | 2.2 | 2.4 |
| Potential growth (y-o-y) | 6.1 | 0.3 | 2.6 | 3.5 | 3.5 | 3.8 | 3.5 | 3.4 |
| Private consumption (y-o-y) | 9.7 | -2.5 | 4.2 | 2.8 | 4.3 | . | . | . |
| Public consumption (y-o-y) | 4.0 | 1.2 | 2.4 | 1.1 | 0.9 | . | . | . |
| Gross fixed capital formation (y-o-y) | 13.3 | -4.1 | -0.9 | 12.5 | 1.7 | . | . | . |
| Exports of goods and services (y-o-y) | 14.8 | 5.4 | 2.2 | 3.8 | 4.3 | . | . | . |
| Imports of goods and services (y-o-y) | 16.6 | 2.0 | 2.4 | 4.2 | 5.7 | . | . | . |
| Contribution to GDP growth: | | | | | | | | |
| Domestic demand (y-o-y) | 10.5 | -2.8 | 2.4 | 4.6 | 2.7 | . | . | . |
| Inventories (y-o-y) | 0.5 | -0.6 | 0.4 | -0.2 | 0.9 | . | . | . |
| Net exports (y-o-y) | -2.6 | 2.3 | 0.0 | -0.1 | -0.8 | . | . | . |
| Contribution to potential GDP growth: | | | | | | | | |
| Total Labour (hours) (y-o-y) | 0.2 | -1.1 | 0.7 | 0.8 | 0.4 | 0.4 | 0.2 | 0.1 |
| Capital accumulation (y-o-y) | 3.3 | 1.4 | 1.2 | 1.3 | 1.3 | 1.4 | 1.4 | 1.3 |
| Total factor productivity (y-o-y) | 2.6 | 0.1 | 0.8 | 1.5 | 1.9 | 2.0 | 2.0 | 2.0 |
| Output gap | 7.5 | -2.0 | 0.7 | 2.2 | 3.4 | 2.9 | 1.5 | 0.5 |
| Unemployment rate | 7.2 | 11.6 | 7.3 | 5.8 | 5.4 | 5.1 | 5.4 | 5.8 |
| GDP deflator (y-o-y) | 8.0 | 3.6 | 2.4 | 3.6 | 4.5 | 3.4 | 3.0 | 2.7 |
| Harmonised index of consumer prices (HICP, y-o-y) | 4.6 | 4.5 | 1.1 | 3.7 | 3.4 | 2.3 | 2.1 | 2.1 |
| Nominal compensation per employee (y-o-y) | 15.7 | 3.5 | 5.4 | 7.0 | 10.2 | 7.3 | 5.8 | 5.8 |
| Labour productivity (real, person employed, y-o-y) | 6.6 | 0.0 | 0.9 | 3.0 | 3.5 | . | . | . |
| Unit labour costs (ULC, whole economy, y-o-y) | 8.6 | 3.4 | 4.5 | 3.9 | 6.5 | 4.7 | 3.6 | 3.2 |
| Real unit labour costs (y-o-y) | 0.6 | -0.1 | 2.0 | 0.2 | 1.9 | 1.3 | 0.6 | 0.4 |
| Real effective exchange rate (ULC, y-o-y) | 6.8 | 0.7 | 3.7 | 3.8 | 5.8 | 2.0 | 1.0 | 0.9 |
| Real effective exchange rate (HICP, y-o-y) | 2.0 | 0.9 | 1.8 | 1.5 | 4.5 | 0.2 | -0.4 | 0.1 |
| Net savings rate of households (net saving as percentage of net disposable income) | -7.5 | 4.5 | 4.8 | 5.8 | 7.1 | . | . | . |
| Private credit flow, consolidated (% of GDP) | 25.1 | 1.9 | 4.8 | 4.8 | 3.7 | . | . | . |
| Private sector debt, consolidated (% of GDP) | 104.4 | 129.9 | 113.9 | 107.6 | 101.5 | . | . | . |
| of which household debt, consolidated (% of GDP) | 36.1 | 49.4 | 39.5 | 39.3 | 38.4 | . | . | . |
| of which non-financial corporate debt, consolidated (% of GDP) | 68.3 | 80.5 | 74.4 | 68.3 | 63.1 | . | . | . |
| Gross non-performing debt (% of total debt instruments and total loans and advances) (2) | . | 5.6 | 2.0 | 1.9 | 1.3 | . | . | . |
| Corporations, net lending (+) or net borrowing (-) (% of GDP) | -7.1 | 1.5 | 1.2 | 2.4 | 3.2 | 0.9 | 1.3 | 1.3 |
| Corporations, gross operating surplus (% of GDP) | 33.0 | 30.1 | 30.5 | 29.7 | 29.6 | 28.8 | 28.8 | 28.6 |
| Households, net lending (+) or net borrowing (-) (% of GDP) | -5.7 | 1.4 | 1.2 | 1.0 | 1.8 | 3.4 | 3.2 | 3.3 |
| Deflated house price index (y-o-y) | . | -10.4 | 9.7 | 1.8 | 2.1 | . | . | . |
| Residential investment (% of GDP) | 5.3 | 3.1 | 3.9 | 4.6 | 4.6 | . | . | . |
| Current account balance (% of GDP), balance of payments | -12.6 | -1.0 | 1.1 | 2.7 | 2.0 | 1.4 | 1.6 | 1.6 |
| Trade balance (% of GDP), balance of payments | -8.0 | 3.0 | 3.5 | 4.3 | 3.5 | . | . | . |
| Terms of trade of goods and services (y-o-y) | 1.8 | -0.3 | 1.0 | 0.9 | 0.4 | 0.1 | 0.4 | 0.2 |
| Capital account balance (% of GDP) | 1.2 | 3.1 | 1.7 | 1.0 | 1.4 | . | . | . |
| Net international investment position (% of GDP) | -78.4 | -65.4 | -43.9 | -32.5 | -27.7 | . | . | . |
| NENDI - NIIP excluding non-defaultable instruments (% of GDP) (1) | -16.8 | -16.2 | 13.8 | 20.1 | 25.7 | . | . | . |
| IIP liabilities excluding non-defaultable instruments (% of GDP) (1) | 79.4 | 92.6 | 76.3 | 68.2 | 60.0 | . | . | . |
| Export performance vs. advanced countries (% change over 5 years) | 57.5 | 29.8 | 13.1 | -0.6 | -1.3 | . | . | . |
| Export market share, goods and services (y-o-y) | 7.9 | 1.3 | 0.6 | -0.1 | 2.3 | 1.3 | -1.2 | -0.9 |
| Net FDI flows (% of GDP) | -6.4 | -4.9 | -1.3 | -3.9 | -4.7 | . | . | . |
| General government balance (% of GDP) | 2.3 | -0.8 | 0.1 | -0.8 | -0.6 | -0.2 | -0.2 | -0.2 |
| Structural budget balance (% of GDP) | . | . | -0.1 | -1.8 | -2.2 | -1.6 | -0.9 | -0.5 |
| General government gross debt (% of GDP) | 4.6 | 6.8 | 10.2 | 9.3 | 8.4 | 8.7 | 8.4 | 8.2 |
| Tax-to-GDP ratio (%) (3) | 30.7 | 32.5 | 32.7 | 32.9 | 33.0 | 33.2 | 33.2 | 33.3 |
| Tax rate for a single person earning the average wage (%) (4) | 19.8 | 19.1 | 19.0 | 18.4 | 14.6 | . | . | . |
| Tax rate for a single person earning 50% of the average wage (%) (4) | 15.2 | 15.5 | 15.0 | 15.5 | 6.0 | . | . | . |

(1) NIIP excluding direct investment and portfolio equity shares
(2) domestic banking groups and stand-alone banks, EU and non-EU foreign-controlled subsidiaries and EU and non-EU foreign-controlled branches.
(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)

# 2. PROGRESS WITH COUNTRY-SPECIFIC RECOMMENDATIONS

**Since the start of the European Semester in 2011, 93% of all country-specific recommendations addressed to Estonia have recorded at least 'some progress'.**[8] 20% of these country-specific recommendations (CSRs) recorded 'substantial progress' and 7% 'limited progress' (see Graph 2.1).

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




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

**Over the past years, Estonia has made substantial progress in addressing the challenge of the shrinking labour force.** It has improved the labour market integration of people with disabilities through the Work Ability reform, which has been in force since July 2016. Specific measures have been deployed for bringing young people and the long-term unemployed to the labour market, helping to lower the unemployment rates.

Estonia improved work incentives by reducing the tax burden on low-income earners, lowering the unemployment insurance contribution rate and abolishing the fringe-benefit tax on work-related studies.

**Steps have been taken to reduce the very high gender pay gap.** The implementation of the 2016-2023 Welfare Plan addresses gender segregation in the labour market. The parental leave and benefit system has been reorganised. Some changes already in force include greater flexibility and incentives for parents to take up jobs.

**Estonia has made progress in improving the labour market relevance of the education and training systems.** The funding model of the higher education was changed in 2017. The skills forecasting tool OSKA was introduced in 2016, and it is continuously assessed and improved.

**Regarding R&I, Estonia has made progress in strengthening its R&D system, but not in the business sector.** The country's difficulties in retaining researchers in business organisations have turned into a permanent weakness. However, there are signs that the governance of the R&D system is improving in terms of merging research and business strategies and making strategic choices.

**Estonia has made some progress ([9]) in addressing the 2019 country-specific recommendations (CSRs).**

With respect to the CSR 1, Estonia has made **limited progress** as regards ensuring effective supervision and the enforcement of the anti-money laundering framework. While steps have been taken against non-compliant credit institutions, limited resources and tools hamper effective action by supervisors and the full implementation of risk-based supervision. The delay in introducing new sanctioning thresholds limits the deterrent effect of supervisory fines. While more resources are being allocated to the Financial Intelligence Unit and to the Prosecutor's Office, proactive cooperation has still not been achieved. The number of prosecutions and convictions of money laundering cases remains limited.

([8]) For the assessment of other reforms implemented in the past see, in particular, section 3

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

Table 2.1: **Assessment of implementation of 2019 country-specific recommendations**

| **Estonia (CSR 1 is euro area relevant)** | **Overall assessment of progress with 2019 CSRs: Some** |
|---|---|
| **CSR 1:** *Ensure that the nominal growth rate of net primary government expenditure does not exceed 4.1% in 2020, corresponding to an annual structural adjustment of 0.6% of GDP. Ensure effective supervision and the enforcement of the anti-money laundering framework.* | • Limited progress to ensure effective supervision and the enforcement of the anti-money laundering framework |
| **CSR 2:** *Address skills shortages and foster innovation by improving the capacity and labour market relevance of the education and training system. Improve the adequacy of the social safety net and access to affordable and integrated social services. Take measures to reduce the gender pay gap, including by improving wage transparency.* | **Some progress**<br>• Some progress to improve the labour market relevance of both higher and vocational education<br>• Some progress to improve the adequacy of the social safety net<br>• Limited progress to improve access to affordable and integrated social services<br>• Some progress to reduce the gender pay gap |
| **CSR 3:** *Focus investment-related economic policy on sustainable transport and energy infrastructure, including interconnections, on fostering research and innovation, and on resource and energy efficiency, taking into account regional disparities.* | **Limited progress**<br>• Some progress to focus investment-related policy on energy infrastructure and on energy efficiency<br>• Limited progress to focus investment-related policy on R&I and on resource efficiency<br>• No progress to focus investment-related policy on sustainable transport |

**Source:** European Commission

With respect to CSR 2, Estonia made **some progress** in improving the adequacy of the social safety net with regard to pensions and benefits. Disability benefits for children have increased two- to threefold as of 2020. Annual pension increases come in particular from indexation of pensions, subsistence benefits, and work ability allowances. From April 2020, the basic pension will marginally increase. The changes to the second pillar are expected to reduce the future sustainability and adequacy of pensions.

Estonia made **limited progress** in providing good quality and affordable social services and this remains an outstanding challenge. Some measures have been taken, e.g. care homes have been made more energy efficient, homes made more accessible, social transport improved and a dementia competence centre developed. There is an agreement on the concept regarding the financing and management model for the long-term care. However, a new framework for integrated provision of social and healthcare services has yet to be designed and implemented.

Estonia made **some progress** in reducing the gender pay gap. From July 2020, paternal leave will increase from 10 days to 30 days and the use of the parental leave period will become flexible or the first 3 years of the child's life. Estonia is developing information technology tools to help employers to increase pay transparency and is running a research project to address the unexplained part of the gender pay.

Estonia made **some progress** in improving the labour market relevance of higher and vocational education. The forecasting system OSKA was evaluated to know how to make the skills supply match the labour market demand at each level of the education and training system.

With respect to CSR 3 (investment), Estonia made **limited progress**. R&D investments in the private sector have remained low and have decreased further over the last years to 0.59% of GDP in 2018. Regarding investment in energy infrastructure, Estonia has made substantial progress, as the implementation of the Baltic

interconnection project is proceeding as expected. Estonia has made some progress with regards to investment in energy efficiency, but improving access of low and medium income households to finance could facilitate further improvements. Estonia has made limited progress in focusing its investment on resource efficiency of companies and no progress with focusing its investment related economic policies on sustainable transport. The assessment of CSR 3 (investment) does not take into account the contribution of the EU 2021-2027 cohesion policy funds ([10]).

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 2017, such support has been provided to Estonia for 16 projects. In 2019, several projects have been delivered on the ground. The Commission, for example, supported the authorities in the full digitisation of the construction sector.. The Commission is also supporting Estonia's efforts to provide social and health services in a more integrated and data-supported way. In addition, by supporting the Estonian government in its fight against cyber-crimes, the Commission laid the groundwork for more effective prevention, investigation and prosecution of those crimes. In 2019, work started on an input study to inform the new transport and mobility masterplan, on building a stronger link between the use of spending reviews and the performance based budget processes, and on improving labour market services. Support also started on data management as a pre-condition for e-Government and digital public administration, with the aim of fully benefitting from the main emergent technologies in the future.

([10]) The regulatory framework underpinning the programming of the 2021-2027 EU cohesion policy funds, has not yet been adopted by the co-legislator, pending *amongst other things* an agreement on the multiannual financial framework.

### *Box 2.1:* EU funds and programmes to address structural challenges and to foster growth and competitiveness in Estonia

**Estonia is one of the countries benefiting most from EU support.** The financial allocation from the EU Cohesion policy funds ([1]) for Estonia amounts to €4.7 billion in the current Multiannual Financial Framework, equivalent to around 2.8% of the GDP annually or around 52.9% of all public investment per year on average. As of the end of 2019, some €3.9 billion (around 86% of the total amount planned) was allocated to specific projects, while €2.2 billion was reported as spent by the selected projects ([2]) showing a level of project implementation well above the EU average.

**While bringing about a more harmonious development through reducing economic, social and territorial disparities, EU Cohesion policy funding also plays a significant role in addressing structural challenges in Estonia.** The Cohesion Policy programmes for Estonia have allocated EU funding of €1.00 billion for smart growth, €1.1 billion for sustainable growth and sustainable transport and €1.3 billion for inclusive growth. In 2019 following a performance review ([3]) €202.4 million have been made available within performing priorities for Estonia.

**EU Cohesion policy funding is contributing to major transformations of the Estonian economy** by promoting growth and employment via investments, among others, in research, technological development and innovation, competitiveness of enterprises, sustainable transport, employment and labour mobility. By 2019, investments driven by EU Cohesion Policy funds have already led to building or modernisation of 201 km of roads, both at regional level and in connection with the Trans-European Transport Network, support was already decided for 10763 enterprises including 449 start-ups, generating 1178 new jobs. Funds contributed also to the reduction of greenhouse gas emissions by 35 198 tons of $CO_2$.

Using the resources of European Regional Development Fund and Horizon 2020 project Tartu opened bike-sharing system in 2019. The system includes 69 electrically provided bike stations and 750 bikes (500 of them are electrical). The biggest bike-sharing network in the Baltics has 36,000 registered users.

The European Social Fund is focusing on boosting jobs opportunities and tackling youth unemployment. The Work Ability reform helps, with the support of ESF, to activate persons with reduced work ability. By the end of 2018, more than 21 500 persons with reduced work ability have taken up a job. Also 557 ex-prisoners were re-integrated into the job market since 2015, with more than half of them having found a job. 120 600 young people and 48 500 adults have participated in career counselling. 46 000 adults have benefitted from upskilling trainings. 1 000 childcare places have been created.

**Agricultural and fisheries funds and other EU programmes also contribute to addressing the investment needs.** Combined with national co-financing, the European Agricultural Fund for Rural Development (EAFRD) makes available in total €0.9 billion to promote improved competitiveness in the agri-food sector, to deliver on environmental priorities and to address development disparities in rural areas while the European Maritime and Fisheries Fund (EMFF) contributes €129.13 million. Estonia benefits from other EU programmes, such as the Connecting Europe Facility, which allocated EU funding of €221.8 million to specific projects on strategic transport networks, Horizon 2020 which allocated EU funding of €178.2 million (including 113 small and medium sized enterprises with about €43.9 million).

**EU funding contributes to mobilisation of important private investment**. By the end of 2018, European Structural and Investment funds ([4]) supported programmes to mobilise additional capital by committing about €218.4 million in the form of loans, guarantees and equity ([5]), which is 4.8% of all decided allocations of the European Structural and Investment funds (ESIF).

**EU funds already invest substantial amounts on actions in line with the Sustainable Development Goals .** In Estonia, European Structural and Investment Funds support 11 out the 17 SDGs and up to 95% of the expenditure is contributing to those.

([1]) European Regional Development Fund, Cohesion Fund, European Social Fund, including national co-financing.
([2]) https://cohesiondata.ec.europa.eu/countries/EE
([3]) The performance review is regulated by Article 22 of the Regulation (EU) No 1303/2013, the amount includes national co-financing.
([4]) European Regional Development Fund, Cohesion Fund, European Social Fund, European Agricultural Fund for Rural Development and European Maritime and Fisheries Fund.
([5]) Member States´ reporting on financial instruments based on Article 46 Regulation 1303/2013, cut-off date 31/12/2018.

# 3. REFORM PRIORITIES

## 3.1. PUBLIC FINANCES AND TAXATION

### 3.1.1. BUDGETARY DEVELOPMENTS AND FISCAL FRAMEWORK

**Estonia's public finances have kept the debt ratio at a very low level, but fiscal policy has been pro-cyclical.** Public expenditure growth was rapid in recent years, when real growth outpaced potential growth. Public finances were in a higher-than-planned deficit over the economic upturn years. In 2018 and 2019, Estonia increased expenditure increased on healthcare, education, social funding, the financing of local government mergers, and transport infrastructure. Social expenditure (pensions, parental benefits) has grown relatively rapidly due to an indirect automatic link to overall wage growth. At the same time, Estonia's public debt was 8.4% of GDP in 2018, by far the lowest level in the EU.

**Pro-cyclical policy in good economic times has reduced fiscal leeway in the current cyclical economic moderation.** Estonia's fiscal position recorded a nominal deficit of 0.6% of GDP in 2018, during the peak of the economic cycle, which corresponded to a structural fiscal deficit of over 2% of potential GDP. While the less favourable economic outlook is set to affect revenues, there is also the need to correct for previous fiscal slippages, putting additional pressure on the budget. The 2020 budget foresees some expenditure restraint, especially regarding locally-funded investments and some categories of central government wages. On the back of slower revenue growth, the budget is projected to remain in a small nominal deficit of 0.2% in 2020 and 2021, according to the Commission 2019 Autumn forecast. Given that economic growth is forecast to slow down and to operate well below its potential in 2020 and 2021, the structural fiscal position is projected to improve from a deficit of around 1½% of GDP in 2019 to about 1% of GDP in 2020 and ½% of GDP in 2021.

**Estonia's fiscal framework is based on a budget balance rule defined in structural terms, but does not make use of expenditure rules.** The exclusive focus on the structural balance rule in Estonia has limited the importance and visibility of other relevant indicators. Most notably, expenditure rules, or binding expenditure targets have not been used and the medium-term budgetary framework does not provide sufficient protection against expenditure volatility. This reduces the framework's counter-cyclical properties. The rapid growth in public expenditures in 2018 and 2019 could not be assessed against any domestic expenditure constraint, such as an expenditure rule, medium-term ceiling or target, reducing the ability to control expenditure dynamics. As a way to mitigate possible risks, a regular assessment of developments on the expenditure side of the budget could inform the national budgetary process ([11]).

#### Changes to the pension system

**The current pension system stands on three pillars**: the public pay-as-you-go system (first pillar), mandatory pension funds (second pillar) and voluntary pension funds (third pillar). The second and third pillars are funded. The pension system is financed from the 33% social tax rate, of which a 20% rate is designated for pensions. For people who do not participate in the second pillar, the 20% social tax goes entirely into the first pillar state pension insurance. For second pillar participants, the 20% social tax is split into 16% to the first pillar and 4% to their personal second pillar account. In this case, employees pay an additional 2% of their salary into the second pillar.

**The functioning of the second pillar is hampered by low returns, which undermines trust in the system.** The second pillar is mandatory for people born after 1983, or for people who have at some point in time opted to join the second pillar. The management of investments has been outsourced to private pension funds. Since their creation in the early 2000s, Estonia's second pillar funds have delivered one of the lowest nominal and real returns (adjusted for inflation) in the EU (OECD, 2019b). The low returns are explained by relatively high

([11]) Such an assessment could for example be made by the Fiscal Council (www.eelarvenoukogu.ee), which is an independent body assessing the macroeconomic and public finance forecasts used for budgetary planning and monitoring compliance with the domestic budgetary rules, as well as EU budgetary rules.

management fees and investment restrictions into riskier (but potentially more profitable) asset classes (Piirits, Laurimäe, 2019). The legislative changes entered into force in January 2019 to lower the pension fund's management fees and reduce investment restrictions with the aim of improving investment returns ([12]).

**In November 2019, the government submitted a bill to the Parliament that would make participation in the second pension pillar voluntary.** The government did not carry out any impact assessments prior to these fundamental changes and launched only a week-long consultation of social partners. Under this legislative proposal, as of 2021 current second pillar savers have broadly three options: 1) to continue saving through pension funds; 2) to manage their own pension savings in an 'investment account' without leaving the second pillar system ([13]); 3) to leave the second pillar, either by cashing out the accumulated savings or by ending contributions while keeping accumulated savings in the pension funds. New entrants to the labour market and those currently out of the 2nd pillar would be free to decide whether to join the second pillar or not. Overall, these proposed changes do not address the causes of low returns in the second pillar, but give the right to exit the pillar.

**The number of people who will exit the second pillar is highly uncertain.** Surveys have indicated that about 20-45% of people will consider exiting the second pillar, with low-income employees (who generally also have the lowest public pensions) more likely to exit ([14]). These choices might also change over the years in reaction to personal life events, economic cycles and the future performance of the funds. Notwithstanding those uncertainties, it is likely that the importance of the second pillar will dwindle and that the adequacy of the overall pensions will become more dependent on the first pillar pay-as-you-go entitlements, which so far have left the elderly population exposed to high risks of poverty and social exclusion (see Section 3.3.2)([15]).

**The changes imply more immediate revenues for the first pillar and additional one-off budget revenues, at the expense of long-term pension funding.** For people exiting the second pillar, the 4% social tax is redirected to the first pillar. This raises the revenues of the first pillar and, as one option, can be used to raise current pensions above the usual pension indexation, which is the plan of the current government. Cashed out pension savings are subject to a 20% income tax (or 10%, if the savings are taken out at the pensionable age). For this reason, the short-term effects on public finances are likely to be positive, though at the expense of long-term pension funding.

**Analysis of the proposed reform has also highlighted macroeconomic risks and challenges for the financial sector and capital markets.** The Bank of Estonia's impact assessment flagged that sharply unwinding the pension funds would increase economic volatility. In 2018, the accumulated assets in the second pillar funds amounted to about €4.5 billion or 17% of GDP. A partial withdrawal of these savings would temporarily boost domestic demand, but cause an opposite effect once the stimulus runs out. The magnitude of this macroeconomic volatility would depend on the share of people exiting the funds in a given year, which is hard to predict (as discussed above). Moreover, as 17% of the current savings are invested in the Estonian economy, withdrawal from the second pillar may have structural effects on the Estonian financial and capital markets. In fact, the financial sector has already started operational adjustments to minimise possible negative effects (see Bank of Estonia, 2019). Shrinking resources in the second pillar would make it more difficult for the local financial market to grow, hampering the diversity of the funding in the economy.

([12]) Changes to the *Investment Funds Act* lowered the management fees by one third and 100% of the fund can now be invested in equities (previously 75%).

([13]) In this case private individuals would hope to achieve higher returns than pension fund managers by making investment decisions on their own.

([14]) Public opinion surveys from Kantar Emor and Turu-uuringute AS.

([15]) With regard to parental pension, the possibility of opt out from the second pillar will create a third category of parents who formerly contributed to the second pillar but after cash out will not receive any pension supplement in the first pillar. Future pensions of these parents will most likely be lower than for the ones who continue contributing to the second pillar and the ones who never contributed to the second pillar

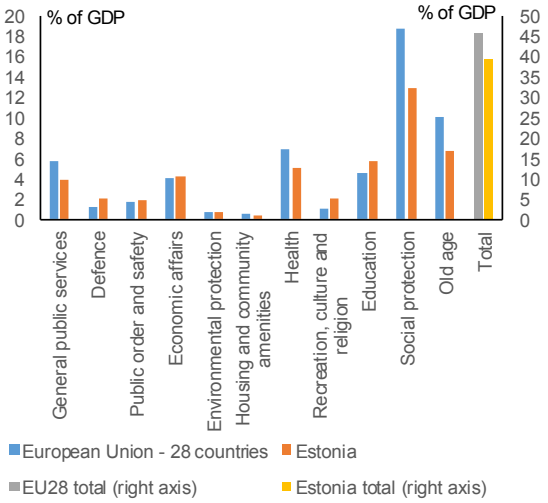
### Debt sustainability analysis and fiscal risks

**Government-sector revenues and expenditures are lower than the EU average, with relatively low spending on pensions and healthcare.** Estonia's tax burden has historically been relatively low (see Section 3.1.2), which in turn translates into lower-than-average public spending. Notably, Estonia spends less than the EU average on healthcare and social protection, including old-age pensions (see Graph 3.1.1). Considering Estonia's relatively weak performance on social cohesion and healthcare (see Section 3.3), this may also mean that some public functions have been under-funded.

**Medium- and long-term fiscal sustainability risks are limited,** given the very low level of public debt and a projected decrease in public first pillar pension spending**.** Long-term fiscal sustainability risks are currently estimated to be low because future spending pressures related to population ageing are contained (see Annex B). In particular, public first pillar pension expenditures as a share of GDP is projected to fall steadily through to 2070 according to the 2018 Ageing Report, mainly due to a decline in the public benefit ratio, i.e. average public pensions vis-à-vis average wages ([16]). The total (public plus private) pension benefit ratio was projected to remain broadly stable as the decline in public pension spending was intended to be compensated by the growing private second pillar pensions. These fiscal sustainability projections do not yet include the potential effects of the upcoming changes to the second pillar pension funds, discussed above.

([16]) The decline in the first pillar occurs for two reasons. First, public pensions grow at a slower pace than wages because they are indexed 80% to social taxes and 20% to consumer prices. Secondly, it reflects the assumed continuing transition to a two-pillar pension system whereby the second pillar is funded through part of the social contributions (a 4% share of social tax is redirected from the first pillar to the second pillar). These projections do not yet include the upcoming changes to the second pillar.

Graph 3.1.1: **Public expenditure by function**




***Source:*** European Commission

**The adequacy of pension and healthcare expenditure will remain a concern in the longer term.** The share of the elderly population at risk of poverty in Estonia is above the EU average (see Section 3.3.2.). Due to population ageing, the ratio of employees per pensioner is projected to decline from 2.2 in 2018 to 1.6 in 2060 (Bank of Estonia, 2019). This would exacerbate the pension adequacy concerns under the current trends, especially if the second pillar unwinds. In the past, low adequacy of pensions and healthcare spending was remedied through consecutive ad hoc increases of pensions on top of the indexation rate and by injections into the healthcare fund.

**Making participation in the second pillar voluntary implies less prefunding for pensions and more uncertainty in the long term.** It undermines the multi-pillar pension approach followed during the past two decades, and reduces the diversification of pension income and risks. Moreover, the envisaged unwinding of the second pillar scheme might result in lower overall replacement rates in the long term, which would be problematic given the already rather low adequacy of Estonian pensions. Strong declines in replacement rates would likely be socially and economically untenable and might require higher public spending and thus higher taxes.

### 3.1.2. TAXATION FRAMEWORK

**The Estonian taxation framework is characterised by low taxation of income, capital and property and a high reliance on indirect taxes.** In 2018, the total tax burden in Estonia at 32.8% was considerably below the EU average of 39.2 % of GDP (Eurostat, 2019). Revenues from labour taxes were low (16.6% of GDP) compared to the EU average (19.64% of GDP) in 2018 (European Commission, 2020). Corporate income taxes and taxation of household capital income are also below the EU average. Estonia has no wealth tax and the taxation of capital is the lowest among all Member States (2.48% compared to an EU average of 8.5% of GDP), with low tax revenues from both capital stocks as well as the various types of capital income. Moreover, Estonia has the lowest revenues from property taxes among all Member States. Revenues from recurrent taxes on immovable property, which are considered to be among the most growth-friendly taxes amounted to 0.2% of GDP in 2018, significantly below the EU average of 1.5% (European Commission, 2020)([17]). On the other hand, at 13.8%, revenues from consumption taxes were above the EU average of 11.1% of GDP in 2018 (European Commission, 2019a), which increases budget vulnerability in periods of lesser consumer demand.

**There is scope to improve the contribution of the tax system to supporting environmental objectives.** Estonia collects more revenue from environmental taxation (8.3% of total tax revenue in 2018) than the EU average 6.14% (European Commission, 2019a), but the majority of it comes from a rather narrow base: excise tax on fuels and environmental fees for excavating oil shale. At the same time, revenues from transport taxes (excluding fuel taxes) account for 0.2% of total tax revenue, the lowest in the EU. The Estonian vehicle taxation system does not support environmental objectives (European Commission, 2019a). There is no $CO_2$-based vehicle tax in Estonia (2018). As a result, new vehicles purchased in Estonia are the most environmentally unfriendly in the EU with an average $CO_2$ emissions of 132 grammes per kilometre compared to the EU average of 118.5 grammes in 2017 (European Environment Agency, 2018). In addition, the government's plan to reduce the tax rate for transport fuels does not provide consumers with an incentive to replace their vehicles with environmentally friendlier alternatives. The 2030 Estonian National Energy and Climate Plan recommends introducing a congestion charge for the capital city and more environmentally motivated parking fees at municipal level, but lacks any country-wide strategy for transport taxes.

**The income tax reform somewhat reduced income inequality for pensioners.** The Commission expected in the 2019 country report that the 2018 tax reform would have a limited effect on reducing income inequality as measured by the Gini coefficient, because the income of the poorest households depends on pensions or subsistence benefits. However, the preliminary estimates suggest that the reform somewhat reduced the previously relatively high tax wedge for low and middle-income earners. According to the Ministry of Finance of Estonia, based on the tax returns filed by employers and social security bodies for the first 11 months of 2018 ([18]), the effective tax rate decreased for 64% of income earners and remained the same for 23% of income earners. The effective tax rate increased for 13% of income earners. The effective tax rate decreased for 55% of old age pensioners who do not work, increased for 1% and remained the same for 44%. For old age pensioners who work, the effective tax rate decreased for 63%, increased for 35% and remained the same for 2% ([19]). This seems to suggest that the 2018 tax reform generally improved the situation of about half of the old age pensioners who do not work. Besides that, it encouraged individuals to earn more, but provided a disincentive for higher earning old-age pensioners to be active on the labour market. There is no data about the effect of the tax reform on other types of low-income deciles. However, since the subsistence benefits did not constitute taxable income before or after the tax reform, the 2018 tax

([17]) In terms of composition of property taxation, recurrent taxes on immovable property amounted to 0.2% of GDP in Estonia, significantly below the EU average of 1.6% of GDP.

([18]) https://blogi.fin.ee/2019/01/maksuvaba-tulu-reform-2018-esialgsed-tulemused-ja-ootused/

([19]) With the new system, workers with average income in the range of €487-€1,776 per month and pensioners with income in the range of €417- €1,351 per month paid less income tax for 2018 than for 2017.

reform did not affect the situation of recipients of such benefits.

**The corporate income tax is favourable for investment in general** (European Commission, 2019a)**.** There are no special provisions to favour R&D activities, but companies can deduct business-related R&D expenses and do not have to pay income tax on the income that they reinvest in R&D.

**The obligation to pay advance corporate income tax for Estonian resident credit institutions seems to put small resident credit institutions at a competitive disadvantage.** As of 2018, Estonian resident credit institutions need to make an advance payment of corporate income tax. The tax rate is 14% and the amount is calculated and paid quarterly on accrued profits. Small resident credit institutions claim that the obligation to make advance payments of corporate income tax hampers their ability to compete with large foreign-owned credit institutions.

**Estonia performs well on measures related to tax administration efficiency.** According to PricewaterhouseCoopers and the World Bank (World Bank Group and PwC, 2019), in 2018 it took 50 hours a year for a medium-sized company to comply with tax obligations, which is the most efficient outcome in the EU. The time it takes to comply with and obtain a value-added tax refund and the time it takes to comply with corporate income tax audits are among the lowest in the EU. E-filing of tax returns is wide-spread and pre-filling data of personal income tax returns is widely used.

**Tax compliance is relatively good; however, undeclared work, particularly the partial declaration of salaries, remains an issue.** The value-added tax gap was 5.4% of the total value-added tax liability in 2017, which marked an approximate 9 percentage point decrease over a 5-year period. It was considerably below the EU average of 11.2% in 2017. According to the Tax and Customs Board of Estonia, undeclared work has decreased in Estonia, but the partial declaration of salaries (‘envelope salaries’) remains an issue. At the same time, the preliminary results of the Eurobarometer survey from September 2019 (to be published in February 2020) show that undeclared income in Estonia is estimated at 13% of the total income over the last 12 months. This is above the EU average of 10%. The national authorities estimate that in 2018 the foregone labour tax revenue was €86 million, consisting of €21 million for totally undeclared wages and €65 million for partially undeclared wages. Undeclared payments concern in particular sectors such as commerce, car service, manufacturing, construction, and information and communication services. The tax authority is planning to take further measures to fight tax evasion, such as introducing online cash registers, cooperating with banks, increasing transparency and facilitating access to tax data.

### Financing of municipalities

**The reform of local government has not expanded the fiscal autonomy and environmental taxation possibilities of the municipalities.** Estonia launched the local government reform in 2017. The local governments depend mostly on tax revenues from centrally-levied taxes (European Commission, 2019a). Local governments may only decide to establish advertising taxes, taxes for closing roads and streets, motor vehicle taxes, animal taxes, entertainment taxes and parking charges. Although most municipalities invest in infrastructure to facilitate tourism, there is no possibility to set tourism taxes. Similarly, local governments are responsible for local waste and water management but are not able to set any environmental taxes except for motor vehicle taxes. Low autonomy in defining the tax base might limit local governments' ability to provide services and incentives to attract businesses, as well as their ability to address local environmental issues.

## 3.2. FINANCIAL SECTOR

**The financial position of the Estonian banking sector is strong.** Banks remain profitable thanks to high efficiency, good quality assets and low cost funding coupled with relatively high interest rates in a setting of high market concentration. So far, the price of market-based (parent bank) funding has remained favourable, despite the suspicions of money laundering that have affected several banks operating in Estonia and the groups owning Estonian banks. Moreover, despite low interest rates and a negative Euribor, banks have managed to maintain interest income and general profitability. This translates into high levels of return on equity, while the return on assets amounted to 1.1% (Table 3.2.1). The ability of households and companies to repay their loans has remained strong, underpinned by still robust economic activity. As a result, loan losses have been very small; the non-performing loans ratio stood at 1.8 in 2019. This allowed larger banks to reduce their model-implied risk weights and consequently their capital requirements. In 2019, the total capital ratio fell to 27% on average, but remains well above the minimum capital adequacy requirements and the capital buffers currently in force. It consists almost entirely of common equity tier 1, the highest quality capital. All banks meet the minimum required liquidity coverage ratio with a sufficient margin (average of 135%).

Table 3.2.1: **Financial soundness of banks**

| | 2014q4 | 2015q4 | 2016q4 | 2017q4 | 2018q4 | 2019q2 |
|---|---|---|---|---|---|---|
| Non-performing loans | 3.2 | 2.2 | 1.7 | 1.9 | 1.3 | 1.8 |
| o/w foreign entities | 2.4 | 1.7 | 1.3 | 1.4 | 1.0 | 0.7 |
| o/w NFC & HH sectors | 3.5 | 2.9 | 2.3 | 2.4 | 1.7 | 2.3 |
| o/w NFC sector | 2.8 | 2.9 | 2.4 | 3.2 | 2.2 | 2.7 |
| o/w HH sector | 4.0 | 3.0 | 2.2 | 1.6 | 1.3 | 2.0 |
| Coverage ratio | 37.7 | 42.4 | 46.7 | 25.4 | 25.0 | 29.3 |
| Return on equity(1) | 9.7 | 6.8 | 11.1 | 9.2 | 9.8 | 9.5 |
| Return on assets(1) | 1.6 | 1.1 | 1.5 | 1.4 | 1.4 | 1.1 |
| Total capital ratio | 41.8 | 35.4 | 34.4 | 30.6 | 31.0 | 27.0 |
| CET 1 ratio | 41.3 | 34.8 | 33.8 | 30.0 | 30.3 | 26.5 |
| Tier 1 ratio | 41.3 | 34.9 | 33.8 | 30.1 | 30.4 | 26.6 |
| Loan to deposit ratio | 125.3 | 123.7 | 125.1 | 119.0 | 114.0 | 112.5 |

ECB aggregated balance sheet: loans excluding to government and MFI / deposits excluding from government and MFI. Loan-to-deposit ratio excluding cross-border operations.
For comparability only annual values are presented
***Source:*** ECB CBD2

**Banks operating in Estonia have become less dependent on their foreign parent banks and now largely fund themselves from domestic deposits and the wholesale funding market.** Despite low interest rates, local deposits are still outpacing credit growth, with a consistent average year-on-year growth of about 9% in 2018 and 7% in 2019. This has helped improve the loan-to-deposit ratio to 108% in October 2019. Under a covered bond legislation adopted in February and in force since October 2019 lenders can use mortgage loans as collateral for issuing covered bonds. This is expected to address the small funding gap. The implementation of the Covered Bonds Act could be the first key step towards creating a pan-Baltic legal framework for the issuance of covered bonds to foster the Baltic capital markets and increase financial stability.

**While household debt is moderate, banks' exposure to mortgage debt is relatively high, pointing to vulnerabilities.** Housing loan demand continues to be supported by favourable labour market conditions, rapid wage growth and strong consumer confidence, as well as rising house prices. Household debt-to-GDP stands at 39%, below the euro area average of 55% (2018 data) and debt-to-disposable income is 70%, still below the euro area average of 94%. However, the share of housing loans in the total assets of the banks operating in Estonia is almost twice the average level in the euro area. This makes the banks vulnerable to any negative change on the real estate market affecting loan servicing by households. In order to ensure that banks have sufficient capital to cover future risks from housing loans, from 30 September 2019, Eesti Pank set a risk weight floor of 15% for Swedbank and SEB. These are the two largest banks in Estonia: they issued 80% of new housing loans in Estonia during the first half of 2019 and both use internal ratings to assess their risk exposures. This, alongside the loan-to-value limit, debt-to-service income ceiling and maximum loan maturity should appropriately support macro-financial resilience to potential shocks arising from high household debt levels.

**Structural changes in the Luminor Group necessitate monitoring risks and developments in all Baltic states in the calibration of macro-prudential policies**. Following the conversion of the Latvian and Lithuanian subsidiaries of Luminor Group into branches and their merger with the head office in Estonia, the Estonian financial sector grew by almost half to 145% of GDP and its credit portfolio almost doubled (accounting for branches in Latvia and Lithuania). The three largest banks (Swedbank, SEB and Luminor) now hold a market share of 85%, of which the Swedish banks now account for two

thirds. Due to banks' increased concentration and their strong interlinkages, potential risks (for example associated with the Swedish real estate sector) from parent and neighbouring countries may be transmitted to the Estonian financial sector, hence the importance of holding sufficient capital buffers in order to ensure the loan supply in Estonia and liquidity buffers.

### Anti-money laundering

**Estonia has reaffirmed its commitment to fighting money laundering and terrorism financing as key to preserving trust in and the stability of its financial system.** First hit by the money laundering scandal involving the Estonian branch of Danske Bank, Estonia has been under pressure to strengthen its anti-money laundering system. Further scandals have since emerged, involving other Nordic credit institutions operating in Estonia. Finantsinspektsioon, the supervisory authority, took action against these institutions: Versobank AS in 2018 has seen its licence withdrawn and Danske Bank can no longer operate in Estonia since 2019. More recently, Finantsinspektsioon cooperated with its Swedish counterpart to investigate alleged misapplication of money laundering measures in the Estonian branches of Swedbank and SEB. Due to parallel judicial investigations, the case against Swedbank was dropped. The licences of three payment institutions were also withdrawn after repeated violations of anti-money laundering requirements.

**Despite various measures taken by Finantsinspektsioon, there is room to further enhance the effectiveness of supervision and enforcement.** On-site supervisory inspections remain limited (during 2014-2018, only ¼ of supervised entities were physically inspected) and Finantsinspektsioon has had to rely heavily on extraordinary inspections of credit institutions (43% of inspections in 2014-2018). Additional resources that were received in 2019 were only partly directed to its anti-money laundering supervisory functions, with limited increases in human resources and skills in this area. In contrast, the Financial Intelligence Unit and the Prosecutor's Office will receive additional dedicated resources in 2020 to increase their capacity in terms of staff, tools and trainings. Data on exchange of information between the Financial Intelligence Unit and law enforcers signal good information sharing but also show that much information is shared upon request, not proactively. On the prosecution side, the case opened at the end of 2018 involving former Danske Bank employees is still pending.

**The share of non-resident deposits, which bear a larger risk of money laundering, fell from 19% to 6% between 2014 and 2018**. In particular, the share of deposits from high-risk jurisdictions fell from 8.5% to 0.5% over the same period. This trend reversed again in 2019 as the average value of non-resident deposits increased in 2019. However, the share of non-EU deposits remains minor (1%). These deposits are largely held by medium risk customers. Only a minor share of customers are deemed as high risk (0.2%) holding 1.2% of total deposit and require appropriate customer due diligence. Identification of beneficial ownership is key in the case of legal entities. Custody services for non-resident customers also increased in 2019 (+63% compared to 2018) ([20]) and account for 60% of all custody services provided by credit institutions operating in Estonia. These products might be exposed to money laundering risks in light of the speed of transactions, the anonymity involved and reliance on checks by institutions operating in other jurisdictions, which may include higher risk relationships. The deficiencies detected in its credit institutions have not yet fed into Estonia's risk assessment which is to be reviewed. .

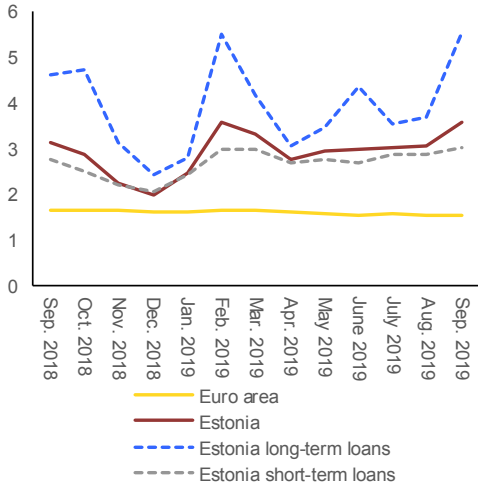
**The government proposed a new set of anti-money laundering legislation, but most is yet to be adopted.** In December 2019, Parliament passed stricter rules for licenses to virtual currency providers and wallet providers and enhanced supervisory powers for the Financial Intelligence Unit. Other legislation including transposition of the EU's 5th Anti-Money Laundering Directive, the higher ceilings for misdemeanours and the introduction of confiscation without conviction powers, have still to be adopted.

**Delays in legislative changes and policy implementation still hinder progress.** The delayed submission of legislation to strengthen the preventive framework and administrative sanctions limits the deterrent effect of the tools currently

([20]) Comparison between data for September 2019 and September 2018.

available to supervisory authorities. The register of beneficial ownership also suffers from shortcomings, amongst which compliance: in October 2019 a quarter of legal entities registered in the country still had to provide information on their ultimate ownership. A revised national risk assessment, planned for 2020, will help to better target resources and reassess risks based on a new methodology while learning from recent scandals. The increased resources of the Financial Intelligence Unit and the Prosecutor Office will allow more staff to be devoted to fighting and repressing money laundering, but more can be done to increase the sanctioning power and the capacity of the banking watchdog, Finantsinspektsioon, to carry out risk-based inspections.

Graph 3.2.1: **Composite cost of borrowing**




***Source:*** European Commission based on ECB data

## Access to finance

**Conditions for access to finance are favourable overall, but have deteriorated slightly.** According to the survey results (ECB, 2019a; ECB, 2019b), while firms appear generally satisfied with the external financing received, the share of companies considering access to finance as their most pressing concern increased to 9% in 2018. As sources of financing, bank loans have been relevant for 41% of small and medium-sized companies, but the share of companies reporting that the fear of rejection prevents them from applying for a loan is much bigger in Estonia than in the EU (14% and 4%, respectively). The percentage of companies for which insufficient collateral represents an obstacle to receiving a bank loan is also higher than the EU average. Public support has been shifting from grants to state-backed loans and guarantees. However, increasing concentration in the banking sector may have made obtaining bank loans more difficult. Estonia has higher a cost of borrowing than the euro area average, and the difference is more pronounced for long-term loans (see Graph 3.2.1). The higher cost of borrowing and stricter conditions for obtaining loans could affect small firms and firms in rural areas, but also innovative firms.

**Cooperation between the Baltics helps overcoming market constraints on early-stage growth capital, but investment in mature companies is still limited.** Cooperation under the Baltic Innovation Fund helped the start-up eco system in the region with more than €435 million raised for investment in young and growing companies. This helped to overcome the small size of the national markets. It is expected that over the next 5 years, the Baltic Innovation Fund 2 will invest €156 million in private equity and venture capital funds further developing equity investments into small and medium-sized companies. Selected fund managers are expected to raise private financing, bringing the total amount for investments to over €300 million. However, despite the steady increase of equity financing since 2015, funding opportunities for more mature companies are still narrow. Moreover, Nasdaq Tallinn's secondary market ([21]) is still too illiquid and is relatively undiscovered by global investors. Special investment vehicles may hence be needed which focus on investments in listed small and medium-sized companies, preferably on a Baltic level, to attract institutional investors.

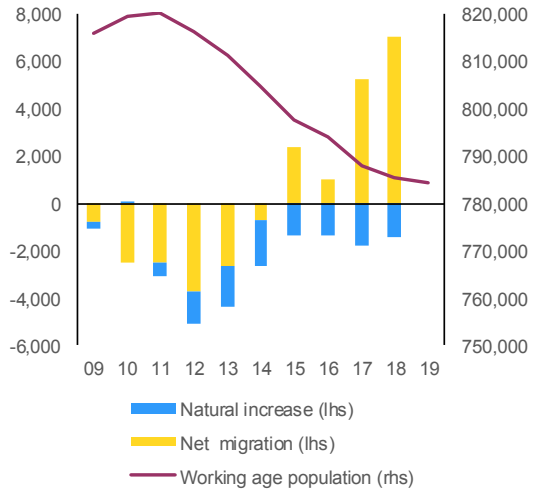
([21]) Nasdaq Tallinn is part of the joint Nasdaq Baltic market that was established to minimise investment barriers between Latvian, Lithuanian and Estonian markets. It includes a common Baltic equities market with harmonised trading rules and market practices, the same trading system, joint trading lists, harmonised indexes, a single membership, and trading and settlement currency allowing investors easy access to all Baltic listed financial instruments through any of the pan-Baltic members.

## 3.3. LABOUR MARKET, EDUCATION AND SOCIAL POLICIES

### 3.3.1. LABOUR MARKET

**Strong labour demand has delivered high employment and participation, but challenges lie ahead as the economy slows down.** Employment increased further by 0.8percentage points in 2018, reaching a record high of 79.5%, flagging as the best performer in the Social Scoreboard. This increase materialises in the context of an already positive labour environment, with low unemployment (5.4%) and high activity rates (83.8%) in 2018. The recent employment growth has been shared more or less equally between permanent and temporary employment, but self-employment increased the most in 2018 reaching 10.6% of total employment. However, as economic growth is slowing, there are already signs that new job creation will moderate in the short term.

Graph 3.3.1: **Demographic change 2009-2019**




***Source:*** European Commission based on national data

**The labour supply has not kept up with the changing needs of the economy, creating a potential barrier to growth.** While in recent years the total population increased due to positive net migration, population ageing has offset the positive effect on the labour market (see Graph 3.3.1). The working age (20-64) population decreased by almost 32,000 people, or 3.9%, over the past decade. In 2015, net migration to Estonia turned positive, reflecting income convergence. In terms of composition, the share of young people in the working age population has dropped. The population is set to decline further due to low birth rates. The working age population will decrease by around 12% by 2035 compared to 2015 (Puur, Piirits, Sakkeus, Klesment, Eamets, 2018). This will exacerbate the existing labour shortages (European Commission, 2019a; European Commission, 2019b).

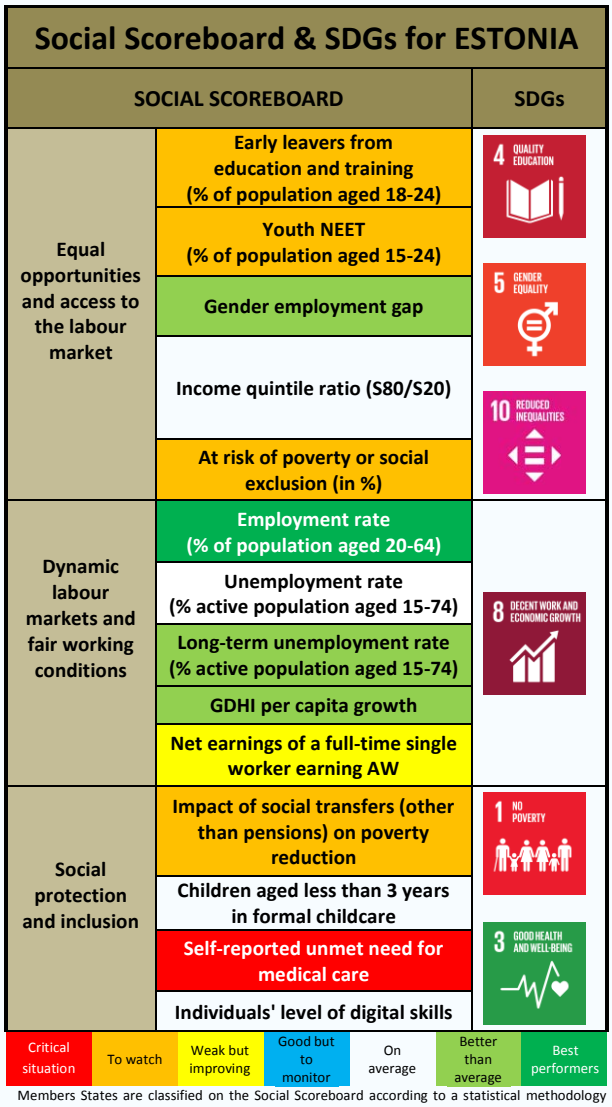
**Skills shortages and high over-qualification indicate room for better use of skills.** Shortages have been identified in information and communication technology specialists, teaching and other professions (OSKA, 2016). According to forecasts, half of those entering the labour market will need a higher education degree and a third will need a vocational education qualification (OSKA, 2018a) ([22]). However, the number of graduates in either track will not suffice to meet future needs. Employers require more transversal competences, from graduates of vocational education and training and more practical skills from higher education graduates (OECD, 2019d). Nevertheless, the high share of low value-added sectors and the high share of the labour force with tertiary education result in over-qualification: 20% of workers with tertiary education are employed in occupations that do not require it. At the same time, Estonia has experienced an increase in high-skilled tasks relative to middle- and low-skilled tasks (upskilling), and the share of routine tasks has declined. Overall, skills mismatches have declined significantly since 2010, and the level of disparities in the labour market outcomes for different skill groups is one of the lowest in the EU (European Commission, 2019i, Part II Analytical chapter).

([22]) As response to emerging skills mismatches, Estonia developed and is further enhancing its comprehensive system to anticipate labour market needs and skills (OSKA).

### *Box 3.3.2:* **Monitoring performance in light of the European Pillar of Social Rights**

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

**The Social Scoreboard supporting the European Pillar of Social Rights points to some employment and social challenges in Estonia.** Estonia's economic and labour market performance has remained stable in recent years with high employment and activity rates. Nevertheless, inactivity due to caring responsibilities remains high, in part due to the improving but still relatively low share of children aged less than 3 years in formal childcare. This is related to there being no childcare below the age of 1.5. While the gender employment gap remains below the EU average, the gender pay gap remains among the highest in the EU. The high self-reported unmet need for medical care, due to long waiting times for both primary and specialist care, remains one of the pressing challenges for Estonia. Finally, the share of people at risk of poverty or social exclusion and the impact of social transfers on poverty reduction remain points to watch, as they are driven by the at-risk-of-poverty level of people aged 65+.




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 draft Joint Employment Report 2019, COM (2018)761 final; NEET: neither in employment nor in education and training; GDHI: gross disposable household income. Update of January 2020. Classification of GDHI per capita growth based on 2017 data.

**High school dropout rates hamper the integration of young people in the labour market and society at large.** Despite recent improvements the early school-leaving rate remains high, with large gender disparities. This contributes to the rising share of young people neither in employment, nor in education or training, in spite of good labour market developments overall. Moreover, low education levels significantly increase the risk of poverty or social exclusion going forward.

The 2019 modification to the Vocational Education Act made **studying in vocational schools more flexible, and introduced testing of innovative study formats in collaboration with local governments**. The amendments allow schools to quickly react to the country's educational and labour market needs. The result-based financing is expected to motivate schools to perform well. Schools are also given the chance to open curricula that are not directly linked to professional studies but which prepare students for selecting a profession.

**The limited supply of skilled labour is likely to remain a growth bottleneck in the medium-term.** This is mostly due to demographic change and to structural problems in the education system (see Section 3.3.3). Participation in adult learning in Estonia remains above the EU average both for employees and unemployed people. While companies have identified the lack of skilled labour as the main constraint to investment (European Investment Bank, 2019a), corporate spending on on-the-job training is among the lowest in the EU (OECD, 2019b). The uptake of public programmes that support investment in human capital has been limited (see Section 3.3.3).

**The transition to a climate-neutral economy will create further need for investment in skills.** The employment impacts of reaching the Paris Climate Agreement are estimated to be positive overall (+0.5% by 2030). In Estonia, more than 10,000 people are thought to be working in sectors that are expected to transform thanks to the transition towards a climate-neutral economy, and another 20,000 are employed in jobs indirectly related to those industries (logistics, services, etc.). Ida-Viru county that is largely dependent on the oil shale sector, will be particularly impacted and therefore additional investments will be key to a successful transition (see Box 3.4.2 and Section 3.5).

**Over recent years, labour shortages have been eased by activation policies**. Though starting from relatively low levels, Estonia has over the course of the last 3 years increased both spending and participation in active labour market policies. This, together with positive economic developments, has helped increasing activity rates across all segments of the population (Table 3.3.1). Major reform initiatives that affect the labour market, such as the implementation of the Youth Guarantee, the work ability reform, or reforms to the parental leave and benefits system, have been introduced to further increase the activity rates. This in turn helped raise activity rates of young people, women and people with disabilities as well as of older workers (see Section 3.3.2). However, challenges remain ensuring sustainable employability.

Table 3.3.1: **Activity rates of subgroups in Estonia and EU-28, 2018**

*Data for 2017;
**Comparison 2017-2014
***Source:*** European Commission based on Eurostat data

**Migration and labour mobility to Estonia has also helped fill labour and skills shortages.** In 2015, net migration to Estonia turned positive, reflecting in part the improved economic situation in the country that saw wages in Estonia grow from 35% to 51% of the EU average between 2011 and 2018. The number of fixed-term residence permits is subject to an annual quota of 0.1% of the Estonian native population. The 2020 quota stood at 1,378 people, which was already filled in January. The government has also pursued a coordinated talent policy to attract top specialists to the Estonian labour market. The increase in foreign short-term workers ([23]) in particular has eased the labour shortage in sectors like

([23]) A person can work in Estonia based on a visa if their employment is registered at the Police and Border Guard Board. This allows for a short-term work up to 365 days during a 455 day period (in case of seasonal work, employment is allowed for 270 days during a 365 day period). Longer stays are allowed for teachers, professors, high level professionals or those working in science or start-up companies that are based in Estonia. Such short-term work is subject to wage criteria applied for short-term workers – the salary of a short-term employee from a third country needs to be at least equal to the national average gross wage (€1,310 in 2019).

construction, agriculture, and manufacturing industry.

**The Work Ability reform has helped increase the activity rate of people with disabilities.** The activity rate of people with disabilities increased from 63% in 2016 to 68% in 2017, overtaking the EU average of 61%. On average, 44% of newly registered jobseekers with reduced work ability find a job within 12 months, resulting in 8,453 people in 2017 and 10,204 people in 2018 becoming employed. The Work Ability reform has brought down the equilibrium unemployment rate, indicating the success of the reform (Eesti Pank, 2019). Around one third of people in Estonia with reduced work ability suffer from mental illnesses, giving rise to the analysis on mental health challenges in the workplace that was carried out in August 2019 (Sotsiaalministeerium, 2019). There is further scope to support the labour market participation of vulnerable groups and people on long-term sick leave, and for measures to prevent loss of ability to work and to preserve good health and safety at work. To this end, available and affordable quality services are key.

**The gender pay gap in Estonia remains one of the highest in the EU.** The gap was considerably higher than the EU average in 2017, 25.6% versus 16.0%, indicating that Estonia requires still some efforts to achieve sustainable development goal 5 (gender equality). Measures to tackle the gender pay gap are part of Estonia's 2016-2023 Welfare Development Plan. The government has abolished earlier plans to introduce the requirement for wage transparency into legislation. The government is preparing digital tools aimed at improving pay transparency and the understanding of the causes of the gender pay gap. A national target of 2.5pp reduction of the gap by 2023 would close it in 40 years. Simulations by the European Commission, based on the Euromod model, show that reducing the gender pay gap to 3.3% would reduce the overall at-risk-of-poverty rate by 1.3 percentage points, particularly for households with one adult and children, which would see it reduced by 6.2 percentage points (more than two thirds of these households are headed by women). It would in turn reduce the spending on subsistence benefits by around 4% and generate over €250 million in revenues from personal income tax and around €400 million in additional social security contributions.

**The parental leave and benefit system reform is expected to increase the need for childcare provision.** Estonia used to have a generous parental leave system but with many built-in rigidities; this was reformed and is implemented in phases starting in 2018 (European Commission, 2019a). In 2018, the impact of parenthood on women's employment was almost three times the EU average (25.2% vs 9.0%). As a result, 6.9% of women in Estonia in 2018 were inactive due to personal and family responsibilities compared to the EU average of 4.7% that affects the sustainable development goal 8 (decent work). This accounts for over a third of all inactive women in Estonia. Only 27% of children below the age of three took part in formal childcare in 2017, far below the EU average (34.2%). Additionally, the lack of obligatory childcare provision for children under 1.5 years of age mutes the impact of the new parental leave flexibility.

**The involvement of social partners in reforms and policies in Estonia has improved but remains limited.** Gaps in the quality of social partners' involvement in legislative procedures are apparent, notably in relation to the preparation of changes to the second pillar pension scheme (Eurofound, 2020, forthcoming). At the same time, social partners are involved in the discussions on the overarching 2035 strategy in the European Semester process. In November 2019, social partners also agreed on minimum wage for 2020 of €584 per month. Nevertheless, the capacity of social partners has been weak, and trade union coverage has remained very low (4.7% in 2017).

### 3.3.2. SOCIAL POLICY

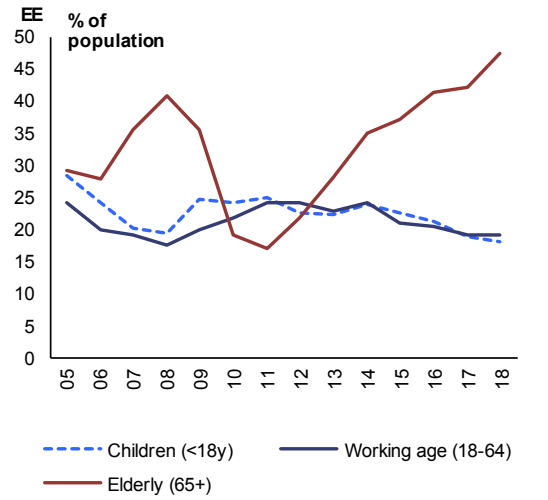
**Poverty remains high, especially in certain regions and among vulnerable groups.** Overall, poverty has further increased in 2018 and the persistence of poverty remained above the EU average. The at-risk-of-poverty or social exclusion rate increased to 24.4% against an EU average of 21.9% in 2018, with strong regional disparities (see Box 3.4.2) in particular for the elderly (see Graph 3.3.3)([24]). This trend was driven by the at-

([24]) Elderly people aged 65+ (46.3% vs 15.9% in 2018 in the EU), people with disabilities (38.5% in 2018 vs 21.3% in the EU) and with lower educational attainment (41.6% vs 26.3% in the EU) have higher than average and increasing poverty rates. The at-risk-of-poverty rate differs

risk-of-poverty rate as the continued rapid increase in wages outperformed the increase in benefits. Though the share of people in low intensity households is declining, in 2018, the at-risk-of-poverty rate among unemployed people aged 16-64 was 51.9% in Estonia (48.9% in the EU). Possible changes to the unemployment benefit system to improve coverage and adequacy are in sight as a response to a study from 2019 (Laurimäe, Piirits, Koppel, Melesk, Masso, 2019). Estonia's performance in terms of material deprivation and child poverty was better than the EU average in 2018 ([25]). Compared to 2016, the child poverty rate has decreased by 3.4 percentage points, thanks to substantial increase in child benefits. This has helped to move towards achieving sustainable development goal 1.

**The high activity rate of the elderly helps them avoid poverty.** The average old age pension was 41% of the average monthly net wage in 2018. Hence, in 2018 a total of 26.3% of 65-74 year olds were working in order to increases their income and ability to save. A pension increase was approved by Parliament in November 2019. Starting in 2020 the base amount of pensions will be increased by €7 in addition to the annual rise from indexation (€38). The authorities estimate that this will lower the at-risk-of-poverty rate for people 65+ by 0.6 percentage points and for pensioners living alone by 0.4 percentage points. These changes will be partly offset as more pensioners will earn above the income threshold of €500 and will need to pay income tax. For example, in 2020 the average old-age pension will increase to €528.10 (up from the €483 of average old age pension in 2019), making approximately 61% of pensioners liable for income tax (37% in 2019) (see Section 3.1.2).

Graph 3.3.2: **At-risk-of-poverty or social exclusion rate, age groups, Estonia**




(1) AROPE: At-risk-of-poverty or social exclusion rate (% of total population). People who are at-risk-of poverty (AROP) and/or suffering from severe material deprivation (SMD) and/or living in household with zero or very low work intensity (LWI).
***Source:*** Eurostat, EU-SILC

**Income inequality decreased to around the EU average in 2018.** The ratio of the richest 20% to the poorest decreased from 5.4 to 5.07, slightly below the EU average of 5.17. At the same time, the income of the poorest 40% amounted only to 20.1% of the overall income, which is below the EU average of 21% and still below pre-crisis levels.

**Social benefits in Estonia are less effective than average in the EU in reducing the incidence of poverty.** In 2017, social transfers reduced the at-risk-of-poverty rate by 27%, and the poverty gap by 43% (compared to an EU average of 34% and 55% respectively). As of 2020, benefits to children with disabilities will increase two- to threefold depending on the level of disability. The maximum will be €241 compared to €80.55 in 2019. On average, family benefits had the largest effect on reducing the poverty rate (18%), followed by sickness and disability benefits (12%)(European Commission, 2019i). The adequacy of the minimum income scheme in supporting people is

considerably between counties, e.g. in Valga (38.2%), Ida-Viru (33.9%) and Võru (29.6%) but only (16.6%) in Tallinn and (18.5%) in Saare county.

([25]) The material and social deprivation indicator (MSD) is the result of a revision of the material deprivation indicator. It also includes items related to social activities. The MSD rate is the share of people in the total population lacking (because of an enforced lack) at least five of the 13 MSD items.

around the EU average, but has decreased from the previous year ([26]).

**Serious challenges in the areas of social and long-term care remain.** The affordability of long-term care is a serious challenge as registered by the high out–of-pocket payments needed to access this type of care (almost 200% of a care user's disposable income in case of severe needs) (OECD, 2020b, forthcoming). The number of people in need of services is high and increasing and care workforce requires continued training and upskilling ([27]). The current system is fragmented as the social and healthcare services are not integrated to take the needs of the person into account (World Bank, 2017). Such integrated provision is necessary given the differences in the capacity of local authorities to provide services ([28]) (see Section 3.1.2). With no compulsory minimum standards for long-term care, local governments lack incentives to meet quality and quantity indicators for long-term care provision ([29]). The system is inefficient and lacks prevention, monitoring and evaluation mechanisms (ESPN, 2019, forthcoming). As regards the delivery of services for children, the need for assistance is often identified too late, and support is fragmented between different institutions and services (social services, healthcare, education). Social enterprises in Estonia have the potential to contribute to alleviating the stretched social services (OECD, 2020a, forthcoming).

**Work is ongoing to develop and implement a framework for a more integrated and person-centred provision of services**. The government took a decision on a future management and financing model in January 2020 with earliest implementation from 2022. Based on the results of various pilot initiatives in this area and inputs provided by technical support from the EU Structural Reforms Support Programme. More broadly, the Estonian authorities are developing a new framework for a more integrated provision of social and health care services. Limited measures to improve social care have already been taken: care homes have been made more energy efficient, homes made more accessible and social transport has been improved. Further efforts leading to an improved system of care include the launching a pilot project for the integrated care of children with support needs. A dementia competence centre is also being developed. Priority was given to alleviating disparities between local governments.

### Healthcare

**Health continues to be a challenge and the high rate of unmet need for medical care is likely to impact poor health outcomes and thereby reduce labour productivity.** Health outcomes in Estonia have improved over the last few years, but remain low compared to the EU average. While life expectancy increased rapidly to 78.4 between 2000 and 2017, it is 2.5 years below the EU average. Premature mortality before the age of 65 is higher in Estonia (20%) than in the EU on average (16%), meaning that a big part of the workforce is lost due to poor health status. People's health skills are low, shown by the fact that a big proportion (50%) of preventable mortality is caused by lifestyle related risk factors([30]). Poorer health outcomes can also be attributed to other factors that stem from long waiting times linked to shortages in the healthcare workforce, the uneven regional distribution of healthcare personnel, and the low public funding of the healthcare sector.

**The level of self-reported unmet need for medical care is among the highest in the EU.** It increased to 16.4% in 2018, significantly higher than the EU average of 1.8%, with the situation flagging in the Social Scoreboard as critical. Dietary habits, accidents, tobacco smoking and alcohol consumption contribute to a high rate of preventable mortality, one of the highest in the EU in 2017, and socioeconomic inequalities have a large impact on health risks. Lower educated Estonians tend to smoke and consume alcohol much more than those with higher education.

([26]) Joint Employment report 2019 and 2020, based on the benchmarking exercise on minimum income of the Social Protection Committee (see European Commission, 2019j).

([27]) Currently around 65 thousand persons are assisted or cared for by their household member.

([28]) Difficulties of access, including long waiting times, and a shortage of service providers.

([29]) Poliitikasuunised Eesti pikaajalise hoolduse süsteemi tõhustamiseks ja pereliikmete hoolduskoormuse vähendamiseks Hoolduskoormuse vähendamise rakkerühma lõpparuanne. Riigikantselei November 2017.

([30]) European Commission calculations based on EUROSTAT data

**Despite considerable health challenges Estonia's public healthcare expenditure remains one of the lowest in the EU.** Notwithstanding efforts to increase public funding for healthcare, it remains one of the lowest in the EU with 4.8% of GDP in 2017 compared to the EU average of 7.8% of GDP (see Section 3.1). This, together with high unmet needs for medical care has led to one of the highest out-of-pocket payments. In 2017 people paid 23.6% of their medical bills out of pocket, one of the highest rates in the EU (EU average is 15.8%). Income inequality plays a role as medicines are the largest single driver of spending for people in the poorest quintile, while richer quintiles, spend more on dental care. Estonia is implementing reforms in order to lower out–of-pocket spending both on pharmaceutical and dental care. In 2017, 0.7% of beneficiaries received additional cost reductions on pharmaceuticals; these were increased to 15.6% in 2018 (EHIF, 2019).

**The healthcare system does not cover the whole population.** The system currently only covers around 94% of the population, though it grants the right to emergency care services to uninsured people. The high share of uninsured people in combination with organisational challenges related to the lack of family doctors and poor integration of services, has caused overuse of emergency care departments. Almost half of patients seeking emergency care could have received care from family doctors at a more cost-effective setting (OECD, 2019a). A recent study (Koppel et al., 2018) found that since health coverage in Estonia is linked to employment, individuals with part-time work, unstable jobs or in informal employment may experience insecure coverage. Furthermore, there are over 50 criteria defining eligibility for health insurance, which makes it difficult for citizens to navigate the system. Gaps in coverage also create barriers to access (WHO, 2019).

**Substantial health disparities exist depending on gender, region, education and income.** On average, women live 9 years longer than men, and the disparity between urban and rural areas is 4.5 years. Estonia has one of the biggest gaps between low and high income earners in the EU with more than three quarters of people in the highest 20% income bracket considering themselves to be in good or very good health compared with less than one third of those in the lowest 20% income group (OECD, 2019a). One of the main causes of high income-based health inequalities is high out-of-pocket payments mentioned above, as high unmet needs for medical care force people who can afford it to pay to have their medical needs met. Regional disparities stemming from the impact of environmental risks to health are quite remarkable. In particular, the residents in the oil shale mining region of Ida-Viru report higher rates of respiratory symptoms and several serious chronic health issues, including cardio-vascular diseases.

**Shortages of medical workers persist, in particular concerning nurses.** These shortages are due to the insufficient number of graduates, but also lower remuneration and worse working conditions in the health sector, which makes it difficult to attract and retain young people. The shortages have been particularly pronounced as regards family doctors in rural areas, while accessing specialised medical care is reported to be more difficult in cities. This situation is expected to worsen in the coming years due to the ageing of doctors, as every fifth family doctor has already reached retirement age in Estonia. The shortage of doctors has negative consequences for the ongoing reforms — especially efforts to improve the primary care.

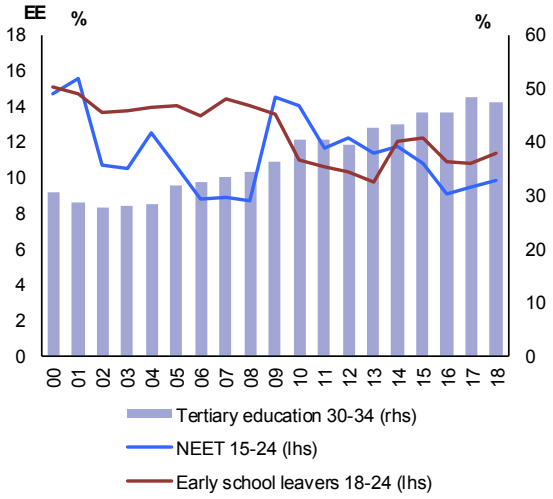
**Estonia is seeking to facilitate access to healthcare.** A pay-for-performance system for family doctors from 2015 tries to improve the recruitment and retention of health workers. Furthermore, the need to strengthen primary care is being addressed by creating multidisciplinary healthcare centres, with 19 out of the 54 already fully functional. However, the authorities continue to encounter challenges in finding staff, the lack of established procedures within the healthcare sector and the reluctance of family doctors to change their current working methods. Access to services is facilitated by the digitalisation of services (e.g. e-consultations, e-prescriptions, e-referrals, central digital registration system) and the networking of hospitals. However, there is a need for further investments in a number of specific areas to enhance the quality of healthcare and improve the access to health coverage to reach the sustainable development goal 3 good health and well-being.

### 3.3.3. EDUCATION AND SKILLS

**The education system is performing well, but the reported skills shortages suggest that the link with the labour market remains a challenge.** Estonia tops the 2018 PISA ranking of EU countries in mean performance in reading, mathematics and science, and has the lowest shares of low achievers in all three domains. Estonia has above average results when it comes to the population's digital skills ([31]) and significant progress has been made in expanding the availability of digital learning resources and information technology learning (European Commission, 2019b). The latest PISA results confirmed Estonia's excellent performance in terms of low performers in reading, and a low gap when considering socio-economic status. However, an above-average share of pupils leave education and training early and many students drop out from higher education (Graph 3.3.3). This leads to an insufficient number of tertiary graduates, whose competences are furthermore insufficiently aligned with labour market needs. Similarly, lifelong learning and vocational education do not yet meet the changing needs of the labour market. Moreover, the good quality of the education system is endangered by the emerging teacher shortages.

**Higher education is insufficiently aligned with labour market needs and dropout rates are high**. Although tertiary educational attainment in the 30-34 age group is currently above the EU average (47.2% compared with 40.7%), it may worsen if the high dropout rates from higher education and falling enrolment rates ([32]) persist. The gender gap in tertiary attainment is significant (57.5% of women compared to 38% of men). The actual number of graduates in science, technology, engineering and mathematics is insufficient to meet the needs of the labour market (OSKA, 2018a). The performance-based funding system introduced in 2017, accompanied by incentives to increase enrolments in certain study fields aim to increase the quality and labour market relevance of higher education, but their impact is yet to be seen.

Graph 3.3.3: **Education and labour market for youth**




(1) Left-hand side: Early leavers from education and training (% of population), total, ages 18-24; NEET: Not in employment, education or training (% of population), total, ages 15-24; Right-hand side: Tertiary educational attainment (% of population), total, ages 30-34
***Source:*** Eurostat, LFS

**The take-up of vocational education and training was not responsive to the needs of the labour market ([33]).** With 40.7% of enrolled students attending vocational programmes, Estonia is below the EU average of 47.8%. The share of apprenticeship students has increased but it is still only at 5%. The level of employability of recent vocational education and training graduates saw a notable decline in 2018, dropping to 76.6% as compared to 86.2% in 2017 (EU average of 79.5%). Measures are under way to improve the quality of work-based learning and to further strengthen career counselling ([34]) and related services offered to young people.

**The participation of adults in learning continued to increase.** In 2018, 19.7% of adults aged 25-64 in Estonia had had a recent learning experience during the last 4 weeks, almost double the EU average of 11.1% (Eurostat, Labour force

([31]) 2019 DESI index indicates that 62.5% of Estonians (vs EU average 60.6%) report they have at least basic software skills, 34.7% (vs 33.3%) have above basic digital skills, and 61.6% (vs 58.3%) have at least basic digital skills

([32]) Besides demographic trends, enrolments are negatively impacted by a high share of early school leavers and an increasing proportion of upper secondary graduates that do not continue studying, in particular men, Russian speakers, and graduates from schools in remote areas (MoER, 2017).

([33]) (Statistics Estonia 2018) While in 2018 the number of admitted students increased slightly, the total number of students enrolled in VET decreased from 25,071 in 2016 to 23,387 in 2018.

([34]) From 2019 career information and counselling services have been offered by and developed in the public employment service.

survey, 2018). The public training provision for adults relies largely on the EU Structural Funds. Since autumn 2019, quality evaluations of institutions providing non-formal training against the requirements set by the Adult Education Act have started.

**The Estonian school education combines excellent performance with a high level of equity.** The 2018 PISA results show that the mean scores in science, mathematics and reading have increased since 2009, and the share of low achievement has remained the lowest in the EU in all three domains ([35]), putting Estonia on top of the PISA ranking among EU Member States. At the same time, Estonia also has one of the most equitable education system, with the smallest impact of socioeconomic background on pupils' performance ([36]). As a consequence Estonia is making progress on sustainable development goal 4 (quality education). However, this positive performance is affected by the chronic issue of early school leaving that hinders future access to higher education (Graph 3.3.3). Overall 11.3% of 18-24 year-olds leave education and training without completing upper secondary education (EU average 10.6%), and this rate has stagnated in recent years. It affects men in a disproportionate way (16.1% compared to 6.4% of women), which helps explain their future low tertiary educational attainment (see above). The main factors appear to be weak learning outcomes and lack of motivation, suggesting that the focus should be put on prevention (MoER, 2018). Wellbeing at school could also be a reason, as 25% of 15 year-olds pupils in Estonia report being bullied at least few times a month. This is above EU average (OECD, 2019e).

**The performance gap between Estonian and Russian-medium basic schools persists and strengthens regional disparities as well as hindering the mobility across the country because of the language barrier.** The proficiency in Estonian of students with a different mother tongue remains low: less than 61.4% of graduates from basic schools where Russian is the language of instruction master Estonian at intermediate (B1) level, well below the national target of 90%. To support Estonian language learning from an early age, a pilot project providing Estonian-speaking teachers in pre-school education groups was launched in the two Russian-speaking regions. The project is expected to be further expanded in 2020 to cover basic schools too.

**The emerging teacher shortages and the unattractiveness of the profession risk affecting the quality of education.** Half of all teachers in primary and secondary education are over 50 years old and almost every fifth teacher is over 60. In the next decade, around half of the current teachers in secondary schooling will therefore have to be renewed. (European Commission, 2019b). Many schools report difficulties in hiring teachers in specific subjects ([37]) (OSKA, 2018b), while teacher education programmes are generally undersubscribed. At the same time, only 26.4% of Estonian teachers believe that their profession is valued in society (OECD, 2019d). While the number of candidates for teacher training increased strongly in the past year, in general, teaching is considered stressful, salaries are uncompetitive and working conditions remain unattractive. An above-average share of teachers report a need for additional continuing professional development ([38]). To tackle these challenges, Estonia is currently developing measures to promote alternative pathways to the teaching profession, and between 2014-2018, teachers' salaries have been raised by more than 40% (NRP, 2019). However, the increase in 2020 will be smaller than in previous years ([39]).

([35]) 11.1% of low achievers in reading, 10.2% in mathematics, 8.8% in science, compared to respectively 21.7%, 22.4%, and 21.6% at EU level.

([36]) The difference between the shares of low achievers in reading in the bottom and top socioeconomic quarter is the smallest in the EU (9.8 percentage points).

([37]) This relates in particular to mathematics, chemistry, physics, geography and biology

([38]) 2018 OECD's Teaching and learning international survey indicates that 26.1% of teachers report a need for additional training in teaching students with special educational needs (EU: 21%), 19.2% in ICT for teaching (EU: 16.1%).

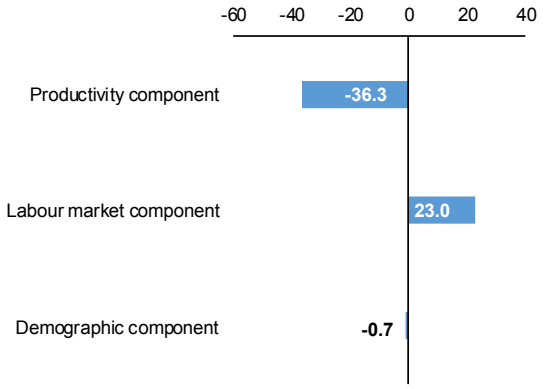
([39]) The minimum monthly salary for teachers will increase by €65 from €1,250 to €1,315 in 2020.

# 3.4. COMPETITIVENESS REFORMS AND INVESTMENT

## 3.4.1. INVESTMENT AND PRODUCTIVITY

**Estonia's income and productivity gap with the EU has decreased, but remains significant.** In 2018, income per head was 81% of the EU average, while the gap in labour productivity per hour worked was almost 30%. Over the last two decades capital accumulation through investment has contributed to catch up. High employment and labour market participation rates explain the strong contribution of the labour market component. Since the financial crisis, the total factor productivity growth has moderated, suggesting potential for more efficient use of resources and further technological upgrading (see Graphs 3.4.1 and 3.4.2, and European Commission, 2019a).

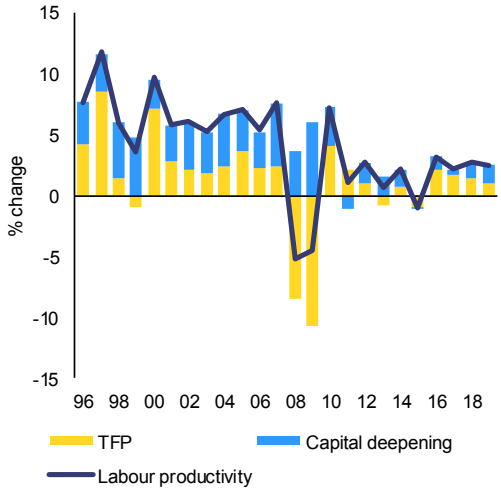
Graph 3.4.1: **Gap compared to the euro area in 2018 levels**




***Source:*** European Commission

**The stock of foreign direct investment per person has been higher than the EU average, but investment is concentrated in sectors with already high labour productivity.** Financial services and insurance, and real estate activities have attracted the highest share of foreign direct investment. The share of industrial manufacturing in foreign direct investment has been stable at around a quarter, while it is only recently that such investments were made in professional, scientific and technical activity and in information and communication (see Graph 3.4.3). On average, companies established through foreign direct investment have higher productivity than other domestic companies since they can benefit from access to the markets and technology of their parent companies. At the same time, as a rule, knowledge-intensive activities happen in mother companies, and the potential for knowledge spillovers remains untapped.

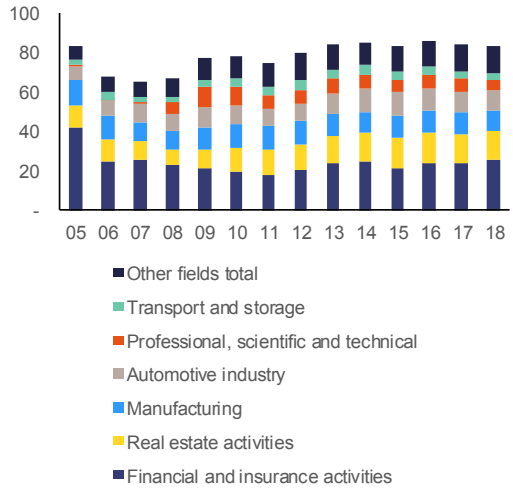
Graph 3.4.2: **Growth of labour productivity decomposed as changes in total factor productivity and capital deepening**




***Source:*** European Commission

**The wide gap in total factor productivity compared the rest of the EU hints at the possibility of improving the quality of investment, the allocation of resources and overall efficiency.** On average around 90% of investment has been in tangible assets. In recent past, over a half of the total investment was made in construction, and about a third in machinery and equipment and in vehicles. Investment in intangibles, which is often seen as leading to higher productivity in the medium term, has been around 10% (Graph 3.4.3). This is almost a third below the EU average in terms of the share of GDP (see Box 3.4.1), and is concentrated mostly in professional and scientific activities and information technologies and communication. This hints at problems with channels for diffusing technology and knowledge, which may block further gains in productivity. The share of companies investing in Estonia or planning to expand their investment was below the EU average in 2018 (EIB 2019a), while the lack of availability of skilled staff is among the most frequently named reasons for holding back investment plans (see Box 3.4.1).

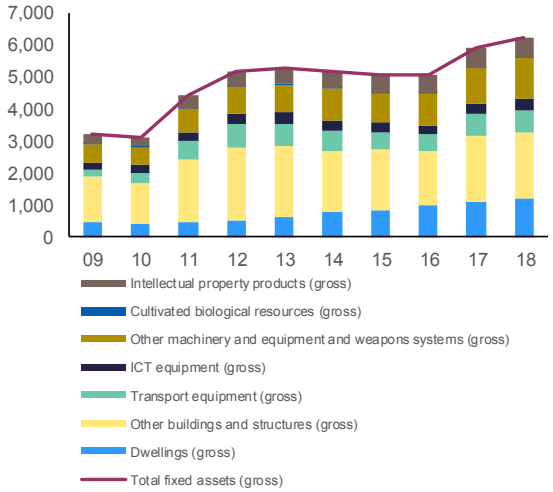
Graph 3.4.3: **Direct investment by field of activity as share of GDP**




***Source:*** European Commission

**Unless productivity catches up, there is a risk that Estonia will be caught in the middle-income trap.** Incomes have converged to the EU average faster than productivity. Relatively low productivity means that Estonian companies use resources less productively than their competitors and have fewer resources to develop new products and services. Looking at specialisation patterns in industry, none of the sectors has higher output per worker than the EU average in that sector. Despite the overall good conditions for doing business in Estonia, the share of high growth companies measured in employment is only 7.2% (the EU average is 11.3% ([40]). The majority of enterprises are micro companies with fewer than 10 employees, and may not have enough capacity to grow outside the Estonian market even though being close to export markets is an important factor for productivity ([41]). While Estonia has the highest number of 'unicorns' per capita, in absolute terms there are only four such companies.

Graph 3.4.4: **Investment by asset type**




***Source:*** European Commission

## Digital economy

**While digitalisation has been increasing, the take-up by corporations remains relatively low, hindering further productivity growth.** Estonia ranked 8th in the 2019 Digital Economy and Society Index, but in integration of digital technology by companies it was only 16th in the EU. The main challenges are in firms' low use of social media (13%) and electronic information sharing (28%). In addition, the share of Estonian small and medium-sized companies selling online (16%) remains below the EU average (17%). On the other hand, the share of companies using cloud services (26%) was higher than the EU average (18%). 20% of Estonian companies have a high digital intensity, using at least 7 out of 12 key digital technologies in their operations. The share of the information and communication technologies sector in total value added increased

([40]) Share of high growth enterprises (growth by 10% or more) measured in employment: number of high growth enterprises divided by the number of active enterprises with at least 10 employees (see Graph 3.4.5). Data for 2017.

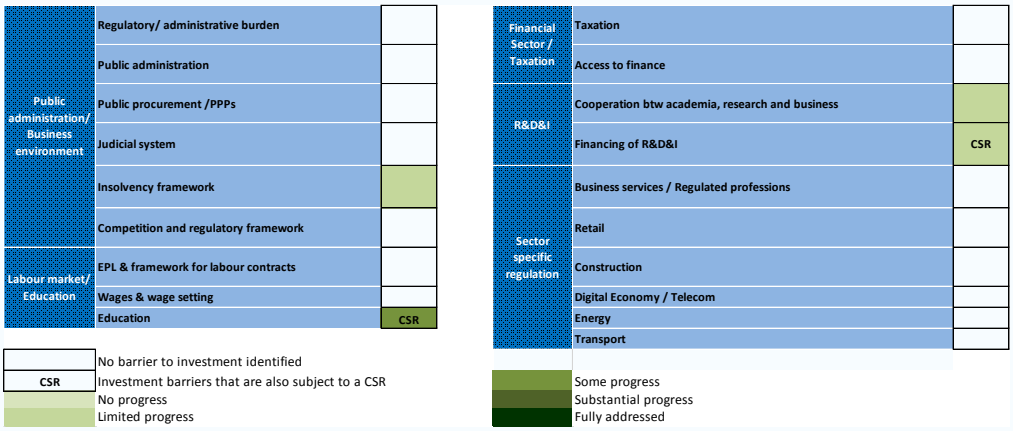
([41]) The productivity of exporting companies is higher than of companies that produce for the domestic market only (Unt, T., Võrk, A. and U. Varblane (2018), "Analysis of position of Estonian firms in the local and global value chains", presentation for the workshop on Productivity in Estonia, Brussels, 20 September 2019).

### *Box 3.4.3:* Investment challenges and reforms in Estonia

#### Section 1. Macroeconomic perspective

Investment increased substantially in 2019 reaching 25% of GDP. It was supported by low interest rates and high savings and profits recorded in recent years (see Section 1). Private investment was particularly noteworthy in machinery and equipment and in construction, and the largest increases were in the electricity and gas sector and in industrial manufacturing. In 2018, investment in intellectual property was 10% of total investment, and happened mainly in the professional and scientific activities and in the information technologies and communication sector.

#### Section 2. Assessment of barriers to investment and ongoing reforms




Several factors are holding back investment and productivity (see Section 3.4). Companies have repeatedly identified the lack of skills and the insufficient labour supply as key bottlenecks to investment (see Section 3.3). Skills are crucial to enable investment in intangibles, for example in information and communication technologies. While public institutions are generally perceived as efficient, some persistent problems in the insolvency framework put a strain on business dynamism. In the economy that creates business opportunities, the regulatory bottleneck in insolvency has become a major cross-cutting issue. Finally, high entry barriers in knowledge-intensive sectors mean that Estonian businesses risk getting into the middle-income trap. This could be addressed through better institutional support for innovation to improve competitiveness (see Section 3.4).

#### Selected barriers to investment and priority actions under way

1. The lack of an efficient insolvency procedure is critically affecting the business environment. Insolvency procedures take around 3 years, and the recovery rate is slightly above 40%. This blocks the resources in less productive firms and reduces incentives to invest. The revision of the insolvency framework started in 2000, but there is still no proposal for legislative amendments linked to bankruptcy, reorganisation, and debt restructuring (see Section 3.4).

2. The lack of skills is a major investment bottleneck, but the share of on-the-job training is among the lowest in the developed countries (OECD 2019). The issue of upskilling and reskilling is relevant considering the challenges of transitioning to more resource and energy efficiency (see Section 3.5).

by 6.2% in 2018. There is evidence of high premium in terms of economy-wide productivity if digital technologies are adopted by manufacturing firms (OECD, 2020a).

**Estonian companies have started benefiting from digitisation measures.** In 2018, investment in information and communication technologies (ICT) picked up to 6.1% of the total investment. In order to improve the digitisation of small and medium-sized firms, Estonia implemented the Digital Diagnostics measure – a grant scheme opened at the end of 2018. Digital Diagnostics supports companies by providing access to ICT experts to help them identify opportunities for improving productivity and growth through the uptake of digital technologies. As a follow-up, a new grant scheme was launched in April 2019 via Enterprise Estonia, supporting investments into automation, digital technologies and robots. The grants range from €20,000 to €500,000. By the end of September 2019, the grant scheme had received applications exceeding its overall budget of €3 million. In addition, the Estonian-Norwegian Green ICT co-operation programme, a grant facility, will open call for applications in early 2020. This programme supports the development of new ICT-based products and services as well as the digitisation of processes in the manufacturing and health service sectors. The grants will range from €200,000 to €1,250,000.

### Research, development and innovation

**Low private research and development investment remains a barrier to productivity growth.** In 2018, R&D investment was below the national target, due mainly to low private funding. Estonia has a R&D intensity ([42]) target of 3%, with public funding at 1% of GDP and private sector funding at 2%. Around 50% of government spending on research comes from European Structural Funds. The only substantial change is the 50% increase in basic funding for universities in 2017. The actual funding increases in other areas have been quite modest. R&D expenditure in the public sector reached 0.79% of GDP in 2018, surpassing the EU average of 0.69%. However, the leverage effect on the level of R&D expenditure in the business sector (0.59% of GDP in 2018) remained limited. At the end of 2018, renewed political commitment to the 3% goal and to the 1% public part was agreed.

**The levels of research-based innovation capacity and activity in the business sector are low.** Estonia improved its performance in the 2019 European Innovation Scoreboard and moved back to the group of strong innovators. Non-research innovation expenditure was 176.1% of the EU average according to the 2019 European Innovation Scoreboard. In contrast, research-based expenditure was only 43.8% of the EU average. Efforts to develop and activate research-based innovation capacity and the R&D function in companies have so far been insufficient. In 2019, the grant scheme launched in 2018 by Enterprise Estonia to support product development in the manufacturing sector, underwent a substantial change, including an increased budget of €20 million from the Structural Funds, and the introduction of more flexible requirements. However, the interest in this grant has been low so far, in part because of insufficient publicity. Another important programme supporting innovation, NUTIKAS, was also simplified to improve the uptake by the private sector. While it previously only financed applied sciences were financed, under the revised rules companies can finance their own costs to build in-house capabilities for research and innovation. The results are still to be seen.

**Estonia underwent a peer review of its research and innovation system under the EU Policy Support Facility**. The review found that Estonia is in the 'middle-income trap' and needs to increase the national effort in R&D by creating distinctive competitive advantages. The main recommendations included ensuring political commitment to the importance of R&I in national policy and a 1% target for government spending on R&D, better targeting of R&I policy, establishing innovation agency to support R&D, strengthening 'intermediary organisations', and modernising research at universities (European Commission, 2019g, p.8). The Estonian authorities keep the 1% spending target in sight. They made immediate steps towards transforming part of Enterprise Estonia into an innovation agency. The recommendation to establish thematic priorities for R&I policy in the light of the societal challenges was taken on board by the Prime Minister's R&D Council. The recommendation to modernise

([42]) R&D expenditures as % of GDP.

universities in order to meet national needs was partly followed by requiring outside representatives to account for the majority in university councils. The most difficult recommendation to implement proved to be the most important one-strengthening the system of intermediary organisations able to support industrial innovation.

**There is a high concentration of investment activities in the private sector.** Overall, fewer than 300 companies (0.3% of the total) made any investment into R&D, yet 90% of those investments are carried out by ⅓ of these companies. In information and communication technology, this concentration is even more pronounced: 13 companies invested 90% of the R&D investment in this sector in 2016 (Kattel, 2019).

**Cooperation between research institutions and enterprises was still limited.** As an indicator of the lagging cooperation, the share of public-private co-authored publications was 53.1 per million population in 2018 (EU average 86.4). Developing the capacities of the public research system enabled it to reach a good level of scientific performance ([43]). However, the economic valorisation of these capacities remains hindered by weak linkages with industry ([44]). While leading universities established structures such as TalTech Innovation and Business Centre Mektory (in 2013) and the University of Tartu's Centre for Entrepreneurship and Innovation (in January 2018), the system of innovation intermediaries remains weak. Estonian industry lags behind the EU average in the number of researchers employed in private companies (Karo, 2019). The number of employed researchers with a PhD has been constantly decreasing in the business sector as a whole, as well as in key sectors such as manufacturing, information and communication industries (Kattel, Napierala, 2019). Initiatives such as university extension services could help strengthen the system of intermediary organisations able to support industrial innovation (European Commission, 2019g).

**Estonia is on track to improve coordination between innovation and research policies.** The Ministry of Education and Research is in charge of national research and education policy. The Ministry of Economic Affairs and Communications oversees technological development and innovation policy. Coordination has recently improved somewhat as the Prime Minister's Research and Development Council seems to take a more decisive role. The Council is an expert consultative body that advises the government, but it could do more. As discussed by the Council after it received the 'peer review' final report in autumn 2019, it may strengthen coordination by making strategic decisions on thematic priorities and funding. A promising step towards better coordination is the initiative to merge the national entrepreneurship strategy and the research and development strategy: the process of writing a single strategy — TAIES — provides clear opportunities to improve coordination. The *Peer review of the Estonian R&I system* also pointed to the need to ensure better coordination of research priorities with societal needs through greater involvement of the other sectoral ministries.

**Several weaknesses have limited the impact of smart specialisation on Estonia's innovation performance.** Weak coordination of research policies with business development ones, as well as insufficient reaction to changes in competitive arenas, have prevented the country from reaping the full benefits of smart specialisation. The renewal of smart specialisation priorities for research and innovation investment in view of the next programming period provides an opportunity to identify growth areas in line with the latest developments, and the strengths and potential of the Estonian economy, based on continuous dialogue with stakeholders of the research and innovation ecosystem.

**High levels of domestic material consumption and waste generation drag down resource productivity and hamper competitiveness**. In 2018, resource productivity in Estonia dropped to €0.44 per kilogram, one of the lowest in the EU and far below the EU average of €2.04. Estonia still lacks an overarching circular economy strategy, but the circular economy will be one of the main priorities of the 2035 national development strategy. In addition, a circular

([43]) For instance, the share of highly-cited publication among all national publications was 9.7% in 2016, close to the EU average of 10.3%.

([44]) As shown for instance by the share of public-private co-publications in the total number of publications, which was only 2.4% in 2017 vs. an EU average of 5.5%.

economy strategic document and action plan are under preparation and are expected to be finalised in 2021 (see Section 3.4.5). The circular economy is the basis for implementing sustainable development goal 12-responsible consumption and production.

**The need for investment in the circular economy remains significant.** Key issues are incineration overcapacity, and a need to increase recycling capacities and to improve the ownership of recycling targets by municipalities. According to the Study on investment needs in the waste sector (European Commission et al, 2019), Estonia's capital investment cost requirements for 2021-2027 amount to €63 million. Investments in projects higher up in the waste hierarchy, such as introduction of meaningful pay-as-you-throw schemes, functional separate collection prioritising bio-waste collection and treatment, and sorting facilities for separately collected waste and recycling infrastructure could bring significant improvements. Investments in waste prevention, including re-use projects, repair networks and awareness raising are also key to Estonia's long-term competitiveness. Concerning biodiversity, which is at the core of sustainable development goal 15, Estonia estimates the total costs of conservation and management of the Natura 2000 network for 2021-2027 at €304.47 million ('priority action framework').

### 3.4.2. MARKET INTEGRATION

**Estonia is performing relatively well in the European single market for goods and services, however specific challenges remain.** Some regulatory requirements on professional services such as limitations to legal forms, shareholding or multidisciplinary activities, notably restrictions on shareholding for the professions of lawyers, are obstacles to business. These requirements may limit firms' access to capital, reduce the economies of scale and scope, and restrict competition. In addition, the number of notifications of draft technical regulations remains low. In 2018, the country notified only 14, which is a very low level and may indicate that it is missing the opportunity to further improve its integration in the single market and thus gain more economic benefits.

**The digital single market is key to maintaining and strengthening Estonia's economic growth.** Estonia is committed to making progress with new digital technologies and to strategically investing in them through EU-coordinated programmes. Estonia is currently reviewing its Digital Agenda 2020 strategy, last updated in 2018. One of the goals of this strategy is to increase the uptake of digital technologies among companies, allowing them to optimise current business processes and create completely new and innovative goods and services.

**Estonia is advancing in the field of artificial intelligence.** The country ranks 23rd globally and first in central and eastern Europe according to the Government Artificial Intelligence Readiness Index 2019 (Oxford Insights, 2019). It reflects the well-developed e-government and innovations such as the digital state code repository launched in 2019, which private and public stakeholders can use free of charge. However, the full benefits from a wide use of artificial intelligence remain untapped. In July 2019, the Estonian government adopted a Strategy on artificial intelligence. The Strategy aims to boost the use of artificial intelligence in both the public and the private sectors, as well as to improve the legal environment and skills necessary to facilitate the process. Estonia is looking at the possibilities for using artificial intelligence in a broad range of areas such public services, transport, energy and education to tackle demographic and productivity challenges.

**Estonia is strategically investing in new digital technologies and cybersecurity.** The country participates in EU-coordinated programmes, for example as a member of the High-Performance Computing Joint Undertaking (EuroHPC). Furthermore, Estonia continues to focus on the importance of cybersecurity as an enabler of a sustainable society, which relies on strong technological resilience and emergency preparedness, as highlighted in the most recent update of the cybersecurity strategy (2019-2022).

**Estonia has improved its broadband coverage**. Both fixed (92%) and fast (83%) broadband coverage has improved, but Estonia is still below the EU average as regards fixed broadband. As regards total ultra-fast broadband coverage (an indicator with increasing importance for the future)

83% of Estonia's households are covered against the EU average of 60%. Ultra-fast coverage in rural areas increased to 32.8%. Despite the availability of networks, the penetration of fast (44%) and ultra-fast (14%) broadband is below the EU average (49% and 26% respectively). This could be due to broadband prices being higher in Estonia than the EU average. The government is anticipating some difficulties in allowing the use of sufficiently large blocks in the 3.6 GHz band, because of restrictions stemming from cross-border coordination issues with non-EU countries.

## Transport

**As a sparsely populated and peripheral country, Estonia depends on a functioning transport system, and in particular on land transport.** While Estonia's transport infrastructure ranks highly, it is the maritime and air transport infrastructure that is best developed. Estonia has not made progress so far on completing the TEN-T core network, and ranks as one of the worst both for rail and road networks. Investment needs in the transport sector until 2030 are increasing with total estimated investment need of €2 billion for the corridor network, €1.6 billion for Rail Baltica ([45]) and further funds needed to upgrade major roads. The actual development of the Rail Baltica project remains a priority. If completed, Rail Baltica will improve congestion, sustainability and connectivity with the internal market. As highlighted by the Supreme Audit Institutions of Estonia, Latvia and Lithuania in their joint report of January 2020, there are risks in the project implementation phase, including in relation to costs and schedule, if the existing project management system is not enhanced to be more effective. Going forward, the outcome of the decision-making process on the future model of infrastructure management will be decisive for realising the full market potential of Rail Baltica. Other sections of the TEN-T network as well as connections between TEN-T corridors and national or local transport networks remain a challenge, and additional focus on prioritising the development of sustainable modes of transport.

([45]) New UIC standard gauge high-speed railway on the North Sea-Baltic core network corridor, C (2018)6969 final.

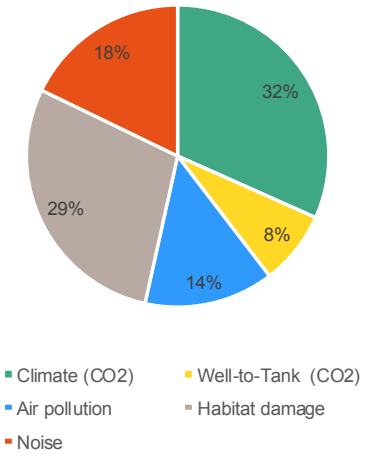
Table 3.4.1: **Completion of TEN-T core network 2016, % in Estonia**

| Road | Conventional Rail | High Speed Rail | Inland Waterways |
|---|---|---|---|
| 34.1 | 2.7 | 0 | not applicable |

***Source:*** European Commission

**Ensuring improvements in the quality of the transport infrastructure remains a concern.** Annual infrastructure costs in Estonia amount to about €1 billion (2016, fixed and variable costs), from which 90% is for road transport and from this 66% for passenger transport (European Commission, 2019l). A better overview of infrastructure quality and dedicated investment would be important to help maintain and improve the secondary (municipal) road infrastructure in particular as it is important for regional development.

Graph 3.4.5: **Share of environmental costs in Estonia for road and rail transport**




***Source:*** European Commission

**Estonia's transport system remains environmentally unfriendly and few incentives are provided to change preferences.** The total external cost of inland transport in Estonia is estimated at €1.5 billion annually, corresponding to 5.3% of Estonia's GDP. 51% of this is environmental costs (EU average 44%). Road users generate 96% of these costs, of which 2/3 are caused by passenger transport. The transport sector is the main contributor to lower air quality in Tallinn. Around 500 premature deaths per year in 2016 were attributable to exposure to fine particulate matter (PM2.5). At the same time,

Estonia's transport taxes do not support the reduction of negative externalities as only time-based charges on heavy goods vehicles are used that do not motivate changes in user-preferences, in particular for road passenger transport (see Section 3.1.2).

**Estonia expects to reach its 10% target for the share of renewable energy in transport by 2020 through obligation on retailers to achieve a statistical target share of renewables sold.** The 2017 level of renewables in transport was only 1.2%, while sales of alternative fuel vehicles decreased from 2.7% to 0.2% between 2012 and 2017, despite the measures taken in recent years ([46]). The government is looking into the electrification of Estonia's rail network that today mostly runs on diesel, with the aim of mitigating greenhouse gas emissions from rail by 2028. The government also provided a limited number of subsidies for the purchase of some 200 electric vehicles (0.8% of annual new registrations) in 2019. It has also privatised the nationwide electric charging network that comprises 165 charging stations. The Liquid Fuel Act sets the proportion of renewable fuel sold to 6.4% of all transport fuels; this is expected to increase to 10% by 2020. There are no plans to use more efficient measures such as emissions-based taxation or to increase support for the charging network or the use of low or zero-emission zones, or to limit the use of vehicles classed as older under EU emission standards. While some support for biomethane and other renewables in transport has been implemented in legislation.

### Energy Union

**Estonia is progressing towards synchronisation with the continental European grids, and this remains a key priority for the coming years.** The ongoing Baltic Synchronisation Project, scheduled for completion by the end of 2025, is key for ensuring security of supply in the Baltic countries and tapping into the potential of renewable energy in the Baltic Sea. The Implementation Roadmap of June 2019 includes the following milestones: building the necessary infrastructure to reinforce the internal grids of the three Baltic States; building a high-voltage direct current line between Lithuania and Poland; and carrying out optimisation measures. All of these actions involve significant investments in the coming years. Estonia also continues to implement key electricity infrastructure projects that form part of the Baltic Energy Market Interconnection Plan. The third interconnection between Estonia and Latvia, planned to be commissioned in 2020, will be key to alleviating congestion at the border between the two Member States.

**While the overall energy efficiency of primary energy consumption has improved, efforts are needed to remain in line with final energy targets.** To reach its energy efficiency targets, Estonia decided to allocate €100 million over the next 4 years to reconstruct apartment buildings. A further budget of €1 million was approved in 2018 to install solar panels (Ministry of Economic Affairs and Communication, 2018). The government recognised the ongoing challenges in energy efficiency in buildings 2020 by dedicating €5.3 million in the State Budget to updates to heating infrastructure.

According to Estonia's National Energy and Climate Plan meeting Estonia's energy and climate goals between 2021 and 2030 will require public expenditure of around €347 million in the energy sector, €589 million in transport, €1,046 million in the renovation of the building stock and €278.5 million in agriculture. This represents €226 million per year on average. Further investments from the private and non-profit sectors are expected.

**The closure of the least efficient blocks of oil shale-based electricity generation units presents an opportunity to green Estonia's electricity generation mix.** Estonia has achieved its 2020 target for the share of renewable energy. The amended renewable energy support scheme, introduced following changes in the Electricity Market Act in 2018, has the potential to support further growth of renewables, provided that there is sufficient clarity on the tenders, auction process and the regulatory framework related to national security restrictions on wind project deployment. The gradual phase-out of oil shale-based electricity generation means that electricity imports and the development of domestic renewable energy will play a key role in ensuring security of supply. Oil shale-based electricity accounted for about three

([46]) Basic nation-wide network of electric fast-charger stations, measures to promote the use of biofuels in public transport, tax incentives to promote bio-methane use.

quarters of Estonia's electricity mix in 2018. The recent rapid increase in the price of EU emissions trading scheme allowances has led to an increase in electricity imports into Estonia from non-EU countries, which has weakened the competitiveness of domestically produced electricity.

### 3.4.3. REGIONAL DIMENSION

**Despite rapid convergence with the EU, the gap in social and economic performance between the capital region and the rest of the country has increased.** Harju and Tartu counties' share in the Estonian total economy increased to 74.2% in 2017. At the same time, GDP per capita was below 50% of the Estonian average in Jõgeva, Põlva and Võru counties. The regional divide is marked by higher wages and better employment and career opportunities in the capital region. As a result, university graduates do not return to rural areas. Furthermore, those who return from abroad prefer to stay in Tallinn and Tartu. The 2018 monitoring report of the regional development strategy (Ministry of Finance, 2019) also confirmed that the regional differences in Estonia were still large and significant shifts towards more uniform territorial development had not taken place.

**Disparities in terms of GDP per capita are also reflected in the regional differences observed in labour productivity.** In 2016, labour productivity was below the EU average in all NUTS3 regions of Estonia. Labour productivity in 2016 was close to the EU average in the capital regions of Põhja-Eesti (at 89% of the EU average), while ranging between 48% and 56% of the EU average in the remaining NUTS3 regions. The regional competitiveness index in Estonia is low, at 53.9 (Annoni, Dijkstra, 2019)([47]).

**More pronounced regional challenges are observed in two regions: in Ida-Viru county and in south-east Estonia** (see Box 3.4.2 and Section 3.5). In order to better address the needs of these regions, in 2018 the government approved a new development programme for Ida-Viru (€15 million under the national budget for 2019–2022) and for south-east Estonia (€3.2 million under the national budget for 2019–2022). Better-targeted measures such as stimulating industrial investments, economic diversification and innovation have been launched in both regions to help create well-paid jobs (see Section 3.4.1).

**Regional aspects are not sufficiently integrated in sectoral policies and the national regional development objectives will probably not be met.** In 2018, close to 80% (€79 million) of regional development investments from Structural Funds were made outside of Harju and Tartu counties. However, by the end of 2018, only about 20% of the selected business development grants from Structural Funds were invested outside of Harju and Tartu counties. Only 5% of start-ups operate outside of these counties. Current public support for innovation activities has not met regional or business needs, calling for strengthening the support to regions lagging behind. Effective implementation of the regional policy measures requires better-targeted cooperation between different strategies and authorities.

**The number of people moving to the capital region from the rest of the country has slowed down, but the number of daily commuters has increased ([48]).** There is an intense internal mobility towards other larger urban and functional urban areas (see Table 3.4.2). The number of commuters to urban settlements is increasing, which puts additional pressure on public transport and traffic. The quality of secondary road networks (in particular local roads) remains low due to underinvestment in road maintenance. Without investing more into connectivity, the attractiveness of the more remote areas will remain limited.

Table 3.4.2: **Main socio-economic indicators by degree of urbanisation, Estonia, 2018**

| | Unemployment rate (%), 2017 | Population aged 25-64 with tertiary education (%) | Early leavers from school and training (%) | NEET (%) | AROPE (%) |
|---|---|---|---|---|---|
| Cities | 5.8 | 51.3 | 8.2 | 10.8 | 22.1 |
| Towns and suburbs | 6.5 | 36.3 | 14.8 | 16 | 20.4 |
| Rural areas | 5.7 | 31.3 | 14 | 17.5 | 29.5 |

***Source:*** Eurostat, European Commission elaboration

([47]) The EU Regional Competitiveness Index varies between 0 and 100 (best performing EU region).

([48]) Maakondlike arenduskeskuste võrgustiku strateegia 2017-2025 seirearuanne 2019, Maakondlike Arenduskeskuste Võrgustik

**Local governments play a decreasing role in implementing public investments in Estonia and therefore also in regional policy making.** Total public sector investment decreased from 6.0% of GDP in 2007 to 5.5% of GDP in 2018, mainly due to a decrease in local government investments. While in 2007 local governments executed investments worth 2.1% of GDP, this fell to 1.5% of GDP by 2018 (the rest being executed by the central government, worth about 4% of GDP). While this may also indicate a centralisation of investment execution, it could also signal the lack of financing of municipal functions (see also Section 3.1).

### 3.4.4. INSTITUTIONAL QUALITY

**Despite the favourable business environment, some challenges persist.** Estonia is among the best performing economies in the World Bank Doing business report, but between 2018 and 2020 its ranking was slightly downgraded due to faster reforms in other countries. Resolving insolvency and protecting minority shareholders remain the most critical points (European Commission, 2018b; European Commission, 2019a). In addition, the ambitious 'zero-bureaucracy' project identified a large number of administrative burdens and bottlenecks. However, the implementation of measures to tackle these challenges is still ongoing. Moreover, the available knowledge and evidence are not fully used in the policy making process. Impact assessment and public consultations have not been properly carried out for important policy initiatives such as pensions reforms.

**Estonia is still in the process of revising its insolvency legislation.** The draft revised bankruptcy law has been prepared by the Ministry of Justice and is awaiting adoption. Work has started on drafting the law for restructuring, debt restructuring and debt discharge (including the transposition of the Restructuring and Insolvency Directive). The Ministry of Justice commissioned an analysis of the impact of the Restructuring and Insolvency Directive on the existing Estonian restructuring framework since it is supposed to bring significant changes to it. Currently, Estonia is implementing a two-phase structural reform support programme project with the World Bank on preventive restructuring and on early warning systems. The analysis of the restructuring framework was finalised and presented for stakeholder' consultation. The review of the early warning systems is ongoing.

**E-Estonia is the main driver of transparency and efficiency in the public sector.** The country ranks [2nd] in the EU in digital public services (European Commission 2019). It has well-developed e-government and e-health systems, and all central government services and municipalities provide services online. The country has one of the highest shares (93.1%) of e-government users in Europe, indicating citizens' high trust in the system. Furthermore, 99% of public services are available online 24/7. In December 2018, the government approved the concept of moving towards a more seamless government. The goal was to kick off with 15 life event/business-event services that will be offered proactively for citizens. Compared to current e-services, the new seamless services will function proactively and are more user-centred.

**New technological solutions in the government sector can further support the country's development.** Estonia is ranked 23rd globally in the UN e-Government Development Index. Machine learning is used in the government's operations and its delivery of public services through initiatives such as the integrated government data exchange portal. Ways to capitalise on former digital investments include using artificial intelligence in public services, for example to detect icy roads using satellite imagery, or improving the e-tax system. Estonia announced that by June 2020 it will prepare legislation allowing the use of fully autonomous information systems in all areas of life. The national 2019-21 artificial intelligence strategy has already been put in place, making the public sector the frontrunner. The Ministry of Finance and the Financial Supervisory Authority are considering implementing a regulatory sandbox for the Fintech industry, where certain regulatory requirements are temporarily waived, so that enterprises can deploy their innovative solutions in real-life market conditions. This approach holds considerable promise for companies, but also for regulators, who can draw experience for future regulatory approaches.

**The use of public procurement in support of strategic objectives is still limited.** Although Estonia has a highly developed e-procurement system and the EU directives have been transposed into national law, the high use of price as the only or major award criterion means that the potential to achieve policy objectives as regards greening of the economy and in social and innovation policies remains untapped. The proportion of procedures awarded only on the basis of lowest price was 88% in 2018. Additionally, the relatively high number of procedures with single bidders indicates lower competition and poses risks to the efficiency of the process. This deprives public buyers from having more options, and getting better value for money. Professionalisation of contracting authorities is still insufficient for efficiently tackling these and supporting the strategic role of public procurement. Efforts in this direction would result in a higher level of awareness, knowledge, experience and capabilities related to new technologies and market developments.

**Green public procurement can help to significantly lower the negative impact of public spending on the environment and support sustainable development goals.** Currently, environmentally-friendly requirements are only mandatory for vehicles. Mandatory green public procurement criteria will be introduced for the central government sector, furniture, cleaning products and services, copying and graphic paper and computers and monitors. Green public procurement is periodically monitored through the official electronic public procurement website (e-procurement Estonia). In 2018, there were 7,854 public procurements in Estonia, of which only 3% included green criteria. The value of public procurement is a little over €2 billion, which makes up 10.3% of GDP and 26.1% of the State budget.

**A recent assessment showed that Estonia still has room to significantly improve its environmental governance performance.** While Estonia performs well on public participation and access to justice, several weak points remain. These include compliance assurance and interventions that authorities undertake to ensure that economic and other activities comply with environmental rules. This is a lack of online information on inspections, and public awareness initiatives to help citizens submit environmental alerts. In addition, the potential of geo-spatial data and earth observation is not fully used in support of environmental compliance. Environmental governance is one of the elements that help to reach SDG 16 justice and strong institutions.

### *Box 3.4.4:* **Regional disparities**

In recent years, the gap in economic and social development between Estonia's regions has widened. In particular, the economic progress helping the north-east (Ida-Viru) and south-east (Kagu-Eesti) catch up with the Estonian average has stalled (European Commission, 2019[a]). These two regions have faced challenges in aligning with the national average due to their economic and demographic structure, as well as their situation on the periphery. Problems have intensified over the years due to the declining and ageing population, high poverty rates and increased pressure on public services such as healthcare, education and social services. Both regions each have each specific development needs, and helping them grow could unlock the economic potential for the whole country.

Ida-Viru county is the third largest and most industrial county in Estonia, and is dominated by the oil shale and chemical industries. Together, those industries accounted for almost half of the county´s GDP in 2017 and indirectly provided 20,000 workplaces (see Section 3.5). At the same time, the unemployment rate is twice that of the rest of Estonia, at around 10% due to low business activity. Environmental degradation and the fact that a large part of the population has skills limited to the oil shale sector make Ida-Viru less attractive for investment. This gives rise to market and policy failures common to post-industrial regions, notably in access to finance and in workforce mobility. A successful transition of the oil shale sector is the challenge not only for the region, but also for the whole country, as the oil shale industry is an important contributor to the budget, energy security and employment. Measures to increase investment in innovative sectors and to improve the business environment to create jobs and have people with the right skills are essential, but may not be sufficient. Consideration could be given to using the existing infrastructure for development of other types of industry.

South-east Estonia is the most remote region in the country; it has limited industry and is dependent on agriculture, forestry and tourism. The region is characterised by a high share of companies with fewer than 10 employees, low private investment and job creation rates. Although it is relatively remote from urban centres, the availability of public transport is limited, and the quality of the road network is poor due to underinvestment in road upgrading and maintenance. Gravel roads account for 45% to 50% of all roads (see Section 3.4.1).

The protracted transition in both regions comes with a social cost. The lack of jobs and low salaries contribute to the high relative poverty rate, which ranged from 29% to 38% in 2018, compared to the national average of 21.7%. In 2019, unemployment in both regions was above the country's average and the number of job vacancies was lower than elsewhere in Estonia ([1]). Poverty traps in these regions have been closely linked to the high share of disabled people among the total population ([2]). Given the continued depopulation, the local authorities have difficulties in ensuring service delivery to citizens.

As flagged in Sections 3.1 and 3.3, several ongoing and future reforms, such as the reform of local government financing, the Work Ability reform, anticipated reform of integrated social and healthcare services, and the rolling out of policies to address skills gaps, can help to address development challenges in these regions. While Estonia designed specific measures for the regions regarding business development and jobs creation, their uptake and effectiveness have been relatively low.

The government initiative to provide tailored and simpler business support measures for the north-east and south-east regions could help to unlock innovation and business development. To increase the attractiveness of these regions for investments and skilled labour, additional measures are necessary to improve connectivity (roads quality and access to high-speed internet). Involving the county municipalities' associations in the early stages of the preparation of sectorial investment plans would be important in addressing the specific development needs of the regions across the sectors. Reinforcing the county development centres to assist municipalities and companies to prepare and implement projects could
help them catch up with the rest of the country more quickly.

The Regional development strategy 2014-2020 and the regional programs provide financing to the regions which are lagging behind, but significantly stronger interventions would be important. The lack of sufficient collaterals is restricting access to finance and holding back not only companies' investments but also people's investments into energy efficient housing, leading to the low value of the real estate. Setting up a guarantee scheme to compensate of the lack of collaterals is one of many possible measures that could improve the regions' development opportunities. Additional measures and resources could be useful.

Estonia does not have tax incentives for investments in these regions. Combined efforts from all public authorities would be necessary to attract important and sustainable investments. In addition, these efforts would need to be supported by providing the necessary social and transport infrastructure.

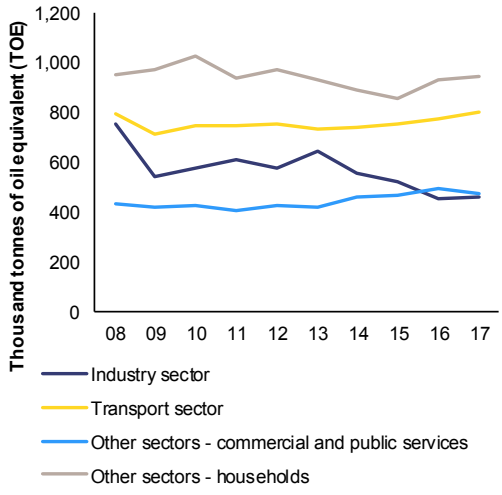
In South-East Estonia, region-specific support could be useful to improve communication connections and promote distant working and learning.

([1]) In Q3 2019 job vacancy rate in Ida-Viru county was 3% and in Põlva county 0.3%.
([2]) Ida-Viru 18%, increasing to close to 25% in Põlva

## 3.5. ENVIRONMENTAL SUSTAINABILITY

**Estonia faces increasing macroeconomic and social costs from extensive reliance on carbon-intensive energy in key sectors of the economy.** While energy production has a high carbon content, the problem is compounded by the high energy intensity of buildings and transport. In 2017, Estonia was one of the most carbon and energy intensive economy in the EU, and in per capita terms, the total $CO_2$ emissions amounted to nearly twice the EU average ([49]). Such a high carbon intensity reflects the importance of the oil shale sector. Oil shale accounts for 75% of Estonia's electricity generation. In total, about 80% of Estonia's energy mix is from fossil fuels, and only 18% of gross inland energy consumption energy production comes from renewable energy sources. In 2017, energy-related emissions accounted for 89% of Estonia's total greenhouse gas emissions, and emissions from carbon-intensive oil shale represented 69% of energy-related $CO_2$ emissions. In terms of energy consumption, residential buildings (heating and electricity) account for 33% of final energy consumption, and transport accounts for 29% (see Graph 5.3.1).

Graph 3.5.1: **Final energy consumption by sector 2008-2017**




***Source:*** European Commission

**Estonia will likely miss its national greenhouse gas emission targets for 2030 ([50]).** Current projections based on existing measures show that the country is likely to achieve the 2020 target. At the same time, current projections based both on existing and additional measures illustrate that Estonia will miss its effort sharing target for 2030 by a significant margin. While energy consumption in the residential sector decreased between 2000 and 2015, it has risen again recently. The energy consumption of transport has increased compared to 2004. Overall, several sectors are not making enough effort to decarbonise. Action to improve energy efficiency in buildings and the transport sector has been insufficient and has not led to significant improvements (see sections on transport and energy). Estonia is planning to update its 2017 General Principles of Climate Policy guidance to incorporate findings from the recently commissioned study 'Analysis to increase the Estonian climate ambition by 2050'. In this way, Estonia is seeking to align its long-term policy vision with concrete ways to reach the 2030 effort sharing target.

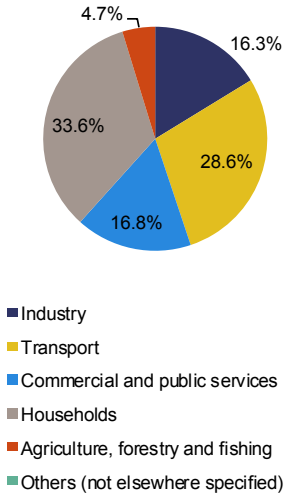
**Estonia has long been highly dependent on the oil shale sector.** On average, the oil shale sector amounts to about 4% of GDP and adds about 1% annually to budget revenues. At the same time, the oil shale industry is largely responsible for Estonia being the biggest generator of hazardous waste per capita in the EU. Oil shale mining produces 70% of Estonia's non-hazardous waste and oil shale combustion and processing account for 90% of the country's hazardous waste, nearly all of which is deposited in landfills. The century of oil shale mining and burning activities has left Estonia with contaminated sites and poor environmental conditions in the mining area. Pollution from oil shale based production has resulted in health problems affecting residents in Ida-Viru county. The contribution of energy generation and the mining sector (mainly from Eesti Energia) to the budget masks significant national and EU spending to improve the environmental situation in landfill disposal sites and address the socio-economic consequences of Ida-Viru county's dependency on oil shale. The Just Transition Fund, as proposed by the European Commission, could contribute to the limiting the potential impact of the energy transition in Ida-Viru region (see Annex D for dedicated investment guidance for the Fund).

([49]) 15 tonnes of $CO_2$ equivalent per capita compared to EU average of 8.7 tonnes

([50]) These targets are covered under the effort sharing legislation. The effort sharing legislation covers those greenhouse gas emissions that are not regulated in the EU emissions trading system.

**Decarbonising the energy sector would improve Estonia's competitiveness and contribute to achieving sustainable development goals 7 and 12.** The prices of energy in the EU reflect the environmental costs via the EU emission trading system. Combined with changes in the global crude oil prices in recent years, the high carbon intensity of energy production caused the loss of competitiveness of the oil shale sector, adding to the risk of the middle-income trap (see Section 3.4). Reducing the reliance on oil shale energy intensity can improve the economy's competitiveness in the medium term. This makes wider deployment of domestic renewable energy and growth-enhancing environmental investment crucial.

Graph 3.5.2: **Final energy consumption by sector in 2017**




***Source:*** European Commission, based on Eurostat data

**Having less carbon intensive transport and more energy efficient housing sectors will require considerable investment**. Estonia's transport sector has a large negative environmental footprint due to the stock of relatively old cars (European Commission, 2018b; European Commission, 2019a), the most environmentally unfriendly new vehicle fleet in the EU and high dependence on fossil fuels (98%). Around 65% of road vehicles run on diesel and 33% on gasoline, while railways are underdeveloped and also operate mainly on diesel. This makes Estonia one of the worst performers on the relevant sustainable development goals 7, 12 and 13. On a related sustainable development goal 9, Estonia is equally among the worst performers in the EU as regards $CO_2$ emissions per km from new passenger cars and the use of trains in passenger transport. Estonia's consumption of energy in the housing sector is significantly higher than in many of the neighbouring Nordic and Baltic countries with a similar climate. As the buildings stock is rather old, the energy demand for heating per surface area in residential buildings is among the highest in the EU (International Energy Agency, 2019). Even though investments to better insulate houses have been made in recent decades, other factors such as more and larger dwellings, and more appliances per dwelling have actually led to increased energy consumption in housing on the whole (Odyssee-Mure, 2018).

**Moving towards more sustainable transport and housing can bring considerable savings**, in particular for low income households (see Section 3.3). Studies show that improving the energy efficiency of buildings can reduce total heating demand by half (MEAC, 2017b). However, the less energy efficient buildings in Estonia are owned by people with limited financial resources and more difficult access to credit. While loan guarantees and grants are available to improve energy efficiency, renovating old buildings requires significant own resources under current measures and is not attainable for many low or even medium income households, in particular in rural areas where real estate values are low. Similarly, the ability of low income earners to invest in new, energy efficient cars and thus enjoy the potential fuel savings is limited. In addition, the transport demand of the rural population is not met. The transition would require identifying market failures impeding access to schemes that support investment in energy efficiency.

**A comprehensive circular economy strategy could help Estonia in transition towards decarbonisation, reduce the negative environmental impacts of the oil shale industry and boost the economy.** The national circular economy strategy and action plan are under preparation and are expected to be finalised in 2021. Until then Estonia is lacking an overarching strategy for the circular economy. Using the potential of the circular economy is a fundamental step towards achieving climate targets. A recent study on *How the circular economy tackles climate change* (Ellen Macarthur Foundation, 2019) suggests that the circular economy is a

powerful force for mitigating climate change. Emissions in material-intensive industries and value chains can be reduced by up to 56% through consistently applying circular economy principles. Moreover, the potential of the circular economy can be used to boost economic development and employment ([51]).

**The Estonian National Energy and Climate Plan envisages creating a competitive low-carbon economy and reducing greenhouse gas emissions ([52]).** The plan sets ambitious objectives and focuses on the energy, transportation and industry sectors. However, the plan does not envisage any comprehensive tax measures, which would help the country to meet those objectives (see Section 3.1.2). Furthermore, allowing local governments more flexibility to establish local environmental taxes and other measures could support local community engagement and improve overall results (see Section 3.1.2). It will be important to offset the negative regional economic and social impacts, including energy poverty by ensuring that people are able to benefit from new opportunities. To this end, it would be important to develop a comprehensive transformation strategy, encompassing economic and social aspects of the industrial transition in partnership with local authorities and other relevant partners.

**The transition process in Ida-Viru county is expected to severely impact local communities that are dependent on oil shale.** The transition may result in more unemployment, fewer job opportunities, skills mismatches and social challenges. Mining, oil shale-based electricity production and the chemical industry made up around 45% of Ida-Viru county's GDP in 2017 ([53]).The related oil shale processing industry employs around 10,000 people, accounting for 23% of the county's total employment. Around 20,000 people are indirectly impacted by the transition process (in logistics, services, etc.). The number of jobs in the oil shale sector is decreasing and a further drop is expected thanks to efficiency gains in the mining sector and to the restructuring of the electricity and oil industries. Ida-Viru county's capacity to absorb efficiently the phasing out of oil shale could be limited because the employment rate is already lower than the Estonian average ([54]) and many residents lack Estonian language skills, limiting their options for finding a job in other Estonian regions.

**A transition to a more energy efficient economy offers opportunities for more innovation and better jobs, but the social costs have to be factored in.** It is estimated that middle-skilled, middle-paying jobs will be created which will somewhat mitigate the current job polarisation (European Commission, 2019e). The reduction in the oil shale sector's activity might also yield some health benefits. Estonia is planning to mitigate the job losses in carbon-intensive industries by building sources of renewable energy production, and through investments and measures to foster entrepreneurship. Additional investments in upskilling and reskilling, and re-evaluating social assistance and active labour market policies will be key to the success of the transition for the people employed in carbon-intensive sectors. The number of jobs in the oil shale sector is decreasing indicating that the transition is already under way and adding further pressure to act.

([51]) It has been suggested that Estonia is the EU country that would benefit most from circular economy activities in terms of GDP increase and labour. Namely, Estonia can have particularly large improvements in GDP from the improved trade balance driven by reduction in imports. The most obvious shift in employment patterns would be between job losses in sectors that extract and process raw materials, such as oil shale industry, and job increases in sectors that offer recycling and repairing services. Employment opportunities in the circular economy extend to small and medium-sized enterprises via the development of reverse logistics, increased innovation and entrepreneurship and increased development of the service-based economy. (European Commission, Cambridge Econometrics, Trinomics, and ICF, 2018)

([52]) The Commission will assess, in the course of 2020, the final National Energy and Climate lans submitted by Estonia on 20 December 2019.

([53]) Based on Ministry of Finance data, 14.9.2019 Letter from the Ministry of Economic Affairs and Communications, the Ministry of the Environment and the Ministry of Finance to Mr Frans Timmermans.

([54]) 52% for women, 61% for men in Ida-Viru, 68% and 76% for all Estonia - Statistics Estonia, www.stat.ee, 2018 data.

# ANNEX A: OVERVIEW TABLE

| Commitments | Summary assessment ([55]) |
|---|---|
| **2019 country-specific recommendations (CSRs)** | |
| **CSR 1:** Ensure that the nominal growth rate of net primary government expenditure does not exceed 4.1% in 2020, corresponding to an annual structural adjustment of 0.6% of GDP. Ensure effective supervision and the enforcement of the anti-money laundering framework. | Estonia has made **Not Assessed** in addressing CSR 1 |
| • Ensure that the nominal growth rate of net primary government expenditure does not exceed 4.1% in 2020, corresponding to an annual structural adjustment of 0.6% of GDP. | • **The assessment of compliance with the Stability and Growth Pact will be included in the spring when final data for 2019 will be available.** |
| • Ensure effective supervision and the enforcement of the anti-money laundering framework. | **Limited progress** was achieved in ensuring effective supervision and the enforcement of the anti-money laundering framework. Finantsinspektsioon took a number of steps against non-compliant credit institutions. However, its anti-money laundering supervisory capacity remains limited both in terms of human resources and tools. This hampers its capacity to carry out effective supervision. A risk-based approach to supervision has not yet been fully implemented. As the introduction of legislation to raise sanction levels has been delayed and is not yet in place, fines continue to be neither effective, nor proportionate or dissuasive. This hampers the |

([55]) The following categories are used to assess progress in implementing the country-specific recommendations:
**No progress:** The Member State has not credibly announced nor adopted any measures to address the CSR. Below a number of non-exhaustive typical situations that could be covered under this, to be interpreted on a case by case basis taking into account country-specific conditions:
no legal, administrative, or budgetary measures have been announced in the National Reform Programme or in other official communication to the national Parliament / relevant parliamentary committees, the European Commission, or announced in public (e.g. in a press statement, information on government's website);
no non-legislative acts have been presented by the governing or legislator 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 that would need to be taken (unless the CSR explicitly asks for orientations or exploratory actions), while clearly-specified measure(s) to address the CSR has not been proposed.
**Limited progress:** The Member State has:
announced certain measures but these only address the CSR to a limited extent;
and/or
presented legislative acts in the governing or legislator body but these have not been adopted yet and substantial non-legislative further work is needed before the CSR will be implemented;
presented non-legislative acts, yet with no further follow-up in terms of implementation which is needed to address the CSR.
**Some progress:** The Member State has adopted measures that partly address the CSR
and/or
the Member State has adopted measures that address the CSR, but a fair amount of work is still needed to fully address the CSR as only a few of the adopted measures have been implemented. For instance: adopted by national parliament; by ministerial decision; but no implementing decisions are in place.
**Substantial progress:** The Member State has adopted measures that go a long way in addressing the CSR and most of which have been implemented.
**Full implementation:** The Member State has implemented all measures needed to address the CSR appropriately.

| | |
|---|---|
| | deterrent effect of supervisory measures, as shown by recent cases. Progress as regards enforcement also remains limited. Prosecutions and convictions in money laundering cases remain limited. The exchange of information between the Financial Intelligence Unit and law enforcement authorities is also seldom proactive. |
| **CSR 2:** Address skills shortages and foster innovation by improving the capacity and labour market relevance of the education and training system. Improve the adequacy of the social safety net and access to affordable and integrated social services. Take measures to reduce the gender pay gap, including by improving wage transparency. | • Estonia has made **some progress** in addressing CSR 2 |
| • Address skills shortages and foster innovation by improving the capacity and labour market relevance of the education and training system. | **Some progress** was made to improve the labour market relevance of both higher and vocational education. The performance-based funding system of universities and incentives to increase enrolments in certain study fields are helping to align skills supply to labour demand. The forecasting system OSKA has been evaluated. The results of the evaluation will be used to make the skills supply match the labour market demand at each level of the education and training system. A number of regulations helping implement the recommendation entered into force since June 2019, notably a regulation assessing the quality of the conditions and procedure for vocational education on the principles, conditions and procedure for support for the activities of vocational education institutions and an amendment to the regulation on the implementation procedure for apprenticeships. |
| • Improve the adequacy of the social safety net and access to affordable and integrated social services. | **Some progress** was made in improving the adequacy of the social safety net. Since April 2020, the base amount of pension will be increased by €7 in addition to the annual pension increase from indexation of €38. The changes to the second pillar are expected to reduce the future sustainability and adequacy of pensions. Annual increases from indexation took place for subsistence benefit, work ability allowance, unemployment allowance, and unemployment insurance benefit. As of 2020, disabled children's benefits will be increased two- to threefold depending on the level of disability to maximum €241 (from €80.55 in 2019). The changes in the first pillar pension formula will take effect as of 2021 and will address the pension adequacy of low-wage earners. **Limited progress** was made in providing good quality and affordable social services. There is an |

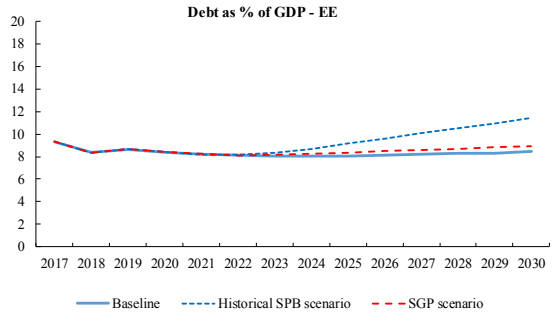
| | |
|---|---|
| | agreement on the concept regarding the financing and management model for long-term care services. However, a new framework for integrated provision of social and healthcare services has yet to be designed and implemented. Some measures have been taken: for example, care homes have been made more energy efficient and more accessible; social transport improved and a dementia competence centre has developed. |
| • Take measures to reduce the gender pay gap, including by improving wage transparency. | **Some progress** As of July 2020, paternal leave will increase from 10 days to 30 days. As of July 2020, the use of parental leave period will be flexible for the first three years of a child's life.. Estonia is developing information technology tools to help employers to increase pay transparency and is running a research project to address the unexplained part of the gender pay. |
| **CSR 3:** Focus investment-related economic policy on sustainable transport and energy infrastructure, including interconnections, on fostering research and innovation, and on resource and energy efficiency, taking into account regional disparities. | Estonia has made **limited progress** in addressing CSR 3. R&D investments by the private sector have remained low and have decreased further over the last years to 0.59% of GDP in 2018. Regarding investment in energy infrastructure, Estonia has made substantial progress, as the implementation of the Baltic interconnection project is proceeding as expected. Estonia has made some progress with regards to investment in energy efficiency, but improving access of low and medium income households to finance could facilitate further improvements. Estonia has made limited progress with focusing its investment related economic policies on resource efficiency and no progress with respect to sustainable transport. |
| Europe 2020 (national targets and progress) | |
| Employment rate target set in the NRP: 76% (20-64). | The target was already reached in 2015 (76.5%) and it increased further to 79.5% in 2018. |
| R&D target set in the NRP: 3% of GDP, of which 2% for the private sector. | In 2018, expenditure on R&D reached 1.38% of GDP, of which 0.59% by the private sector. Public expenditure increased to 0.79% of GDP in 2018 (from 0.66% in 2017). |
| National greenhouse gas (GHG) emissions target: maximum 11% increase in 2020 compared with 2005 (in sectors not included | Provisional GHG emissions data for 2018 show that Estonia currently emits 17% more GHG emissions in the sectors not included in the EU emissions trading system than it did in 2005. Projections with existing |

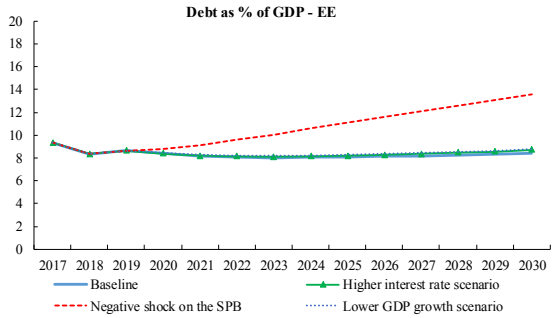
| | |
|---|---|
| in the EU emissions trading scheme) | measures, however, indicate that Estonia will likely meet its 2020 target of an increase of at most 11% in the GHG emissions from sectors not included in the EU emissions trading system. |
| 2020 renewable energy target: 25% | With a renewable energy share of 30% in 2018, Estonia is already above its 25% target for 2020.<br><br>With a 3.3% share of renewable energy sources in transport in 2018, Estonia is lagging behind the binding 10% target in transport to be achieved by 2020. |
| Energy efficiency, 2020 energy consumption targets:<br><br>Estonia's 2020 energy efficiency target is 6.5 Mtoe expressed in primary energy consumption (2.8 Mtoe expressed in final energy consumption) | In 2018, Estonia's primary energy consumption increased by 11% to 6.2 Mtoe, compared to 2017. Final energy consumption increased by 3% to 3.0 Mtoe. |
| Early school/training leaving target: 9.5% of the 18-24 year-olds with at most lower secondary education and who are currently not in further education or training. | Estonia is moving away from the target, the rate deteriorated to 11.3 in 2018 (from 9.7% in 2017). Gender differences are significant. |
| Tertiary education target: 40% of population aged 30-34. | With 47.2% in 2018, Estonia is well above its national target. |
| Target for reducing the number of people at risk of poverty: from 17.5% in 2010 (income year) to 15% in 2020 (income year). | Overall at-risk-of-poverty rate increased to 21.9% in 2018 (from 21% in 2017). |

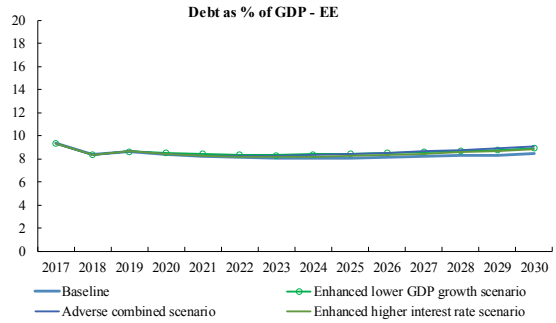
# ANNEX B: COMMISSION DEBT SUSTAINABILITY ANALYSIS AND FISCAL RISKS

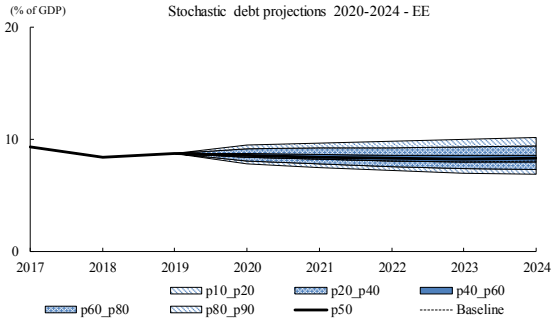
**General government debt projections under baseline, alternative scenarios and sensitivity tests**

| EE - Debt projections baseline scenario | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Gross debt ratio** | **8.4** | **8.7** | **8.4** | **8.2** | **8.1** | **8.0** | **8.1** | **8.1** | **8.1** | **8.2** | **8.3** | **8.3** | **8.4** |
| *Changes in the ratio (-1+2+3)* | *-1.0* | *0.3* | *-0.3* | *-0.2* | *-0.1* | *-0.1* | *0.0* | *0.0* | *0.0* | *0.1* | *0.1* | *0.1* | *0.1* |
| *of which* | | | | | | | | | | | | | |
| **(1) Primary balance** (1.1+1.2+1.3) | **-0.5** | **-0.2** | **-0.1** | **-0.2** | **-0.3** | **-0.3** | **-0.4** | **-0.4** | **-0.4** | **-0.4** | **-0.4** | **-0.4** | **-0.4** |
| ***(1.1) Structural primary balance*** *(1.1.1-1.1.2+1.1.3)* | ***-2.2*** | ***-1.6*** | ***-0.9*** | ***-0.4*** | ***-0.5*** | ***-0.4*** | ***-0.4*** | ***-0.4*** | ***-0.4*** | ***-0.4*** | ***-0.4*** | ***-0.4*** | ***-0.4*** |
| *(1.1.1) Structural primary balance (bef. CoA)* | *-2.2* | *-1.6* | *-0.9* | *-0.4* | *-0.4* | *-0.4* | *-0.4* | *-0.4* | *-0.4* | *-0.4* | *-0.4* | *-0.4* | *-0.4* |
| *(1.1.2) Cost of ageing* | | | | | *0.1* | *0.0* | *-0.1* | *-0.1* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* |
| *(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*** | ***1.7*** | ***1.4*** | ***0.7*** | ***0.2*** | ***0.2*** | ***0.1*** | ***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) | **-0.8** | **-0.5** | **-0.4** | **-0.4** | **-0.4** | **-0.4** | **-0.3** | **-0.4** | **-0.3** | **-0.3** | **-0.3** | **-0.3** | **-0.3** |
| *(2.1) Interest expenditure* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* | *0.1* |
| *(2.2) Growth effect* | *-0.4* | *-0.3* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* |
| *(2.3) Inflation effect* | *-0.4* | *-0.3* | *-0.3* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* | *-0.2* |
| **(3) Stock-flow adjustments** | **-0.7** | **0.6** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** |




| Short term | Medium term | S1 | Debt sustainability analysis (detail) | Baseline | Historical SPB | Lower GDP growth | Higher interest rate | Negative shock on SPB | Stochastic projections | DSA | S2 | Long term |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Risk category | LOW | LOW | LOW | LOW | LOW | LOW | | | |
| | | | Debt level (2030) | 8.4 | 11.4 | 8.8 | 8.7 | 13.6 | | | | |
| | | | Debt peak year | 2019 | 2030 | 2030 | 2030 | 2030 | | | | |
| | | | Percentile rank | 66.0% | 70.0% | | | | | | | |
| | | | Probability debt higher | | | | | | 37.4% | | | |
| | | | Dif. between percentiles | | | | | | 3.3 | | | |
| LOW (S0 = 0.2) | LOW | LOW (S1 = -5.3) | | | | | | | | LOW | LOW (S2 = 0.8) | LOW |

**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 after that) 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 five 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).

# 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) | 106.3 | 111.8 | 113.9 | 107.1 | 100.7 | 106.6 |
| Share of assets of the five largest banks (% of total assets) | 89.9 | 88.6 | 88.0 | 90.3 | 91.0 | - |
| Foreign ownership of banking system (% of total assets)(2) | 95.1 | 94.2 | 93.4 | 74.1 | 72.7 | 52.3 |
| Financial soundness indicators:(2) | | | | | | |
| - non-performing loans (% of total loans) | 3.2 | 2.2 | 1.7 | 1.9 | 1.3 | 1.8 |
| - capital adequacy ratio (%) | 41.8 | 35.4 | 34.4 | 30.6 | 31.0 | 27.0 |
| - return on equity (%)(3) | 9.7 | 6.8 | 11.1 | 9.2 | 9.8 | 9.5 |
| Bank loans to the private sector (year-on-year % change)(1) | 4.5 | 9.3 | 9.5 | 2.1 | 5.8 | 6.8 |
| Lending for house purchase (year-on-year % change)(1) | 2.9 | 4.5 | 5.5 | 6.9 | 7.1 | 7.1 |
| Loan-to-deposit ratio(2) | 87.8 | 97.6 | 99.0 | 89.8 | 93.5 | 90.9 |
| Central bank liquidity as % of liabilities(1) | 0.3 | 0.4 | 0.4 | 0.5 | 0.3 | 0.0 |
| Private debt (% of GDP) | 115.4 | 112.8 | 112.4 | 107.6 | 101.5 | - |
| Gross external debt (% of GDP)(2) - public | 7.9 | 7.0 | 6.9 | 6.2 | 5.9 | 7.0 |
| - private | 48.3 | 45.0 | 42.5 | 43.8 | 43.9 | 42.0 |
| Long-term interest rate spread versus Bund (basis points)* | - | - | - | - | - | - |
| Credit default swap spreads for sovereign securities (5-year)* | 57.1 | 58.3 | 58.5 | 55.6 | 56.1 | 57.4 |

(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 annualised.
* 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) | 12.0 | 12.2 | 10.9 | 10.8 | 11.3 | : |
| Gender employment gap (pps) | 7.7 | 7.9 | 8.2 | 7.3 | 7.8 | 8.0 |
| Income inequality, measured as quintile share ratio (S80/S20) | 6.5 | 6.2 | 5.6 | 5.4 | 5.1 | : |
| At-risk-of-poverty or social exclusion rate(1) (AROPE) | 26.0 | 24.2 | 24.4 | 23.4 | 24.4 | : |
| Young people neither in employment nor in education and training (% of population aged 15-24) | 11.7 | 10.8 | 9.1 | 9.4 | 9.8 | : |
| **Dynamic labour markets and fair working conditions** | | | | | | |
| Employment rate (20-64 years) | 74.3 | 76.5 | 76.6 | 78.7 | 79.5 | 79.8 |
| Unemployment rate(2) (15-74 years) | 7.4 | 6.2 | 6.8 | 5.8 | 5.4 | 4.4 |
| Long-term unemployment rate (as % of active population) | 3.3 | 2.4 | 2.1 | 1.9 | 1.3 | 1.1 |
| Gross disposable income of households in real terms per capita(3) (Index 2008=100) | 101.0 | 105.7 | 109.4 | 113.7 | : | : |
| Annual net earnings of a full-time single worker without children earning an average wage (levels in PPS, three-year average) | 13048 | 13741 | 14373 | : | : | : |
| Annual net earnings of a full-time single worker without children earning an average wage (percentage change, real terms, three-year average) | 2.95 | 5.17 | 5.21 | : | : | : |
| **Public support / Social protection and inclusion** | | | | | | |
| Impact of social transfers (excluding pensions) on poverty reduction(4) | 23.2 | 22.3 | 24.9 | 27.3 | 26.8 | : |
| Children aged less than 3 years in formal childcare | 19.4 | 21.4 | 30.2 | 27.1 | 28.3 | : |
| Self-reported unmet need for medical care | 11.3 | 12.7 | 15.3 | 11.8 | 16.4 | : |
| Individuals who have basic or above basic overall digital skills (% of population aged 16-74) | : | 65.0 | 60.0 | 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, 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** [5] |
|---|---|---|---|---|---|---|
| Activity rate (15-64) | 75.2 | 76.7 | 77.5 | 78.8 | 79.1 | 78.7 |
| Employment in current job by duration | | | | | | |
| *From 0 to 11 months* | 15.2 | 14.8 | 15.6 | 16.6 | 17.9 | : |
| *From 12 to 23 months* | 11.2 | 11.9 | 11.4 | 11.6 | 12.5 | : |
| *From 24 to 59 months* | 20.3 | 20.9 | 21.2 | 19.6 | 18.3 | : |
| *60 months or over* | 53.1 | 52.2 | 51.6 | 51.9 | 51.1 | : |
| Employment growth* (% change from previous year) | 0.8 | 2.9 | 0.3 | 2.7 | 1.2 | 1.2 |
| Employment rate of women (% of female population aged 20-64) | 70.6 | 72.6 | 72.6 | 75.1 | 75.6 | 75.8 |
| Employment rate of men (% of male population aged 20-64) | 78.3 | 80.5 | 80.8 | 82.4 | 83.4 | 83.8 |
| Employment rate of older workers* (% of population aged 55-64) | 64.0 | 64.5 | 65.2 | 68.1 | 68.9 | 72.1 |
| Part-time employment* (% of total employment, aged 15-64) | 8.3 | 9.5 | 9.9 | 9.5 | 11.1 | 11.5 |
| Fixed-term employment* (% of employees with a fixed term contract, aged 15-64) | 3.1 | 3.4 | 3.7 | 3.1 | 3.5 | 3.2 |
| Transition rate from temporary to permanent employment (3-year average) | 62.5 | 55.7 | 45.0 | 37.5 | 38.2 | : |
| Youth unemployment rate (% active population aged 15-24) | 15.0 | 13.1 | 13.4 | 12.1 | 11.9 | 11.2 |
| Gender gap in part-time employment | 5.3 | 7.2 | 6.4 | 7.1 | 7.9 | 8.2 |
| Gender pay gap[2] (in undadjusted form) | 28.1 | 26.9 | 25.3 | 25.6 | : | : |
| **Education and training indicators** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** |
| Adult participation in learning (% of people aged 25-64 participating in education and training) | 11.6 | 12.4 | 15.7 | 17.2 | 19.7 | : |
| Underachievement in education[3] | : | 11.2 | : | : | : | : |
| Tertiary educational attainment (% of population aged 30-34 having successfully completed tertiary education) | 43.2 | 45.3 | 45.4 | 48.4 | 47.2 | : |
| Variation in performance explained by students' socio-economic status[4] | : | 7.8 | : | : | : | : |

* Non-scoreboard indicator
(1) Long-term unemployed are people who have been unemployed for at least 12 months.
(2) 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.
(3) PISA (OECD) results for low achievement in mathematics for 15 year-olds.
(4) Impact of socio-economic and cultural status on PISA (OECD) scores.
(5) 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* | 4.1 | 4.3 | 4.5 | 4.9 | 4.7 | : |
| *Disability* | 1.8 | 1.7 | 1.8 | 1.9 | 1.8 | : |
| *Old age and survivors* | 6.5 | 6.5 | 6.9 | 6.9 | 6.6 | : |
| *Family/children* | 1.6 | 1.6 | 2.0 | 2.1 | 2.1 | : |
| *Unemployment* | 0.5 | 0.4 | 0.4 | 0.5 | 0.4 | : |
| *Housing* | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | : |
| *Social exclusion n.e.c.* | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | : |
| ***Total*** | 14.6 | 14.6 | 15.8 | 16.4 | 15.8 | : |
| *of which: means-tested benefits* | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | : |
| General government expenditure by function (% of GDP) | | | | | | |
| *Social protection* | 11.9 | 11.8 | 12.8 | 13.2 | 13.0 | : |
| *Health* | 5.0 | 5.1 | 5.4 | 5.2 | 5.0 | : |
| *Education* | 6.0 | 5.6 | 6.0 | 5.8 | 5.8 | : |
| Out-of-pocket expenditure on healthcare | 22.6 | 22.6 | 22.8 | 22.7 | 23.6 | : |
| Children at risk of poverty or social exclusion (% of people aged 0-17)* | 22.3 | 23.8 | 22.5 | 21.2 | 18.8 | 17.9 |
| At-risk-of-poverty rate[1] (% of total population) | 18.6 | 21.8 | 21.6 | 21.7 | 21.0 | 21.9 |
| In-work at-risk-of-poverty rate (% of persons employed) | 7.6 | 11.8 | 10.0 | 9.6 | 9.3 | 9.3 |
| Severe material deprivation rate[2] (% of total population) | 7.6 | 6.2 | 4.5 | 4.7 | 4.1 | 3.8 |
| Severe housing deprivation rate[3], by tenure status | | | | | | |
| *Owner, with mortgage or loan* | 4.4 | 2.2 | 1.9 | 0.9 | 1.8 | 3.1 |
| *Tenant, rent at market price* | 5.1 | 8.1 | 4.3 | 6.1 | 5.6 | 4.1 |
| Proportion of people living in low work intensity households[4] (% of people aged 0-59) | 8.4 | 7.6 | 6.6 | 5.8 | 5.8 | 5.2 |
| Poverty thresholds, expressed in national currency at constant prices* | 2965 | 3151 | 3428 | 3754 | 4043 | 4374 |
| Healthy life years | | | | | | |
| *Females* | 5.7 | 6.0 | 5.3 | 7.0 | 6.1 | : |
| *Males* | 5.1 | 4.9 | 5.3 | 5.5 | 5.7 | : |
| Aggregate replacement ratio for pensions[5] | 0.5 | 0.5 | 0.4 | 0.5 | 0.5 | 0.4 |
| Connectivity dimension of the Digital Economy and Society Index (DESI)[6] | : | 44.8 | 51.8 | 56.7 | 62.2 | : |
| GINI coefficient before taxes and transfers* | 48.9 | 51.6 | 49.9 | 47.5 | 46.5 | : |
| GINI coefficient after taxes and transfers* | 32.9 | 35.6 | 34.8 | 32.7 | 31.6 | : |

* 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 | 4.81 | 7.20 | -3.52 | 3.24 | 2.42 | 6.83 |
| Labour productivity growth in construction | -4.30 | -7.64 | -7.17 | 28.59 | 8.24 | 12.16 |
| Labour productivity growth in market services | -2.38 | 0.79 | 1.24 | -1.21 | 1.84 | 4.37 |
| Unit Labour Cost (ULC) index[2] growth (t/t-1) in % | | | | | | |
| ULC growth in industry | 2.74 | 2.14 | 4.78 | 0.33 | -0.93 | 0.23 |
| ULC growth in construction | 6.98 | 5.78 | 6.19 | -5.48 | -2.66 | -3.77 |
| ULC growth in market services | 5.60 | 5.66 | 4.12 | 3.47 | 2.23 | 7.72 |
| **Business environment** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** |
| Time needed to enforce contracts[3] (days) | 455 | 455 | 455 | 455 | 455 | 455 |
| Time needed to start a business[3] (days) | 6.5 | 4.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| Outcome of applications by SMEs for bank loans[4] | 0.91 | 0.66 | 0.19 | 0.82 | 0.91 | 0.37 |
| **Research and innovation** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** |
| R&D intensity | 1.71 | 1.42 | 1.46 | 1.25 | 1.28 | 1.40 |
| General government expenditure on education as % of GDP | 6.00 | 5.60 | 6.00 | 5.80 | 5.80 | : |
| Employed people with tertiary education and/or people employed in S&T as % of total employment | 51 | 51 | 51 | 51 | 51 | 53 |
| Population having completed tertiary education[5] | 32 | 33 | 33 | 34 | 35 | 36 |
| Young people with upper secondary education[6] | 84 | 83 | 82 | 84 | 85 | 83 |
| Trade balance of high technology products as % of GDP | -0.31 | -0.33 | -0.35 | -0.49 | -0.67 | -0.51 |
| **Product and service markets and competition** | **2003** | **2008** | **2013** | | | **2018*** |
| OECD product market regulation (PMR)[7], overall | : | 1.37 | 1.29 | | | 1.29 |
| OECD PMR[7], retail | : | 1.40 | 1.50 | | | 0.38 |
| OECD PMR[7], professional services[8] | : | 1.81 | 1.79 | | | 1.44 |
| OECD PMR[7], network industries[9] | 3.34 | 2.60 | 2.40 | | | 1.33 |

*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
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).

Table C.6: **Green growth**

| Green growth performance | | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|
| ***Macroeconomic*** | | | | | | | |
| Energy intensity | kgoe / € | 0.37 | 0.34 | 0.31 | 0.33 | 0.30 | - |
| Carbon intensity | kg / € | 1.31 | 1.23 | 1.04 | 1.09 | 1.10 | - |
| Resource intensity (reciprocal of resource productivity) | kg / € | 2.27 | 2.16 | 2.03 | 1.97 | 2.15 | 2.27 |
| Waste intensity | kg / € | - | 1.27 | - | 1.35 | - | - |
| Energy balance of trade | % GDP | -2.2 | -2.1 | -1.5 | -1.0 | -0.6 | -1.0 |
| Weighting of energy in HICP | % | 14.42 | 14.43 | 13.65 | 10.58 | 11.63 | 11.75 |
| Difference between energy price change and inflation | p.p. | 7.4 | -4.6 | -4.1 | -5.1 | -2.9 | 4.2 |
| Real unit of energy cost | % of value added | 17.9 | 16.6 | 16.7 | 16.7 | - | - |
| Ratio of environmental taxes to labour taxes | ratio | 0.16 | 0.16 | 0.16 | 0.18 | 0.17 | - |
| Environmental taxes | % GDP | 2.6 | 2.6 | 2.7 | 3.0 | 2.9 | 2.7 |
| ***Sectoral*** | | | | | | | |
| Industry energy intensity | kgoe / € | 0.15 | 0.12 | 0.12 | 0.10 | 0.09 | - |
| Real unit energy cost for manufacturing industry excl. refining | % of value added | 13.6 | 12.5 | 12.6 | 12.8 | - | - |
| Share of energy-intensive industries in the economy | % GDP | 12.94 | 13.45 | 13.12 | 13.12 | 13.67 | 14.12 |
| Electricity prices for medium-sized industrial users | € / kWh | 0.10 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| Gas prices for medium-sized industrial users | € / kWh | 0.04 | 0.04 | 0.03 | 0.02 | 0.03 | 0.03 |
| Public R&D for energy | % GDP | 0.01 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 |
| Public R&D for environmental protection | % GDP | 0.04 | 0.04 | 0.05 | 0.02 | 0.01 | 0.01 |
| Municipal waste recycling rate | % | 17.9 | 31.3 | 28.3 | 28.1 | 28.4 | 28.0 |
| Share of GHG emissions covered by ETS* | % | 73.5 | 71.1 | 65.9 | 68.4 | 70.3 | 68.6 |
| Transport energy intensity | kgoe / € | 0.60 | 0.59 | 0.62 | 0.63 | 0.60 | - |
| Transport carbon intensity | kg / € | 1.43 | 1.29 | 1.12 | 1.29 | 1.08 | 1.02 |
| **Security of energy supply** | | | | | | | |
| Energy import dependency | % | 13.9 | 11.1 | 9.6 | 7.9 | 4.1 | - |
| Aggregated supplier concentration index | HHI | 53.2 | 50.8 | 53.5 | 48.5 | 66.4 | - |
| Diversification of energy mix | HHI | 53.8 | 54.7 | 52.0 | 52.9 | 57.2 | - |

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 arger 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 ESTONIA

Building on the Commission proposal, this Annex ([56]) 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 Estonia. 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 Estonia, assessed in the report. This Annex provides the basis for a dialogue between Estonia 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 Estonia ([57]).

The North-eastern region (Ida-Viru County) of Estonia relies heavily on the oil shale sector, which provides 75% of the Estonia's energy production. The oil shale related sectors amounted to about 4% of Estonian and about 45% of county's GDP and generates 69% of the Estonian greenhouse gas (GHG) emissions.

The energy and oil shale industries have started decarbonisation-related restructuring that will continue for the coming ten years and will have a significant impact in direct and indirect jobs at risk. The number of jobs in the oil shale sector is decreasing and a further drop is expected. The number of people who are indirectly impacted by the process is around 20,000. The demand for labour in the region is limited, and together with skills mismatches many people will be at risk of unemployment. The smart specialisation strategy ([58]) provides an important framework to set priorities for innovation in support of economic transformation. Diversifying regional economic activities and creating new business opportunities and upskilling and reskilling would therefore be essential. Based on this preliminary assessment, it appears warranted that the Just Transition Fund concentrates its intervention on that region.

To tackle these transition challenges, priority investment needs have been identified for the diversification of the local economy and ensuring necessary skills for those affected by the transition. Key actions of the Just Transition Fund could target in particular:

- productive investments in SMEs, including start-ups, leading to economic diversification and reconversion;
- investments in the creation of new firms, including through business incubators and consulting services;
- investments in the deployment of technology and infrastructures for affordable clean energy, in greenhouse gas emission reduction, energy efficiency and renewable energy;
- upskilling and reskilling of workers.

To increase the resilience of the affected region and to alleviate potential negative social and economic impacts posed by the transition, investment needs therefore have also been identified. Key actions of the Just Transition Fund could target in particular:

([56]) 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)

([57]) SWD(2019) 1005 final

([58]) As defined in Article 2(3) of Regulation EU 1303/2013 (CPR)

- investments in research and innovation activities and fostering the transfer of advanced technologies;
- investments in digitalisation and digital connectivity;
- investments in regeneration and decontamination of sites, land restoration and repurposing projects;
- 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;
- technical assistance.

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

## Assessment of Estonia's short-term progress towards the SDGs ([59])

Table E.1 shows the data for Estonia 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 ([60]). 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 Estonia's progress towards the SDGs**

| SDG / Sub-theme | Indicator | Unit | Estonia | | | | 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 | 23.5 | 2018 | 24.4 | 2013 | 24.6 | 2018 | 21.9 |
| | People at risk of income poverty after social transfers | % of population | 2013 | 18.6 | 2018 | 21.9 | 2013 | 16.7 | 2018 | 17.1 |
| | Severely materially deprived people | % of population | 2013 | 7.6 | 2018 | 3.8 | 2013 | 9.6 | 2018 | 5.8 |
| | People living in households with very low work intensity | % of population aged 0 to 59 | 2013 | 8.4 | 2018 | 5.2 | 2013 | 11.0 | 2018 | 8.8 |
| | In-work at-risk-of-poverty rate | % of population aged 18 or over | 2014 | 11.8 | 2018 | 9.3 | 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 | 17.5 | 2018 | 13.6 | 2013 | 15.6 | 2018 | 13.9 |
| | Self-reported unmet need for medical care | % of population aged 16 or over | 2013 | 8.4 | 2018 | 16.4 | 2013 | 3.7 | 2018 | 2.0 |
| | Population having neither a bath, nor a shower, nor indoor flushing toilet in their household | % of population | 2013 | 6.4 | 2018 | 4.0 | 2013 | 2.2 | 2018 | 1.7 |
| | Population unable to keep home adequately warm | % of population | 2013 | 2.9 | 2018 | 2.3 | 2013 | 10.7 | 2018 | 7.3 |
| | Overcrowding rate | % of population | 2014 | 14.2 | 2018 | 12.6 | 2013 | 17.0 | 2018 | 15.5 |
| **SDG 2 – Zero hunger** | | | | | | | | | | |
| Malnutrition | Obesity rate | % of population aged 18 or over | 2014 | 20.4 | 2017 | 21.0 | 2014 | 15.9 | 2017 | 15.2 |
| Sustainable agricultural production | Agricultural factor income per annual work unit (AWU) | EUR, chain linked volumes (2010) | 2012 | 17 902 | 2017 | 13 353 | 2012 | 14 865 | 2017 | 17 304 |
| | Government support to agricultural research and development | million EUR | 2013 | 14.6 | 2018 | 5.4 | 2013 | 3 048.6 | 2018 | 3 242.5 |
| | Area under organic farming | % of utilised agricultural area | 2013 | 15.7 | 2018 | 20.6 | 2013 | 5.7 | 2018 | 7.5 |
| | Gross nitrogen balance on agricultural land | kg per hectare | 2010 | 31 | 2015 | 22 | 2010 | 49 | 2015 | 51 |
| Environmental impacts of agricultural production | Ammonia emissions from agriculture | kg per ha of utilised agricultural area | 2012 | 9.8 | 2017 | 9 | 2011 | 19.7 | 2016 | 20.3 |
| | Nitrate in groundwater | mg $NO_3$ per litre | 2012 | 6.3 | 2017 | 6.2 | 2012 | 19.2 | 2017 | 19.1 |
| | Estimated soil erosion by water | $km^2$ | 2010 | 1.3 | 2016 | 0.6 | 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 | 76.7 | 2017 | 78.4 | 2012 | 80.3 | 2017 | 80.9 |
| | Share of people with good or very good perceived health | % of population aged 16 or over | 2013 | 53.5 | 2018 | 51.8 | 2013 | 67.3 | 2018 | 69.2 |
| Health determinants | Smoking prevalence | % of population aged 15 or over | 2012 | 26 | 2017 | 23 | 2014 | 26 | 2017 | 26 |
| | Obesity rate | % of population aged 18 or over | 2014 | 20.4 | 2017 | 21.0 | 2014 | 15.9 | 2017 | 15.2 |
| | Population living in households considering that they suffer from noise | % of population | 2013 | 10.8 | 2018 | 8.6 | 2013 | 18.8 | 2018 | 18.3 |
| | Exposure to air pollution by particulate matter ($PM_{2.5}$) | $\mu g/m^3$ | 2012 | 7.8 | 2017 | 5.3 | 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 | 174.3 | 2016 | 155.8 | 2011 | 132.5 | 2016 | 119.0 |
| | Death rate due to tuberculosis, HIV and hepatitis | number per 100 000 persons | 2011 | 8.7 | 2016 | 5.9 | 2011 | 3.4 | 2016 | 2.6 |
| | People killed in accidents at work | number per 100 000 employed persons | 2012 | 2.24 | 2017 | 1.21 | 2012 | 1.91 | 2017 | 1.65 |
| | People killed in road accidents | number of killed people | 2012 | 87 | 2017 | 48 | 2012 | 28 231 | 2017 | 25 257 |
| Access to health care | Self-reported unmet need for medical care | % of population aged 16 or over | 2013 | 8.4 | 2018 | 16.4 | 2013 | 3.7 | 2018 | 2.0 |

*(Continued on the next page)*

([59]) 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).

([60]) 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 | Estonia | | | | 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 | 9.7 | 2018 | 11.3 | 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 | 90.0 | 2017 | 92.9 | 2012 | 94.0 | 2017 | 95.4 |
| | Underachievement in reading | % of 15-year-old students | 2015 | 10.6 | 2018 | 11.1 | 2015 | 19.7 | 2018 | 21.7 |
| | Young people neither in employment nor in education and training | % of population aged 15 to 29 | 2013 | 14.3 | 2018 | 11.7 | 2013 | 15.9 | 2018 | 12.9 |
| Tertiary education | Tertiary educational attainment | % of the population aged 30 to 34 | 2013 | 42.5 | 2018 | 47.2 | 2013 | 37.1 | 2018 | 40.7 |
| | Employment rate of recent graduates | % of population aged 20 to 34 | 2013 | 76.8 | 2018 | 81.7 | 2013 | 75.4 | 2018 | 81.7 |
| Adult education | Adult participation in learning | % of population aged 25 to 64 | 2013 | 12.6 | 2018 | 19.7 | 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 | 5 | N/A | : | 2012 | 8 |
| Education | Gender gap for early leavers from education and training | percentage points, persons aged 18–24 | 2013 | 7.8 | 2018 | 9.7 | 2013 | 3.4 | 2018 | 3.3 |
| | Gender gap for tertiary educational attainment | percentage points, persons aged 30–34 | 2013 | 21.9 | 2018 | 19.8 | 2013 | 8.5 | 2018 | 10.1 |
| | Gender gap for employment rate of recent graduates | percentage points, persons aged 20–34 | 2013 | 12.8 | 2018 | 8.0 | 2013 | 4.4 | 2018 | 3.4 |
| Employment | Gender pay gap in unadjusted form | % of average gross hourly earnings of men | 2012 | 29.9 | 2017 | 25.6 | 2012 | 17.4 | 2017 | 16.0 |
| | Gender employment gap | percentage points, persons aged 20–64 | 2013 | 6.6 | 2018 | 7.8 | 2013 | 11.7 | 2018 | 11.6 |
| | Gender gap in inactive population due to caring responsibilities | percentage points, persons aged 20–64 | 2013 | 35.7 | 2018 | 37.8 | 2013 | 25.5 | 2018 | 27.1 |
| Leadership positions | Seats held by women in national parliaments and governments | % of seats | 2014 | 19.8 | 2019 | 28.7 | 2014 | 27.2 | 2019 | 31.5 |
| | Positions held by women in senior management | % of board members | 2014 | 7.1 | 2019 | 8.5 | 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 | 6.4 | 2018 | 4.0 | 2013 | 2.2 | 2018 | 1.7 |
| | Population connected to at least secondary wastewater treatment | % of population | 2012 | 86.2 | 2017 | 87.9 | N/A | : | N/A | : |
| Water quality | Biochemical oxygen demand in rivers | mg $O_2$ per litre | 2012 | 1.47 | 2017 | 1.75 | 2012 | 2.06 | 2017 | 2.00 |
| | Nitrate in groundwater | mg $NO_3$ per litre | 2012 | 6.3 | 2017 | 6.2 | 2012 | 19.2 | 2017 | 19.1 |
| | Phosphate in rivers | mg $PO_4$ per litre | 2012 | 0.024 | 2017 | 0.024 | 2012 | 0.096 | 2017 | 0.093 |
| | Inland water bathing sites with excellent water quality | % of bathing sites with excellent water quality | 2013 | 85.2 | 2018 | 77.8 | 2013 | 76.5 | 2018 | 80.8 |
| Water use efficiency | Water exploitation index | % of long term average available water (LTAA) | 2012 | 13.2 | 2017 | 14.5 | N/A | : | N/A | : |
| **SDG 7 – Affordable and clean energy** | | | | | | | | | | |
| Energy consumption | Primary energy consumption | million tonnes of oil equivalent (Mtoe) | 2013 | 6.0 | 2018 | 6.2 | 2013 | 1 577.4 | 2018 | 1 551.9 |
| | Final energy consumption | million tonnes of oil equivalent (Mtoe) | 2013 | 2.9 | 2018 | 3.0 | 2013 | 1 115.5 | 2018 | 1 124.1 |
| | Final energy consumption in households per capita | kgoe | 2013 | 708 | 2018 | 712 | 2013 | 605 | 2018 | 552 |
| | Energy productivity | EUR per kgoe | 2013 | 2.5 | 2018 | 3.0 | 2013 | 7.6 | 2018 | 8.5 |
| | Greenhouse gas emissions intensity of energy consumption | index 2000 = 100 | 2012 | 100.4 | 2017 | 101.6 | 2012 | 91.5 | 2017 | 86.5 |
| Energy supply | Share of renewable energy in gross final energy consumption | % | 2013 | 25.3 | 2018 | 30.0 | 2013 | 15.4 | 2018 | 18.0 |
| | Energy import dependency | % of imports in gross available energy | 2013 | 14.0 | 2018 | 0.7 | 2013 | 53.2 | 2018 | 55.7 |
| Access to affordable energy | Population unable to keep home adequately warm | % of population | 2013 | 2.9 | 2018 | 2.3 | 2013 | 10.7 | 2018 | 7.3 |

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*Table (continued)*

| SDG / Sub-theme | Indicator | Unit | Estonia | | | | 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 | 12 640 | 2018 | 15 090 | 2013 | 25 750 | 2018 | 28 280 |
| | Investment share of GDP | % of GDP | 2012 | 28.6 | 2017 | 24.4 | 2013 | 19.5 | 2018 | 20.9 |
| | Resource productivity | EUR per kg, chain-linked volumes (2010) | 2013 | 0.44 | 2018 | 0.44 | 2013 | 1.98 | 2018 | 2.04 |
| Employment | Young people neither in employment nor in education and training | % of population aged 15 to 29 | 2013 | 14.3 | 2018 | 11.7 | 2013 | 15.9 | 2018 | 12.9 |
| | Employment rate | % of population aged 20 to 64 | 2013 | 73.3 | 2018 | 79.5 | 2013 | 68.4 | 2018 | 73.2 |
| | Long-term unemployment rate | % of active population | 2013 | 3.8 | 2018 | 1.3 | 2013 | 5.1 | 2018 | 2.9 |
| | Gender gap in inactive population due to caring responsibilities | percentage points, persons aged 20–64 | 2013 | 35.7 | 2018 | 37.8 | 2013 | 25.5 | 2018 | 27.1 |
| Decent work | People killed in accidents at work | number per 100 000 employed persons | 2012 | 2.24 | 2017 | 1.21 | 2012 | 1.91 | 2017 | 1.65 |
| | In-work at-risk-of-poverty rate | % of population | 2014 | 11.8 | 2018 | 9.3 | 2013 | 9 | 2018 | 9.5 |
| **SDG 9 – Industry, innovation and infrastructure** | | | | | | | | | | |
| R&D and innovation | Gross domestic expenditure on R&D | % of GDP | 2013 | 1.71 | 2018 | 1.40 | 2013 | 2.01 | 2018 | 2.12 |
| | Employment in high- and medium-high technology manufacturing and knowledge-intensive services | % of total employment | 2013 | 39.6 | 2018 | 40.7 | 2013 | 45.0 | 2018 | 46.1 |
| | R&D personnel | % of active population | 2013 | 0.89 | 2018 | 0.93 | 2013 | 1.15 | 2018 | 1.36 |
| | Patent applications to the European Patent Office (EPO) | number | 2012 | 24 | 2017 | 36 | 2012 | 56 772 | 2017 | 54 649 |
| Sustainable transport | Share of buses and trains in total passenger transport | % of total inland passenger-km | 2012 | 18.6 | 2017 | 19.5 | 2012 | 17.2 | 2017 | 16.7 |
| | Share of rail and inland waterways in total freight transport | % of total inland freight tonne-km | 2012 | 66.9 | 2017 | 44.4 | 2012 | 25.4 | 2017 | 23.3 |
| | Average CO2 emissions per km from new passenger cars | g $CO_2$ per km | 2013 | 147.0 | 2018 | 132.5 | 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 | 21.5 | 2018 | 21.9 | 2013 | 23.8 | 2018 | 24.6 |
| | Income distribution | income quintile share ratio | 2013 | 5.5 | 2018 | 5.1 | 2013 | 5.0 | 2018 | 5.2 |
| | Income share of the bottom 40 % of the population | % of income | 2013 | 19.7 | 2018 | 20.1 | 2013 | 21.1 | 2018 | 21.0 |
| | People at risk of income poverty after social transfers | % of population | 2013 | 18.6 | 2018 | 21.9 | 2013 | 16.7 | 2018 | 17.1 |
| Inequalities between countries | Purchasing power adjusted GDP per capita | Real expenditure per capita (in PPS) | 2013 | 20 300 | 2018 | 25 300 | 2013 | 26 800 | 2018 | 31 000 |
| | Adjusted gross disposable income of households per capita | Purchasing power standard (PPS) per inhabitant | 2012 | 13 124 | 2017 | 15 963 | 2013 | 20 392 | 2018 | 22 824 |
| | Financing to developing countries | million EUR, current prices | N/A | : | N/A | : | 2012 | 147 962 | 2017 | 155 224 |
| | Imports from developing countries | million EUR, current prices | 2013 | 983 | 2018 | 1 578 | 2013 | 817 475 | 2018 | 1 013 981 |
| Migration and social inclusion | Asylum applications | Positive first instance decisions, per million inhabitants | 2013 | 8 | 2018 | 15 | 2013 | 213 | 2018 | 424 |
| **SDG 11 – Sustainable cities and communities** | | | | | | | | | | |
| Quality of life in cities and communities | Overcrowding rate | % of population | 2014 | 14.2 | 2018 | 12.6 | 2013 | 17.0 | 2018 | 15.5 |
| | Population living in households considering that they suffer from noise | % of population | 2013 | 10.8 | 2018 | 8.6 | 2013 | 18.8 | 2018 | 18.3 |
| | Exposure to air pollution by particulate matter ($PM_{2.5}$) | µg/$m^3$ | 2012 | 7.8 | 2017 | 5.3 | 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 | 17.5 | 2018 | 13.6 | 2013 | 15.6 | 2018 | 13.9 |
| | Population reporting occurrence of crime, violence or vandalism in their area | % of population | 2013 | 12.3 | 2018 | 7.4 | 2013 | 14.5 | 2018 | 12.7 |
| Sustainable mobility | People killed in road accidents | number of killed people | 2012 | 87 | 2017 | 48 | 2012 | 28 231 | 2017 | 25 257 |
| | Share of buses and trains in total passenger transport | % of total inland passenger-km | 2012 | 18.6 | 2017 | 19.5 | 2012 | 17.2 | 2017 | 16.7 |
| Adverse environmental impacts | Settlement area per capita | $m^2$ | 2009 | 1 164.4 | 2015 | 1 540.5 | 2012 | 625.0 | 2015 | 653.7 |
| | Recycling rate of municipal waste | % of total waste generated | 2013 | 17.9 | 2018 | 28.0 | 2013 | 41.7 | 2018 | 47.0 |
| | Population connected to at least secondary wastewater treatment | % of population | 2012 | 86.2 | 2017 | 87.9 | N/A | : | N/A | : |

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*Table (continued)*

| SDG / Sub-theme | Indicator | Unit | Estonia | | | | 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 | 0.44 | 2018 | 0.44 | 2013 | 1.98 | 2018 | 2.04 |
| | Average CO2 emissions per km from new passenger cars | g $CO_2$ per km | 2013 | 147.0 | 2018 | 132.5 | 2014 | 123.4 | 2018 | 120.4 |
| | Energy productivity | EUR per kgoe | 2013 | 2.5 | 2018 | 3.0 | 2013 | 7.6 | 2018 | 8.5 |
| Energy consumption | Primary energy consumption | million tonnes of oil equivalent (Mtoe) | 2013 | 6.0 | 2018 | 6.2 | 2013 | 1 577.4 | 2018 | 1 551.9 |
| | Final energy consumption | million tonnes of oil equivalent (Mtoe) | 2013 | 2.9 | 2018 | 3.0 | 2013 | 1 115.5 | 2018 | 1 124.1 |
| | Share of renewable energy in gross final energy consumption | % | 2013 | 25.3 | 2018 | 30.0 | 2013 | 15.4 | 2018 | 18.0 |
| Waste generation and management | Circular material use rate | % of material input for domestic use | 2012 | 19.1 | 2017 | 8.7 | 2012 | 11.5 | 2017 | 11.7 |
| | Generation of waste excluding major mineral wastes | kg per capita | 2012 | 8 589 | 2016 | 8 965 | 2012 | 1 716 | 2016 | 1 772 |
| | Recycling rate of waste excluding major mineral wastes | % of total waste treated | 2012 | 25 | 2016 | 10 | 2012 | 55 | 2016 | 57 |
| **SDG 13 – Climate action** | | | | | | | | | | |
| Climate mitigation | Greenhouse gas emissions | index 1990 = 100 | 2012 | 50.2 | 2017 | 52.0 | 2012 | 82.1 | 2017 | 78.3 |
| | Greenhouse gas emissions intensity of energy consumption | index 2000 = 100 | 2012 | 100.4 | 2017 | 101.6 | 2012 | 91.5 | 2017 | 86.5 |
| | Primary energy consumption | million tonnes of oil equivalent (Mtoe) | 2013 | 6.0 | 2018 | 6.2 | 2013 | 1 577.4 | 2018 | 1 551.9 |
| | Final energy consumption | million tonnes of oil equivalent (Mtoe) | 2013 | 2.9 | 2018 | 3.0 | 2013 | 1 115.5 | 2018 | 1 124.1 |
| | Share of renewable energy in gross final energy consumption | % | 2013 | 25.3 | 2018 | 30.0 | 2013 | 15.4 | 2018 | 18.0 |
| | Average CO2 emissions per km from new passenger cars | g $CO_2$ per km | 2013 | 147.0 | 2018 | 132.5 | 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 | 0.6 | 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 | 2013 | 42.3 | 2018 | 55.6 | 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 | $km^2$ | 2013 | 6 756 | 2018 | 6 754 | 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 | 55.6 | 2015 | 58.2 | 2012 | 40.3 | 2015 | 41.6 |
| | Biochemical oxygen demand in rivers | mg $O_2$ per litre | 2012 | 1.47 | 2017 | 1.75 | 2012 | 2.06 | 2017 | 2.00 |
| | Nitrate in groundwater | mg $NO_3$ per litre | 2012 | 6.3 | 2017 | 6.2 | 2012 | 19.2 | 2017 | 19.1 |
| | Phosphate in rivers | mg $PO_4$ per litre | 2012 | 0.024 | 2017 | 0.024 | 2012 | 0.096 | 2017 | 0.093 |
| Land degradation | Soil sealing index | index 2006 = 100 | 2009 | 102.3 | 2015 | 105.3 | 2009 | 101.7 | 2015 | 104.2 |
| | Estimated soil erosion by water | $km^2$ | 2010 | 1.3 | 2016 | 0.6 | 2010 | 207 232.2 | 2016 | 205 294.5 |
| | Settlement area per capita | $m^2$ | 2009 | 1 164.4 | 2015 | 1 540.5 | 2012 | 625.0 | 2015 | 653.7 |
| Biodiversity | Surface of terrestrial sites designated under NATURA 2000 | $km^2$ | 2013 | 8 076 | 2018 | 8 106 | 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 | Estonia | | | | 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 | 4.7 | 2016 | 2.7 | 2011 | 0.9 | 2016 | 0.6 |
| | Population reporting occurrence of crime, violence or vandalism in their area | % of population | 2013 | 12.3 | 2018 | 7.4 | 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 | 5 | N/A | : | 2012 | 8 |
| Access to justice | General government total expenditure on law courts | million EUR | 2012 | 32 | 2017 | 70 | 2012 | 48 381 | 2017 | 51 027 |
| | Perceived independence of the justice system | % of population | 2016 | 62 | 2019 | 55 | 2016 | 52 | 2019 | 56 |
| Trust in institutions | Corruption Perceptions Index | score scale of 0 (highly corrupt) to 100 (very clean) | 2013 | 68 | 2018 | 73 | N/A | : | N/A | : |
| | Population with confidence in the EU Parliament | % of population | 2013 | 57 | 2018 | 51 | 2013 | 39 | 2018 | 48 |
| **SDG 17 – Partnerships for the goals** | | | | | | | | | | |
| Global partnership | Official development assistance as share of gross national income | % of GNI | 2013 | 0.13 | 2018 | 0.16 | 2013 | 0.43 | 2018 | 0.48 |
| | EU financing to developing countries | million EUR, current prices | N/A | : | N/A | : | 2012 | 147 962 | 2017 | 155 224 |
| | EU imports from developing countries | million EUR, current prices | 2013 | 983 | 2018 | 1 578 | 2013 | 817 475 | 2018 | 1 013 981 |
| Financial governance within the EU | General government gross debt | % of GDP | 2013 | 10.2 | 2018 | 8.4 | 2013 | 86.3 | 2018 | 80.4 |
| | Shares of environmental and labour taxes in total tax revenues | % of total tax revenues | 2013 | 8.1 | 2018 | 8.3 | 2013 | 6.4 | 2018 | 6.1 |

***Source:*** Eurostat

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