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2022 Country Report – Estonia

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Recommendation for a COUNCIL RECOMMENDATION

on the 2022 National Reform Programme of Estonia and delivering a Council opinion on the 2022 Stability Programme of Estonia

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European Commission

Estonia

2022 Country Report

ECONOMIC AND EMPLOYMENT SNAPSHOT

Estonia's economy was performing well prior to the COVID-19 crisis. The average annual growth of real GDP per capita was 3.7% from 2010 to 2019, among the highest in the EU. GDP per capita in purchasing power standards reached 84% of the EU average in 2020 (up from 66% in 2010), indicating the economy is catching up with the rest of the EU.

The impact of the COVID-19 pandemic on the Estonian economy has been moderate and limited in time. In 2020, Estonia's real GDP declined by 3.0% – less than in most Member States, followed by a strong rebound of 8.3% in 2021. The relatively mild contraction was due to sustained consumer spending as COVID-19 restrictions were limited and lifted swiftly. The government had also supported household incomes during this time. In addition, the 2020 reform of the pension system ([1]) temporarily boosted consumer spending. This reform enables workers to withdraw their savings from their individual (second pillar) pension accounts before they reach retirement age. The first round of withdrawals in 2021 (equivalent to around 4% of GDP) was partly used to pay off debt, but also to buy durable consumer goods. This boosted domestic demand further, at the expense of long-term pension savings. By the end of 2021, investments and exports were above pre-crisis level, partly because of Estonia's strong position in information technology for which global demand has increased. Public sector investment also supported the economy throughout the COVID-19 crisis, reflecting national support measures and an upturn in spending EU funds. Most industries recovered strongly in 2021 except hospitality and other tourism services ([2]).

Going forward, Russia's invasion of Ukraine is expected to affect some sectors of the economy more seriously. Estonia's trade links with Russia have declined over time, representing 7.6% of total trade in 2021. Estonia has a particular dependence on Russian construction materials (including wood and steel), fertilisers and natural gas (which accounted for 8% of Estonia's total energy supply in 2020). Estonia also has strong links with Russia when it comes to services in transport and tourism. Before the COVID-19 pandemic, Russia accounted for over 11% of all foreign tourists in Estonia. This and other temporary factors are set to slow down GDP growth in real terms to 1.0% in 2022 and 2.4% in 2023. Due to the invasion, Estonia has also seen a large inflow of people fleeing from Ukraine (around 2.5% of population). In response, the government earmarked EUR 232 million in the supplementary budget adopted in April to support their accommodation, the integration of children in education and of workers in the labour market – including through unemployment benefits – and other healthcare and social expenditure. Estonia will benefit from the exceptional support made available under the CARE initiative and through the additional pre-financing under REACT-EU to urgently address reception and integration needs of those fleeing Ukraine.

Estonia had strong public finances before the COVID-19 crisis but is emerging from it somewhat weaker. Public debt went up from 8.4% of GDP in 2019 to 18.1% in 2021 – still the lowest ratio in the EU. The general government balance fell sharply from 0.1% of

([1]) 2020 Country Report for Estonia, SWD(2020) 505 final.

([2]) In 2019, before the pandemic, tourism in Estonia represented around 13% of total employment (JRC121262).

GDP in 2019 to -5.6% in 2020, driven by the decrease in GDP and COVID-19 support measures. As the economic recovery has been fast and support for businesses and households was largely phased out in 2021, the general government balance improved to -2.4% in 2021. However, this improvement also reflects the second pillar pension withdrawals, which temporarily boosted income tax revenues by about 1% of GDP in 2021 ([3]). The Commission 2022 spring forecast projects the government deficit to again increase to 4.4% of GDP in 2022 and then decrease to 3.7% in 2023, mainly reflecting the new expenditure measures to mitigate energy prices and additional social and security related spending.

EU-backed labour market support measures have helped reduce the social and economic fallout from the COVID-19 crisis. Estonia introduced effective short-time work schemes supported by a EUR 230 million loan from the EU's Support to mitigate Unemployment Risks in an Emergency (SURE) instrument. The unemployment rate increased from 4% at the beginning of the COVID-19 crisis to almost 7% in 2020, but it fell back to 6.2% in 2021. The employment rate only slightly decreased in 2020 and then recovered in 2021 to 79.3%, remaining above the EU average of 73.1%. Although long-term unemployment increased to 1.6% in 2021, it remained well below the EU average.

Estonia faces skills shortages. Although the country's education and training system is good, it cannot meet all the labour market's skills needs – including digital and green skills. The trend of positive net migration continued in 2021 ([4]), and this may help with the skills supply.

The Social Scoreboard supporting the European Pillar of Social Rights also points to some social challenges. While poverty has been gradually decreasing, it remains high in certain groups, including unemployed people, older people and people with disabilities. The reported unmet need for medical care is one of the highest in the EU, pointing to gaps in access to and coverage of healthcare services. Population ageing is putting pressure on the long-term care system, which is already unable to meet the current demand. Public expenditure on long-term care is projected to increase from 0.4% of GDP in 2019 to 0.7% in 2060, under baseline assumptions; the respective values for the EU are 1.7% and 2.7% ([5]).

Regional socio-economic disparities continue. Several economic and social well-being indicators show large and continuing disparities between Northern Estonia (Põhja-Eesti) around the national capital and the four other regions. The regional differences in employment rates are significant. In the north-east, employment is 10 percentage points lower than the national average, which contributes to widening the income gap (see Graph 1.1). In 2019, GDP per capita (in purchasing power standards) in Northern Estonia was 120% of the EU average, while it ranged between 48% and 59% in the other regions (see Annex 15). Labour productivity in Põhja-Eesti in 2020 was 170% of the average of the other regions. Internal migration towards urban areas, and particularly to Tallinn, has not changed over the last decade. Targeted development programmes could help unlock innovation and business development, address skills gaps, and ensure integrated social and healthcare services. Programmes in Ida-Viru County (Ida-Virumaa) and South East

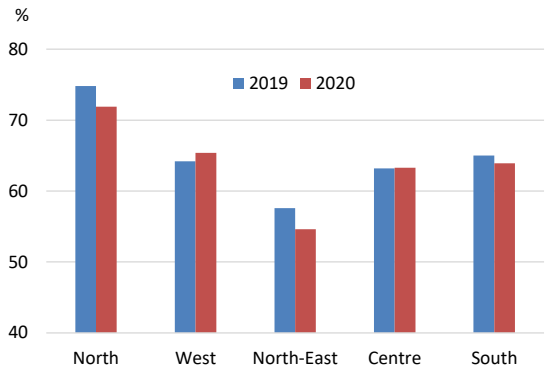
([3]) Cashed out pension savings are subject to 20% income tax (or 10% if the savings are withdrawn at pension age). For people exiting the second pillar, the compulsory 4% pension contribution (known as 'social tax') is redirected from the second to the first pillar (the state pension). This raised revenue of the first pillar, making it possible for the government to increase current pensions above the usual pension indexation in 2021.

([4]) According to registered migration data, in 2021, 12 280 people immigrated to Estonia and 8 602 emigrated from the country. This is 15% more for both figures than in 2020.

([5]) The 2021 Ageing Report: Economic and Budgetary Projections for the EU Member States (2019-2070), European Commission, Institutional Paper 148.

Estonia (Kagu-Eesti) are good examples of such initiatives. The broadband connection and transport measures in the recovery and resilience plan (RRP) and the programmes under the European Structural and Investment Funds will help the situation (see Annex 3).

Graph 1.1: **Employment rate (15-74 years old)**



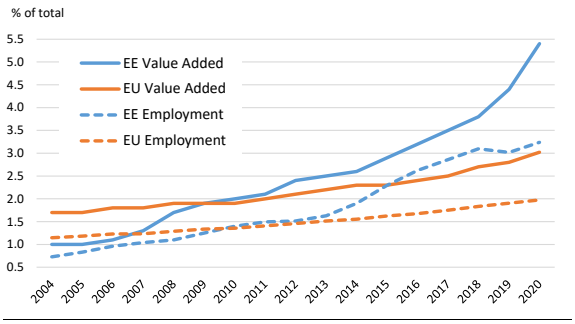
Source: Statistics Estonia

Like most of the EU, rising energy prices have had a noticeable impact on inflation. In Estonia, energy prices grew rapidly in the last quarter of 2021, mainly due to the electricity price increases being passed quite quickly on to retail. Electricity prices reached record highs in December 2021. The industrial price index for electricity and gas combined at the end of March was 184% higher than a year before. These rising prices increased inflation directly and indirectly (through the cost of other goods and services) and this effect has amplified in 2022, with the harmonised index of consumer prices growing by 12.5% in the first quarter of the year. The government introduced substantial temporary measures to alleviate electricity, gas and heating price rises for households. This notwithstanding, inflation is forecast to rise to 11.2% in 2022, but revert to 2.5% in 2023.

Estonia is one of the most carbon- and energy-intensive economies in the EU. In 2020, greenhouse gas emissions were 8.8 tonnes per capita in CO_2 equivalent (compared to the EU average of 7.6) due to Estonia's dependence on oil shale and the high energy intensity of its transport (see Annex 5) and buildings. Despite the considerable increase of renewables in Estonia's energy consumption in past years (from 17% in 2005 to 30% in 2020), oil shale still makes up around 60% of the total. Russia's invasion of Ukraine calls for a prompt policy response in terms of accelerating the transition to renewable domestic energy sources (including boosting local bio-methane production), increasing interconnection capacity (including synchronisation with the EU continental electricity grid), reducing energy consumption and diversifying import and export markets. More efficient power generation, heating of buildings and transport can also increase resource productivity, which is one of the lowest in the EU. Emissions from road transport are also high due to comparatively old and fuel-intensive vehicles on Estonian roads. The government can address this by creating appropriate incentives and measures supporting the development of sustainable and energy efficient transport.

The competitiveness of Estonia's economy benefits from sound structural features. These include a flexible labour market, effective e-government and a favourable business environment that facilitates investment. Estonia is a front-runner in the EU for digital public services, with all central government services accessible online. Recently, Estonia's digital innovations have helped to increase production, exports and employment more than the EU average (see graph 1.2). Estonia has made progress in its digital infrastructure, for example, by expanding physical access to high-speed broadband. However, progress on digital transformation and economic competitiveness requires further improvements in connectivity and integrating digital technologies in all businesses, including traditional sectors.

Graph 1.2: **Share of IT services in total economy**



Source: Eurostat, National accounts (table nama_10_a64_e, NACE J62+J63)

Despite the increase in funding in Estonian research and innovation (R&I), the research-based innovation capacity of businesses remains limited. In 2021, Estonia fulfilled its overarching 2019 political commitment to increase public sector investment in R&D to 1% of GDP. This level is expected to be maintained and remain slightly above the EU average. The business sector has also rapidly increased investment in R&D to above 1% of GDP, but remains below the EU average ([6]) and far from the expected two percentage points needed to meet the 3% overall target of the European Research Area ([7]). Collaboration between public science (concentrated in a few independent state-funded universities) and business may benefit from better innovation support that Estonia is developing. Moreover, there is scope for boosting the research-based innovation capacity and R&D function in companies (See Annex 9).

Overall, Estonia performs well in achieving the UN Sustainable Development Goals (SDGs), but it could do more to progress on green goals and fairness (see Annex 1). Estonia performs generally well on 'quality education' (SDG4) and 'decent work and economic growth' (SDG8) due to accessible and good quality education, high employment, and relatively low long-term unemployment. While performance on 'no poverty' (SDG 1) is close to the EU average, it could be further improved with better protection of older people, unemployed people and people with disabilities. Performance on 'good health and well-being' (SDG3) could improve through better access to healthcare and increasing the share of people with good health. Renewable energy accounted for a sizeable portion of total energy consumption, but reducing CO_2 emissions from fuel combustion for electricity and heating would improve Estonia's performance on 'affordable and clean energy' (SDG 7) and on 'climate action' (SDG 13).

([6]) See European Innovation Scoreboard 2021.

([7]) Target reaffirmed in the Recommendation adopted by the Council on 26 November 2021: https://ec.europa.eu/commission/presscorner/detail/en/IP_21_6270.

THE RECOVERY AND RESILIENCE PLAN IS UNDERWAY

Estonia's recovery and resilience plan (RRP) addresses many of the main challenges the country is facing. The plan pursues a significant reform and investment agenda facilitating the green and digital transitions of the economy and improving the social dimension. The Estonian plan, with EUR 969.5 million in grants and about 3.4% of GDP, includes significant reforms and investments to help the Estonian economy become more sustainable and promote a strong recovery (see Annex 2). Overall, 41.5% of the RRP will support climate objectives and 21.5% will foster the digital transition.

The plan's main green transition priority will be encouraging the production of renewable energy and development of green technologies. Estonia aims to reduce the carbon and energy intensity of the economy by improving energy efficiency, further developing renewable energy production capabilities, and making transport and mobility more sustainable. Another major challenge for Estonia is strengthening the productivity and innovation capability of the business sector. Several measures address this and aim to support companies in their green and digital transitions, while applying principles of the circular economy and improving their access to finance. The planned measures to develop workers' green skills will better align employers' needs and skills supply with each other. In the foreseeable future, measures in the RRP focus on removing administrative barriers and supporting investments in renewable energy production. Setting up the Green Fund aims to support developing innovative green technologies in the business sector. A support scheme for energy-efficient renovations in residential and apartment buildings will also be launched. Estonia has been working to remove other non-financial barriers to develop wind parks, which should contribute to producing more renewable energy over time. Furthermore, work will soon start on constructing the Rail Baltic terminal and the Tallinn Old Port tramline, and on electrifying railway lines. This will improve access to rail transport for both passengers and freight customers.

Digital transition policies will focus on upgrading digital government services to improve their resilience, security and efficiency and reduce the administrative burden for people and businesses. By using the latest digital technologies, the delivery of digital public services will become more efficient. The plan will also help reduce the digital divide between urban and rural areas by deploying very high capacity networks. In the foreseeable future, Estonia will also design and launch dedicated schemes to support digitalisation of small and medium-sized companies and microenterprises. Another relevant priority will be to set up support schemes to provide digital skills training to the labour force. This will contribute to making education and training more relevant to the labour market and to reducing the skills gap.

In the social and healthcare areas, the plan focuses on improving the accessibility and resilience of the healthcare system and improving social protection, thus contributing to the implementation of the European Pillar of Social Rights. The RRP contains measures to make healthcare more accessible and resilient by addressing shortage in healthcare workers and strengthening primary care. The construction of the Northern Estonian Medical Campus should improve access to health care in Northern Estonia. Investment in multifunctional helicopters should give better access to those who live in remote regions and on islands. Social protection will be improved by extending the duration of unemployment benefits and reducing the gender pay gap - both are long-standing challenges for Estonia. To improve long-term care, steps will be taken

to improve care for children with high-care needs and help people live independently. To encourage youth employment, the priority will be the reinforced "My First Job" scheme that combines wage and training support.

Box 2.1: **Key deliverables under the Recovery and Resilience Plan in 2022-2023.**

- Green transition: creation of the Green Transition Task Force to monitor the green transition in companies and setting up the Green Fund supporting innovative green technologies
- Green transition: removing administrative barriers to renewable energy production
- Digital transition: launch of the first digital public services delivered proactively based on the life or business events (such as a marriage, the birth of a child or the creation of an enterprise)
- Digital transition: launch of the support scheme for the digital transition of small and medium-sized companies and microenterprises
- Health care: award the design contract for the Northern Estonia Medical Campus, marking the first phase of its construction
- Youth employment: Entry into force of the legislation to strengthen the "My First Job" scheme and adoption of the Youth Guarantee Action Plan
- Long-term care: Entry into force of the amendments to the Social Welfare Act to improve independent living and adoption of an action plan on integrated care

FURTHER PRIORITIES AHEAD

Beyond the challenges addressed by the RRP, as outlined above, Estonia faces additional key challenges not sufficiently covered in the plan. There are bottlenecks that need to be addressed to ensure Estonia's long-term sustainable growth and competitiveness, notably to increase energy security while reducing the energy intensity of the economy and increase resource productivity, improve the social safety net and close the skills gaps. These objectives are also identified in the national strategy 'Estonia 2035'. Addressing these challenges will also help to make further progress in achieving the relevant SDG indicators in the respective underlying areas.

Strengthening social protection, including unemployed people

The adequacy of the social safety net has slightly improved, but the risk of poverty or social exclusion remains high for older people, people with disabilities and unemployed people. In general, the share of people at risk of poverty or social exclusion continued to decrease in 2020 (22.8%), although it remained higher than the EU average (21.9%). The impact of social transfers on poverty reduction improved, and it is now close to the EU average. However, the adequacy of the minimum income is low, and the at risk of poverty or social exclusion rate for older people and for people with disabilities is one of the highest in the EU (see Annex 12). Risks of poverty for older people linked to the recent pension reform, which made the statutory funded scheme voluntary should be monitored. Currently, 5% of the population have no health insurance, and those most likely to be in this situation work part-time and have unstable jobs. Tackling these challenges is key for Estonia to contribute to reaching the 2030 EU headline target on poverty reduction.

The low coverage of unemployment benefits contributes to income inequality and increased poverty. In Estonia, the criteria to receive unemployment benefits are restrictive. Qualifying for unemployment insurance benefits depends on the individual's employment and income before unemployment. The amount of the less generous unemployment allowance – given to those who do not qualify for unemployment insurance benefits – is not based on the individual's income but the minimum wage. In addition, the self-employed are excluded from contributory schemes. Currently, around half of all registered unemployed people receive unemployment benefits. In 2021, only 37% of the newly registered unemployed people received unemployment insurance benefits and 26% received the fixed unemployment allowance of EUR 292 a month, which is below the poverty threshold. This means that more than half of unemployed people lived in relative poverty and one fifth in absolute poverty (Praxis 2021).

The risk of poverty or social exclusion could be reduced by improving social protection and labour market integration of the unemployed people. Estonia has taken some steps to improve social protection of older people and people with disabilities, notably by increasing pensions and unemployment benefits. However, gaps remain as regards unemployed people. Helping unemployed people find a job (e.g. through training and matching) and finding solutions in the benefit system can prevent people from falling into the poverty trap. Extending unemployment benefits coverage and relaxing the minimum criteria to qualify for these benefits can be effective to ensure the coverage of more people, in particular those

with short work spells and in non-standard forms of work.

Affordable and quality long-term care

The Estonian population is ageing but the provision of long-term care is inadequate to meet the current and growing demand. Life expectancy in Estonia is increasing, driving up the number of those who need care. However, due to deficiencies in the organisation and financing of long-term care, a high share of the 65+ population in need of long-term care already lacks assistance in personal care or household activities today (58.4% in Estonia compared to 46.5% on average in the EU in 2019) ([8]). The demand will further increase because the share of the 65+ population is expected to grow from 19.8% to 28.5% by 2050, and so the old -age dependency ratio will also increase.

The financing and organisation of long-term care is fragmented, with a high share of costs paid by those who need care. The responsibility for long-term care is divided between the state, local government and family of the people who need assistance. Fragmentation in the organisation and financing of long-term care between the social and healthcare sector, and between the state and the local governments leads to an uneven supply of similar home and community services. Local governments have legal obligations when providing long-term care services but they have a high degree of autonomy in defining their policies. The lack of common national standards for services and the shortage of workers make it difficult to ensure quality care. Therefore, along with availability, the quality and affordability of services may vary. The out-of-pocket payments for long-term care are high accounting for 45% of disposable income (the second highest in the EU in 2019). Public sector spending on long-term care was only 0.4% of GDP in 2019 (1.7% EU). This places a high burden on family members who may need to quit their jobs, aggravating existing labour and skills shortages even more.

A comprehensive reform of long-term care can ensure access to affordable and quality formal long-term care. While the Estonian RRP contains some measures (see section on RRP), it lacks a comprehensive long-term care reform. Such reform could help those in need by focusing on efficient and sustainable funding for long-term care, access to integrated care services, setting quality standards, and ensuring sufficient and skilled workforce.

Matching skills with employers' needs

While Estonia performs well in education and training, employers' needs are not fully met due to a shortage and mismatch of skills. The Estonian education system already provides very good basic skills in schools and a high number of higher education graduates. However, companies in technology, manufacturing, construction, science and agriculture in Estonia repeatedly report a lack of skilled workers, especially in rural areas. Similarly, skills shortages continue in the care and education sectors. The main reasons are that the education system cannot keep up with the rapidly changing labour market and technological developments and companies provide limited training. The number of vocational education and training and higher education graduates with relevant skills is too low to fill job vacancies. In 2020 the rate of early leavers from education and training fell below the EU average. However, this hides significant differences: there is a higher rate for men, those in rural areas and amongst youth with disabilities. Estonia has the third highest gender gap in higher education graduates in the EU, with significantly more

([8]) According to the Ministry of Social Affairs, in 2019, long-term care services and assistance were provided approximately in 71 100 service places, but the actual need is around 120 500 service places. The greatest unmet need around 13 000 was for home services in 2019.

young women than young men graduating (see Annex 13). Furthermore, ageing of teachers and a high number of dropouts from the profession at the start of their career are key challenges to the education and training system in the years to come (see Annex 13).

Improving workers' skills and solving teacher shortages can contribute to meeting employers' needs and maintaining a good education system. Since the measures in the RRP concentrate on digital and green skills, more comprehensive solutions will be needed to meet all skills needs. In addition to tackling the challenges above in higher education and in vocational education and training, effective measures to address skills shortages could be to encourage employers to provide more training and to re-design the skills forecasting system by transferring skills surveys to existing registry data relevant for the education and training system to help better anticipate skills needs. The Education Strategy 2021-2035 and the action plan for ensuring a new generation of teachers are steps in the right direction to address teacher shortages.

Making the use of energy and natural resources more efficient and decreasing reliance on fossil fuels, including from Russia

Fostering the green transition, the efficient use of natural resources and embracing circular economy principles are instrumental for the sustainability of the Estonian economy. Reducing the share of oil shale in electricity production and replacing it with low- and zero-carbon electricity sources will help to achieve the greenhouse gas mitigation objectives. Estonia's own objective is to reduce CO_2 emissions by 70% by 2030 compared to 1990 levels and achieve climate neutrality by 2050. In 2020, emissions excluding the land use and land-use change and forestry (LULUCF) sector had decreased by 72% compared to 1990 levels. In the transition from oil shale to renewable sources, particular attention is being paid to alleviating the socio-economic impact in the Ida-Viru county in the context of the Just Transition Plan.

Estonia's energy mix in 2020 was made up of 32% renewable sources and 68% fossil ones (domestic consumption of local oil shale 32%, fossil fuels in transportation 16% and other fossil sources 19%, including 8% of gas). An increase in the renewable share is envisaged, thanks mainly to more wind power, a greater use of biomass, and an associated decrease in the share of fossil fuels. Although gas accounts for just 8% of the energy mix, it is supplied mostly by Russia ([9]). However, reducing Estonia's dependence on Russian gas is already well advanced and will speed up as a result of the implementation of the EU unbundling rules and pipeline and infrastructure projects underway with neighbouring countries. Investments should be future-proof where possible to avoid lock-in effects.

Estonia has increased financing for renewable energy projects, but some regulatory barriers remain, such as the slow planning process, height restrictions to windmills for defence reasons and local resistance. National measures, including those in the Estonian RRP, have laid the groundwork for expanding renewable energy. To accelerate the transition, advancing planning and permitting quickly for new onshore and offshore wind farms would enable a faster roll-out of investments. This includes removing more defence-related constraints, which restrict the availability of sites for developing wind energy. Corresponding investments in the electricity grid infrastructure will make a larger share of renewable sources possible. Increased transparency on the grid capacity available and on the conditions to access it would also

([9]) Eurostat (2020), share of Russian imports over total imports of natural gas, including intra-EU trade. While Eurostat 2020 data report a 46% import gas dependency on Russia for Estonia, accounting for the secondary dependence on Russian gas through intra-EU imports would lead to the estimation that Estonia has a 98% Russian import dependency on gas.

contribute to the market flexibility. Expanding the ongoing projects on renewable hydrogen and other energy storage solutions and developing the capacity to use local sustainable bio-methane will help diversify the energy mix and increase the flexibility of supply. Moreover, cross-border cooperation on renewables and ensuring the timely synchronisation with the EU continental power grid would further enhance energy flexibility in the region. Estonia would benefit from integrated building renovations to improve energy efficiency based on installations combining heat production and the use of renewable energy, to reduce energy consumption and in parallel the dependence on Russia.

Estonia's resource efficiency remains low because it uses a lot of material and generates a lot of waste, dragging down productivity and competitiveness ([10]). Estonia is 25th in the EU for resource productivity, one third of the EU average of 2.23 (measured in euro at purchasing power standards per kilogram). Material intensity is more than twice the EU average (see Annex 11). For the circular material usage rate (17.3%), Estonia performed better than the EU average (12.8%) in 2020, but missed the municipal waste recycling target of 50% (Estonia: 28.9%; EU average: 47.8%). Estonia will greatly benefit from implementing a national strategy and action plan on the circular economy targeting the entire life cycle of products, which are set to be adopted towards the end of 2022.

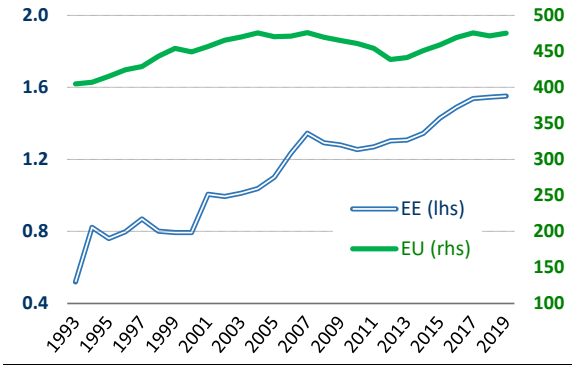
Sustainable use of natural resources is key to resilience, and although Estonia has generally performed well in nature conservation, further efforts are needed to restore and reduce the degradation of natural habitats and halt the loss of biodiversity. Estonia has a larger share of species and habitats in good conservation condition than many other EU Member States, and this share is growing. Nevertheless, the number of species and habitats in bad conservation status has also increased. Forests cover 58.4% of Estonia and only 20% of protected forest habitats are in favourable conservation status (see Annex 5). The adoption of Estonia's national forest strategy post-2020 has been delayed, but its quick adoption would be beneficial with a view to the sustainable management of forests and strengthening their protection, restoration and resilience. Also, most of mire and semi-natural grassland habitats remain in unfavourable status.

Reducing transport's carbon footprint

Road transport contributes significantly to total pollution in Estonia, especially because it has very carbon-intensive passenger cars. Road transport represents nearly one third of Estonia's total final energy consumption, as it relies almost entirely on oil-derived fuels. Greenhouse gas emissions from cars have increased for several decades (Graph 3.1), along with the number of cars and distance travelled. Estonia has the EU's second-oldest stock of vehicles, which are less fuel-efficient and more polluting.

([10]) The green dimension of the Resilience Dashboards shows that Estonia displays high vulnerabilities in the areas 'sustainable use of resources' and 'ecosystems, biodiversity and sustainable agriculture' both of which are crucial for the successful management of the green transition. (https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en#heatmap)

Graph 3.1: **CO2 emissions from cars (mTon)**



Source: Eurostat

The transport sector has a crucial role to play in decarbonisation. Estonia has one of the lowest shares of electrified railway kilometres in the EU (see Annex 5). Electrification of the main railway lines, supported by EU funds, is already ongoing or planned, but electrifying the whole network would contribute to faster decarbonisation of transport. Building on the implementation of a recently adopted transport and mobility plan for 2035, some small-scale initiatives are planned to boost the sustainability of public transport and promote more charging stations for electric vehicles.

There is currently no recurrent tax on road vehicles. Estonia is one of the few Member States without an annual road vehicle tax, although it applies relatively high excise duties on road fuels (the highest in the EU at 2.3% of GDP, against an average of 1.2%, in 2019, see Annex 17). Road tolls are time-based and only for heavy-duty commercial vehicles, while there are no congestion charges in urban areas. A graduated tax on passenger cars and light commercial vehicles could be designed in line with the polluter pays principle. This would make car ownership costlier, thus taking older vehicles off the road and encouraging people to use less polluting transport modes. To reduce the adverse social impact of such a tax, measures could be introduced to support low-income car owners.

KEY FINDINGS

Estonia's recovery and resilience plan includes measures to address a series of structural challenges, through:

- Removing administrative barriers, strengthening the productivity and innovation capability of the business sector, and setting up the Green Fund to support access to finance for developing innovative green and digital technologies.

- Upgrading digital government services using the latest technologies to improve their resilience, security and efficiency, improving digital skills to support the digital transition as well as reducing the administrative burden for both people and businesses.

- Reducing the economy's energy intensity by improving energy efficiency of buildings, further developing renewable energy production capacity, and developing support schemes for workers' green skills to reduce the skills gap.

- Making transport and travel more sustainable and improving access to rail transport for passengers and freight with the construction of the Rail Baltic terminal and the Tallinn Old Port tramline, and the electrification of railway lines.

- Improving the accessibility and resilience of the health system, including by increasing the number of health workers and strengthening primary care.

- Strengthening social protection, by extending the duration of the unemployment benefit, reducing the gender pay gap, improving long-term care, and encouraging youth employment through the "My First Job" scheme.

Beyond the reforms and investments in the RRP, Estonia would benefit from:

- Extending the coverage of unemployment benefits, in particular to those with short work spells and in non-standard form of work.

- Reforming the long-term care system to improve affordability and quality of the service.

- Addressing skills shortages and mismatches, including by improving the labour market relevance of the education and training system and easing teacher shortages.

- Strengthening the protection, restoration, resilience and sustainable use of natural resources, including forests, and increasing the circular material use rate.

- Diversifying the energy mix, including by streamlining of permitting procedures for the installation of renewables, ensuring sufficient capacity of interconnections, strengthening of the internal domestic electricity grid and reducing the overall energy consumption, and by enhancing energy efficiency,

- Improving the sustainability of the transport system, including through electrification of the rail network and through incentives to renew the road vehicle stock.

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ANNEX 1: SUSTAINABLE DEVELOPMENT GOALS

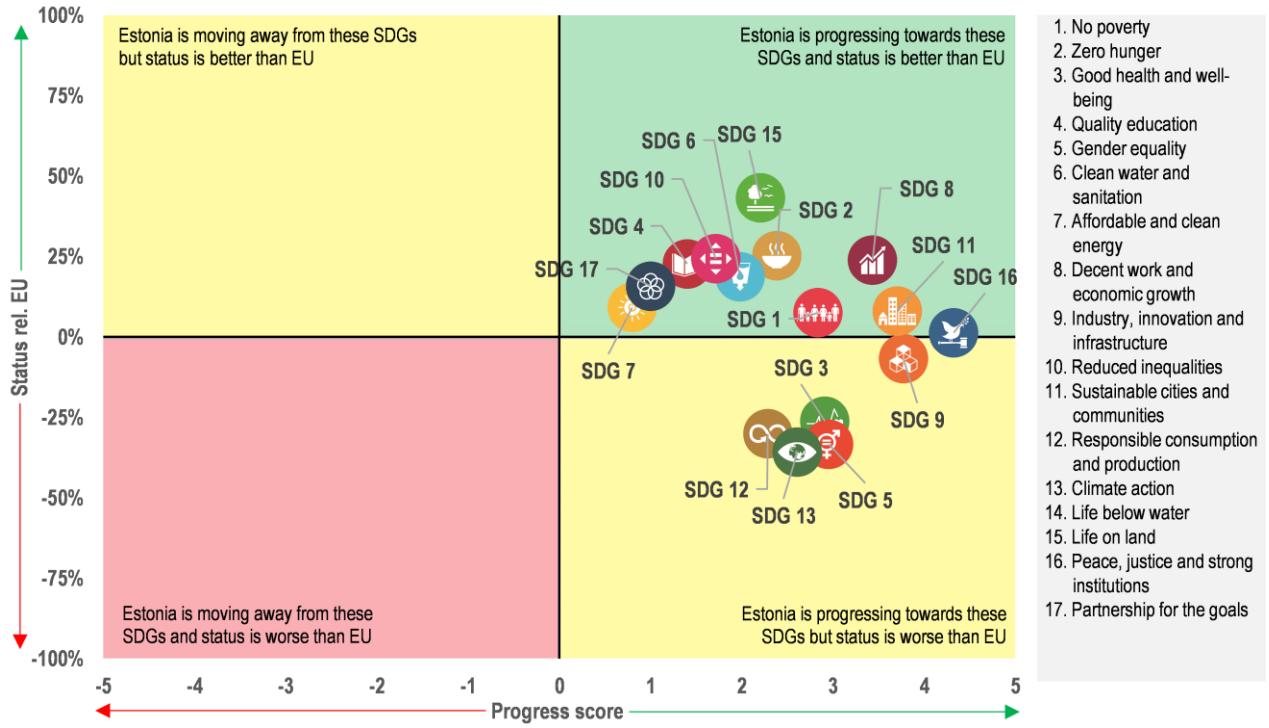
This Annex assesses Estonia's progress on the Sustainable Development Goals (SDGs) along the four dimensions of competitive sustainability. The 17 SDGs and their related indicators provide a policy framework under the UN's 2030 Agenda for Sustainable Development. The aim is to end all forms of poverty, fight inequalities and tackle climate change, while ensuring that no one is left behind. The EU and its Member States are committed to this historic global framework agreement and to playing an active role in maximising progress on the SDGs. The graph below is based on the EU SDG indicator set developed to monitor progress on SDGs in an EU context.

Estonia performs very well or well on some *environmental sustainability* indicators (SDG 2, 6, 7, 11, 15), and is improving on others (SDG 9, 12, 13). Estonia progressed further in 2020 to ensure that the whole population has clear water and sanitation, as well as affordable and sustainable energy. Estonia performs below the EU average but is improving on resource consumption and production and climate action. Estonia's dependence on oil shale and its energy-intensive transport and building sectors contributes greatly to its carbon emissions and slows down progress towards the Paris targets. However, the share of renewable energy is increasing, and Estonia intends to cover 42% of its energy needs with renewables by 2030. The resource productivity of the Estonian economy is quite low, at EUR-PPS 0.74/kg in 2020 (EU average is EUR-PPS 2.2/kg), but improvements are becoming more visible (0.58/kg in 2017). The recovery and resilience plan (RRP) includes measures to incentivise the uptake of renewable energy, pilot hydrogen and energy storage, help introduce green business models in companies, improve energy efficiency of buildings, and invest in sustainable transport.

Estonia is performing very well or well on several SDG indicators related to *fairness* (SDG 1, 2, 4, 8, 10) and is improving on others (SDG, 3, 5). Estonia has made progress in reducing the rate of risk at poverty or social exclusion and has improved the impact of social transfers on poverty, getting closer to the EU average. Estonia performs well in terms of the percentage of people living in households with very low work intensity (4.8% in 2020), which is below the EU average (8.2% in 2020). While improvements have been made on some indicators, the self-reported unmet needs for medical care (13% in 2020) are far above the EU average of 1.7%, and the healthy life years at birth (55.8 in 2019) are almost 9 years shorter than the EU average (64.6 in 2019). The gender pay gap decreased from 26.7% in 2015 to 21.1% in 2020, but it is still well above the EU average (13% in 2020). The RRP contains measures to improve access to healthcare and long-term care, reduce the gender pay gap and increase the social protection of unemployed people in times of very high unemployment.

Estonia performs well or is improving on all SDG indicators related to *productivity* (SDG 4, 8, 9). Estonia performs very well on 'quality education' (SDG 4) with a tertiary education attainment and adult participation in learning higher than EU average, and early school leaving in line with EU average. Performance on 'industry, innovation, and infrastructure' (SDG 9) is below the EU average but is improving. Notably, a growing share of GDP (1.79%) was allocated to R&D in 2020, still less than the 2.32% average in the EU. The share of households with very high capacity network (VHCN) coverage increased from 48.5% in 2016 to 73.4% in 2021 (EU: 70.2% in 2021). The RRP will address bottlenecks, especially the digitalisation of companies and digital skills, to further progress on these SDGs.

Graph A1.1: **Progress towards SDGs in Estonia in the last five years**



For detailed datasets on the various SDGs see the annual ESTAT report 'Sustainable development in the European Union', : https://ec.europa.eu/eurostat/product?code=KS-09-22-019; Extensive country specific data on the short-term progress of Member States can be found here: Key findings - Sustainable development indicators - Eurostat (europa.eu)
Source: Eurostat, latest update of 28 April 2022. Data mainly refer to 2015-2020 and 2016-2021.

Estonia is performing well or very well on SDG indicators related to *macroeconomic stability* (8, 16). Estonia performs very well on 'decent work and economic growth' (SDG 8) and notably increased its investment share of GDP from 24.5% in 2015 to 30.7% in 2020 (EU: 22.3% in 2020). The employment rate increased from 77.0% in 2016 to 79.3% in 2021 (EU: 73.1% in 2021), and the long-term unemployment rate declined from 2.2% to 1.6% in the same period (EU: 2.8% in 2021). In addition, Estonia is improving on indicators measuring 'peace, justice, and strong institutions' (SDG 16), showing a stable and secure environment for pursuing economic activities. The percentage of people reporting crime, violence or vandalism in their area decreased from 11.8% in 2015 to 5.5% in 2020 (EU: 10.9% in 2020). The RRP provides a direct and indirect boost to Estonia's long-term economic growth potential through directly supported investments that increase its infrastructural endowment and extend its productive capacity and reforms that improve the business environment and economic resilience.

The Recovery and Resilience Facility (RRF) is the centrepiece of the EU's efforts to support its recovery from the COVID-19 pandemic, fast forward the twin transition and strengthen resilience against future shocks. Estonia submitted its recovery and resilience plan (RRP) on 18 June 2021. The Commission's positive assessment on 5 October 2021 and Council's approval on 29 October 2021 paved the way for disbursing EUR 969.5 million in grants under the RRF in 2021-2026. The financing agreement and operational arrangements were signed on 10 December 2021 and 22 March 2022 respectively. The key elements of the Estonian RRP are set out in Table A2.1.

The share of funds contributing to each of the RRF's six policy pillars is shown in Graph A2.1.

The progress made by Estonia in implementing its plan is published in the Recovery and Resilience Scoreboard. The Scoreboard also gives a clear overview of the progress made in implementing the RRF as a whole.

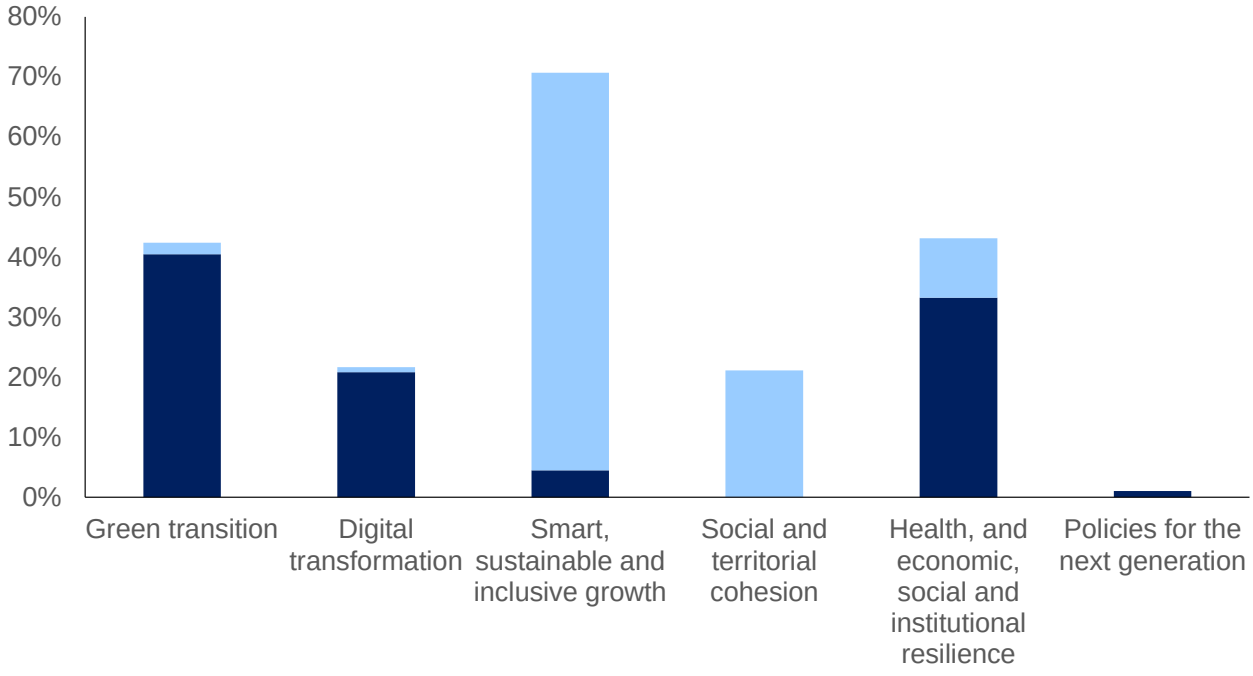
Table A2.1:**Key elements of the Estonian RRP**

Total allocation	EUR 969.5 million in grants (3.4% of 2019 GDP)
Investments and Reforms	25 investments and 17 reforms
Total number of Milestones and Targets	124
Estimated macroeconomic impact (1)	Raise GDP by 0.9%-1.3% by 2026 (0.5% in spillover effects)
Pre-financing disbursed	EUR 126 million (December 2021)
First instalment	Estonia has not yet submitted a first payment request

(1) See Pfeiffer P., Varga J. and in 't Veld J. (2021), "Quantifying Spillovers of NGEU investment", European Economy Discussion Papers, No. 144 and Afman et al. (2021), "An overview of the economics of the Recovery and Resilience Facility", Quarterly Report on the Euro Area (QREA), Vol. 20, No. 3 pp. 7-16.

Source: European Commission 2022

Graph A2.1: **Share of RRF funds contributing to each policy pillar**

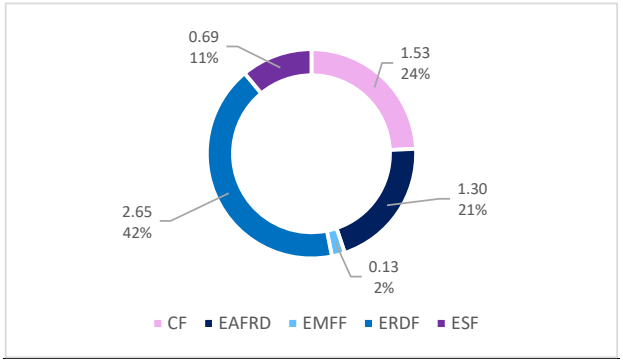


Each measure contributes towards two policy areas of the six pillars, therefore the total contribution to all pillars displayed on this chart amounts to 200% of the estimated cost of the Estonia RRP approved in 2021. The bottom part represents the primary pillar, the top part the secondary pillar.

Source: RRF Scoreboard
https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html

The EU's budget of more than EUR 1.2 trillion for 2021-2027 is the investment lever to help implement EU priorities. Underpinned by an additional amount of about EUR 800 billion through Next Generation EU and its largest instrument, the RRF, it represents a significant firepower to support the recovery and sustainable growth.

Graph A3.1: **ESIF 2014-2020 Total budget by fund (EUR billion, %)**



Bln EUR in current prices, % of total. The data for the EAFRD and REACT-EU refer to the period 2014-2022.
Source: European Commission, Cohesion Open Data

In 2021-2027, EU cohesion policy funds ([11]) will support long-term development objectives in Estonia by investing EUR 3.68 billion ([12]). This includes EUR 353.9 million from the Just Transition Fund to alleviate the socio-economic impacts of the green transition in Ida-Virumaa, the most vulnerable region. The 2021-2027 cohesion policy funds partnership agreement and programme take into account the 2019-2020 country-specific recommendations and investment guidance provided as part of the European Semester, ensuring this money fully complements other EU funding. In addition, Estonia will benefit from EUR 1.4 billion support for the 2023-27 period from the Common Agricultural Policy, which supports social, environmental, and economic sustainability and innovation in agriculture and rural areas, contributing to the European Green Deal, and ensuring long-term food security.

In 2014-2020, the European Structural and Investment Funds (ESIF) for Estonia allocated EUR 4.86 billion ([13]) from the EU budget and another 1.44 billion was added as national financing (Graph 3.1), representing around 3.8% of GDP on average for 2014-2020 and 61.1% of public investment ([14]). By 31 December 2021, 97% of the total was allocated to specific projects and 66% was reported as spent, leaving EUR 2.17 billion to be spent by the end of 2023 ([15]). Among the 11 ESIF objectives, the most relevant ones for Estonia are R&D, low-carbon economy, transport and social inclusion. By the end of 2020, cohesion policy investments supported 17 793 businesses, created 3 538 new jobs, reconstructed 199 km of TEN-T railway tracks, reduced 96 127 tonnes of CO_2 equivalent emissions, supported 30 914 disadvantaged people in joining the labour market, and enabled 56 758 people gain a qualification. Estonia is investing the 2014-2020 European Social Fund (ESF) in education and training to reform its education system and improve study materials and career advice to cut the number of early school leavers (EUR 227 million). It is also promoting social inclusion through better welfare and social services, such as affordable childcare and care services for older people and people with disabilities (EUR 169 million). The ESF also invested EUR 241 million for a more cohesive labour market, including EUR 157.5 million to reform the work ability system that helps people with disabilities join the labour market. By the end of 2020, ESF investments had supported the participation of more than 194 000 people in funded projects, from which more than 45 000 gained a qualification. Over 69 000 people with reduced work ability have received help to participate in the labour market, and active labour market measures have assisted over 25 000 participants. The ESF has helped 12 790 young people neither in employment nor in education or

([11]) European Regional Development Fund (ERDF), European Social Fund+ (ESF+), Cohesion Fund (CF), Just Transition Fund (JTF), Interreg.

([12]) Current prices, source: Cohesion Open Data

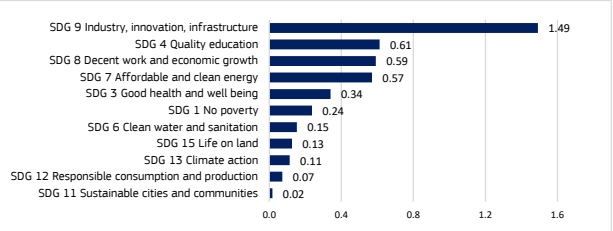
([13]) ESIF includes cohesion policy funds (ERDF, ESF+, CF, Interreg) and European Agricultural Fund for Rural Development (EAFRD) and European Maritime and Fisheries Fund (EMFF). According to the 'N+3 rule', the funds committed for the years 2014-2020 must be spent by 2023 at latest (by 2025 for EAFRD). Data source: Cohesion Open data, cut-off date 31.12.2021 for ERDF, ESF+, CF, Interreg; cut-off date 31.12.2020 for EAFRD and EMFF

([14]) Public investment is the sum of general government's gross fixed capital formation and capital transfers.

([15]) Including REACT-EU. ESIF data on https://cohesiondata.ec.europa.eu/countries/ES https://cohesiondata.ec.europa.eu/countries/EE

training; career and study counselling have also been offered over 173 000 times.

Graph A3.2: **Cohesion policy contribution to the SDGs (EUR billion)**



Source: European Commission, DG REGIO

Cohesion policy funds are already substantially contributing to the Sustainable Development Goals (SDGs) objectives. In Estonia, they are supporting 9 of the 17 SDGs with up to 94% of spending contributing to reach the goals.

The REACT-EU instrument (Recovery Assistance for Cohesion and Territories of the EU) under NextGenerationEU provided EUR 226.4 million additional funding to 2014-2020 cohesion policy allocations for Estonia to ensure a balanced recovery, boost convergence and provide vital support to regions following the COVID-19 pandemic. REACT-EU supported Estonia in purchasing vaccines, strengthening primary healthcare, businesses and preserving jobs youth employment measures, promoting energy efficiency, and reducing material deprivation.

Estonia received support under the European instrument for temporary support to mitigate unemployment risks in an emergency (SURE) to finance short-time work schemes, similar measures and as an ancillary, health-related measures. The Council granted the country SURE financial assistance up to EUR 230 million in March 2021, which was disbursed by 25 May 2021. SURE supported an estimated 20% of workers and 13% of firms for at least one month in 2020, primarily in manufacturing, wholesale and retail trade, and accommodation and food services.

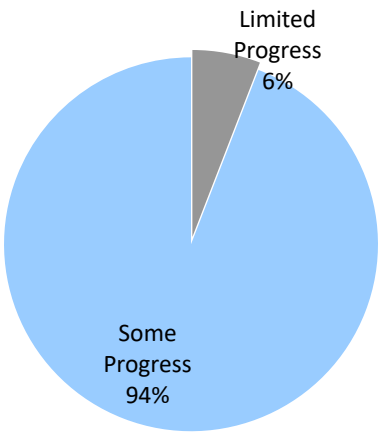
Estonia benefits from tailored expert advice through the Technical Support Instrument to design and implement growth-enhancing reforms, including carrying out the RRP. Since 2017, the country has received assistance through 42 technical support projects. Projects delivered in 2021 aimed, for example, to strengthen the financial management information system, improve active labour market policies, promote professional development of teachers and school leaders, and develop a draft transport and mobility plan. New projects started in 2021 included implementing specific reforms and investments in the RRP, for instance for e-health, and the development of an integrated hospital master plan, digital public administration, decarbonisation, and anti-money laundering. In 2022, new projects will focus, among others, primary health-care and the renovation of buildings.

Estonia also benefits from **other EU programmes**, such as the **Connecting Europe Facility**, which allocated EUR 253 million to specific projects on strategic transport networks (from CEF1, CEF2 projects to be added in the coming weeks), and **Horizon 2020**, which allocated EUR 274.3 million in funding.

ANNEX 4: PROGRESS IN THE IMPLEMENTATION OF COUNTRY-SPECIFIC RECOMMENDATIONS

The Commission assessed the 2019-2021 country-specific recommendations (CSRs) ([16]) addressed to Estonia in the context of the European Semester. The assessment takes into account the policy action taken by Estonia to date ([17]), as well as the commitments in the Recovery and Resilience Plan (RRP) ([18]). At this early stage of the RRP implementation, overall 94% of the CSRs focusing on structural issues in 2019 and 2020 have recorded at least "some progress", while 6% recorded "limited" (see Graph A4.1). Considerable additional progress in addressing structural CSRs is expected in the years to come with the further implementation of the RRP.

Graph A4.1: **Estonia's progress on the 2019-2020 CSRs (2022 European Semester cycle)**



Source: European Commission

([16]) 2021 CSRs: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021H0729%2806%29&qid=1627675454457

2020 CSRs: EUR-Lex - 32020H0826(06) - EN - EUR-Lex (europa.eu)

2019 CSRs: EUR-Lex - 32019H0905(06) - EN - EUR-Lex (europa.eu)

([17]) Incl. policy action reported in the National Reform Programme, as well as in the RRF reporting (bi-annual reporting on the progress with implementation of milestones and targets and resulting from the payment request assessment).

([18]) Member States were asked to effectively address all or a significant subset of the relevant country-specific recommendations issued by the Council in 2019 and 2020 in their RRPs. The CSR assessment presented here takes into account the degree of implementation of the measures included in the RRP and of those done outside of the RRP at the time of assessment. Measures foreseen in the annex of the adopted Council Implementing Decision on the approval of the assessment of the RRP which are not yet adopted nor implemented but considered as credibly announced, in line with the CSR assessment methodology, warrant "limited progress". Once implemented, these measures can lead to "some/substantial progress" or "full implementation", depending on their relevance.

Table A4.1:**Summary table on 2019, 2020 and 2021 CSRs**

Estonia	Assessment in May 2022*	RRP coverage of CSRs until 2026
2019 CSR1	**Some Progress**	
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.	Not relevant anymore	Not applicable
Ensure effective supervision and the enforcement of the anti-money laundering framework.	Some Progress	Relevant RRP measures planned as of 2024 and 2026
2019 CSR 2	**Some Progress**	
Address skills shortages and foster innovation by improving the capacity and labour market relevance of the education and training system.	Some Progress	Relevant RRP measures planned as of 2022
Improve the adequacy of the social safety net and access to affordable and integrated social services.	Some Progress	Relevant RRP measures planned as of 2022 and 2023
Take measures to reduce the gender pay gap, including by improving wage transparency.	Some Progress	Relevant RRP measures planned as of 2022
2019 CSR 3	**Some progress**	
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.	Some progress	Relevant RRP measures planned as of 2021, 2022, 2023 and 2024
2020 CSR1	**Some Progress**	
In line with the general escape clause, take all necessary measures to effectively address the pandemic, sustain the economy and support the ensuing recovery. When economic conditions allow, pursue fiscal policies aimed at achieving prudent medium-term fiscal positions and ensuring debt sustainability, while enhancing investment.	Not relevant anymore	Not applicable
Improve the accessibility and resilience of the health system, including by addressing the shortages of health workers, strengthening primary care and ensuring the supply of critical medical products.	Some Progress	Relevant RRP measures planned as of 2020, 2021, 2022 and 2023
2020 CSR2	**Some progress**	
Strengthen the adequacy of the social safety net, including by broadening the coverage of unemployment benefits.	Some progress	Relevant RRP measures planned as of 2022 and 2023
2020 CSR 3	**Some Progress**	
Front-load mature public investment projects	Some Progress	
and promote private investment to foster the economic recovery.	Some Progress	Relevant RRP measures planned as of 2021
Focus investment on the green and digital transition, in particular on digitalisation of companies,	Some Progress	Relevant RRP measures planned as of 2021, 2022, 2023 and 2024
research and innovation,	Some Progress	Relevant RRP measures planned as of 2021 and 2022
clean and efficient production and use of energy,	Some Progress	Relevant RRP measures planned as of 2021 and 2022
resource efficiency, and	Some Progress	Relevant RRP measures planned as of 2021 and 2022
sustainable transport, contributing to a progressive decarbonisation of the economy.	Limited Progress	Relevant RRP measures planned as of 2021 and 2022
Support the innovation capacity of small and medium-sized enterprises,	Some Progress	Relevant RRP measures planned as of 2021, 2022, 2023 and 2024
and ensure sufficient access to finance.	Some Progress	Relevant RRP measures planned as of 2021
2020 CSR 4	**Some progress**	
Step up the efforts to ensure effective supervision and enforcement of the anti-money laundering framework.	Some Progress	Relevant RRP measures planned as of 2024 and 2026

(Continued on the next page)

Table (continued)

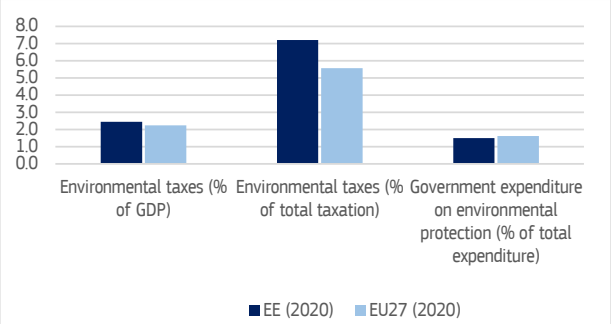
2021 CSR1	Substantial Progress	
In 2022, maintain a supportive fiscal stance, including the impulse provided by the Recovery and Resilience Facility, and preserve nationally financed investment.	Full Implementation	Not applicable
When economic conditions allow, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions and ensuring fiscal sustainability in the medium term.	Some Progress	Not applicable
At the same time, enhance investment to boost growth potential. *Pay particular attention to the composition of public finances, on both the revenue and expenditure sides of the budget, and to the quality of budgetary measures in order to ensure a sustainable and inclusive recovery. Prioritise sustainable and growth-enhancing investment, in particular investment supporting the green and digital transition.*	Full Implementation	Not applicable
Give priority to fiscal structural reforms that will help provide financing for public policy priorities and contribute to the long-term sustainability of public finances, including, where relevant, by strengthening the coverage, adequacy and sustainability of health and social protection systems for all.	Substantial Progress	Not applicable

* See footnote 18

Source: European Commission

The European Green Deal intends to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use. This Annex offers a snapshot of the most significant and economically relevant developments in Estonia in the respective building blocks of the European Green Deal. It is complemented by Annex 6 on the employment and social impact of the green transition and Annex 7 for circular economy aspects of the Green Deal.

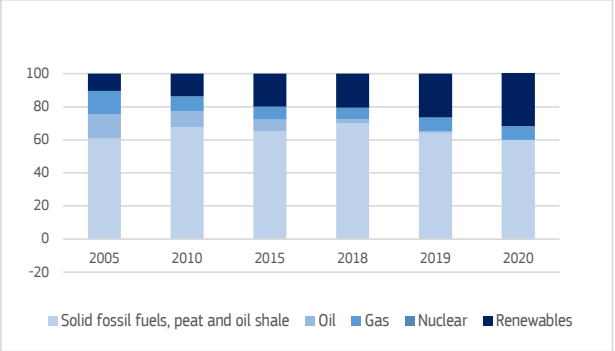
Graph A5.1: **Fiscal aspects of the green transition**
Taxation and government expenditure on environmental protection



Source: Eurostat

Estonia remains a greenhouse gas (GHG) intensive economy due to its reliance on oil shale. It is on the right track to significantly reducing GHG emissions even though additional efforts are needed in specific sectors. Estonia's national energy and climate plan aims to reduce GHG emissions by 70% by 2030 and by 80% by 2050, compared to 1990 levels. The national strategy "Estonia 2035" aims at climate neutrality and climate neutral energy production by 2050. In 2020, emissions had been reduced by 72% compared to 1990 levels, excluding those from the land use and land-use change and forestry (LULUCF) sector. From the sectors not covered by the EU emission trading system (ETS) in 2020, emissions were still 10% higher compared to 2005 levels, mainly due to increased emissions in the agriculture, road transport and international aviation sectors. Removals by Estonia's carbon sinks in the LULUCF sector have decreased significantly, from -4,742 kt CO_2 equivalent in 2011 to -716 in 2019. Estonia will need to put in place more climate mitigation and adaptation measures to reach the agreed legally binding 2030 target and efforts will have to increase further in the light of the more ambitious 2030 targets under the EU Climate Law, the Commission's proposed fit for 55 package and Estonia's own domestic GHG reduction target. In its RRP, Estonia allocates 41.5% of the budget to climate measures, or to addressing climate challenges ([19]).

Graph A5.2: **Thematic – Energy**
Share in energy mix (solids, oil, gas, nuclear, renewables)



The energy mix is based on gross inland consumption, and excludes heat and electricity. The share of renewables includes biofuels and non-renewable waste.
Source: Eurostat

Estonia is performing rather well on environmental tax collection and environmental protection expenditure. Despite the absence of annual taxes on cars, Estonia's environmental tax revenues are above the EU average both as a percentage of total tax revenues and of GDP (graph A5.1). Environmental tax revenues are increasing, except in 2020 when Estonia was hit most by the COVID-19 crisis (graph A5.2) ([20]). The share of expenditure on environmental protection in total government expenditure is in line with the EU average. Estonia shows a low budgetary risk from climate hazards due to a high insurance penetration, with a noticeable exception for wildfires.

Estonia's energy mix is dominated by fossil fuels, especially oil shale but the share of fossil fuels has been rapidly decreasing

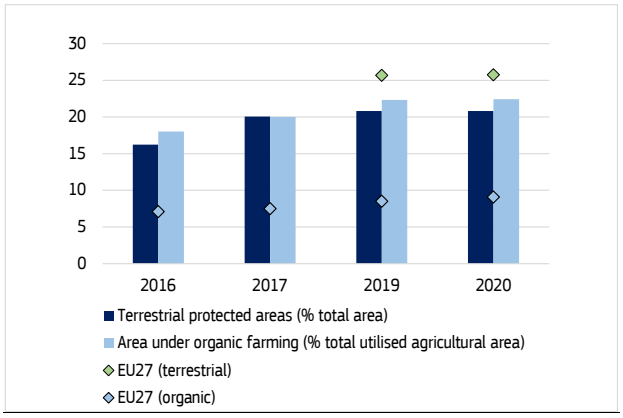
([19]) The share of financial allocation contributing to climate objectives has been calculated using Annex VI to the RRF Regulation.

([20]) For more information on taxation, see Annex 18.

during the last few years. Estonia ranks 20th in the World Energy Trilemma index ([21]). The current share of renewables (including biofuels) in Estonia's energy mix is 32% (2020). Projections indicate that this share would increase by 2030, for when Estonia has set a goal of at least 42%. To increase the share of electricity produced from renewables, further simplification of administrative procedures is required.

On biodiversity and ecosystem health, Estonia presents a mixed picture. Estonia achieved the 10th position in SDG Index in 2021, and best results in life on land ([22]). Its share of protected species and habitats in good conservation status shows an improving trend, and the share of organic farming (22%) is not far from the EU 2030 target of 25%. At the same time, with 21% share of terrestrial protected area, the country is below the EU average and most of its mire, forest and semi-natural grassland habitats remain in unfavourable status. Despite efforts to halt deterioration, farmland and forest bird numbers are decreasing due to pressure from agriculture and forestry.

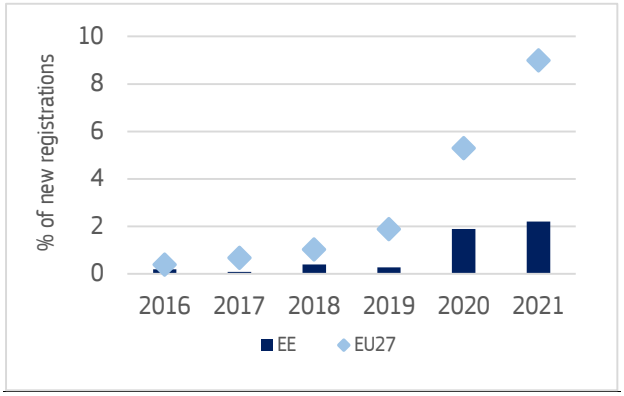
Graph A5.3: **Thematic – Biodiversity**
Terrestrial protected areas and organic farming



For terrestrial protected areas data for 2018, and data for the EU average (2016, 2017) is lacking.
Source: EEA (terrestrial protected areas) and Eurostat (organic farming).

Regarding pollution and air and groundwater quality, Estonia performs well, but with some exceptions. Emissions of air pollutants have decreased significantly in Estonia over the last years due to the energy transition away from oil shale burning. In 2020, no exceedances above EU air quality standards were registered. Groundwater quality is overall good, with tolerable amounts of nitrates pollution. However, a high number of surface waters are eutrophic, and there are hotspots where nitrates pollution is too high. Eutrophication is a shared problem with other Member States around the Baltic Sea. A very high number of water bodies in the region have been assessed to be below good eutrophication status.

Graph A5.4: **Thematic – Mobility**
Share of zero emission vehicles (% of new registrations)



Zero emission vehicles (passenger cars) include battery and fuel cell electric vehicles (BEV, FCEV).
Source: European Alternative Fuels Observatory.

Sustainable mobility has room for improvement in Estonia. The country has one of the lowest shares of electrified railway kilometres in the EU. Electric passenger cars only make up a very small share of new registrations, but the density of electric charging points is adequate.

([21]) https://www.worldenergy.org/publications/entry/world-energy-trilemma-index-2021

([22]) https://www.sdgindex.org/reports/sustainable-development-report-2021/

Table A5.1:**Indicators underpinning the progress on EU Green Deal from macroeconomic perspective**

						Target	Distance		'Fit for 55' Target	'Fit for 55' Distance	
			2005	2019	2020	2030	WEM	WAM	2030	WEM	WAM
Progress to policy targets	Non-ETS GHG emission reduction target [1]	MTCO2 eq; %; pp [2]	6.2	14%	10%	-13%	-1	1	-24%	-12	-10

									National contribution to 2030 EU target
			2005	2016	2017	2018	2019	2020	
Progress to policy targets	Share of energy from renewable sources in gross final consumption of energy [1]	%	17%	29%	30%	30%	32%	30%	42%
	Energy efficiency: primary energy consumption [1]	Mtoe	5.3	6.0	5.8	5.6	4.7	4.3	5.4
	Energy efficiency: final energy consumption [1]	Mtoe	2.9	2.8	2.9	3.0	2.9	2.8	2.9

			ESTONIA						EU		
			2015	2016	2017	2018	2019	2020	2018	2019	2020
Fiscal and financial indicators	Environmental taxes (% of GDP)	% of GDP	2.7	3.0	2.9	2.8	3.2	2.5	2.4	2.4	2.2
	Environmental taxes (% of total taxation)	% of taxation [3]	8.2	8.9	8.7	8.3	9.6	7.2	6.0	5.9	5.6
	Government expenditure on environmental protection	% of total exp.	1.83	1.50	1.87	1.90	1.71	1.49	1.66	1.70	1.61
	Investment in environmental protection	% of GDP [4]	1.14	0.48	0.53	0.70	-	-	0.42	0.38	0.41
	Fossil fuel subsidies	EUR2020bn	0.08	0.05	0.05	0.04	0.05	-	56.87	55.70	-
	Climate protection gap [5]	score 1-4	1.1 out of 4 (increase from historical level of 0.5). This is a low risk category (4 being a high risk).								
Climate	Net GHG emissions	1990 = 100	45	49	52	50	36	28	79	76	69
	GHG emissions intensity of the economy	kg/EUR'10	1.10	1.15	1.15	1.05	0.74	0.60	0.32	0.31	0.30
	Energy intensity of the economy	kgoe/EUR'10	0.28	0.34	0.31	0.29	0.23	0.23	0.12	0.11	0.11
Energy	Final energy consumption (FEC)	2015=100	100.0	101.4	102.4	105.6	103.3	98.2	103.5	102.9	94.6
	FEC in residential building sector	2015=100	100.0	108.5	109.7	109.7	111.0	110.2	101.9	101.3	101.3
	FEC in services building sector	2015=100	100.0	107.1	100.3	105.3	100.4	101.3	102.4	100.1	94.4
Pollution	Smog-precursor emission intensity (to GDP) [4]	tonne/EUR'10 [6]	4.39	4.23	3.80	3.21	2.31	-	0.99	0.93	-
	Years of life lost caused due to air pollution by PM2.5	per 100.000 inh.	479	410	433	531	423	-	863	762	-
	Years of life lost due to air pollution by NO2	per 100.000 inh.	3	< 1	< 1	< 1	< 1	-	120	99	-
	Nitrate in ground water	mg NO3/litre	4.5	4.6	4.2	4.8	5.0	-	21.7	20.7	-
Biodiversity	Terrestrial protected areas	% of total	-	16.2	20.1	-	20.8	20.8	-	25.7	25.7
	Marine protected areas	% of total	-	18.5	-	-	18.6	-	-	10.7	-
	Organic farming	% of total utilised agricultural area	15.7	18.0	20.0	21.0	22.3	22.4	8.0	8.5	9.1

			2000-2006	2006-2012	2012-2018	00-06	06-12	12-18
Biodiversity	Net land take	per 10,000 km2	7.5	9.7	5.9	13.0	11.0	5.0

			2015	2016	2017	2018	2019	2020	2018	2019	2020
Mobility	GHG emissions intensity of transport (to GVA) [7]	kg/EUR'10	1.42	1.23	1.25	1.10	0.91	1.09	0.89	0.87	0.83
	Share of zero emission vehicles [8]	% in new registrations	0.2	0.2	0.1	0.4	0.3	1.9	1.0	1.9	5.4
	Number of plug-in electric vehicles per charging point		7	3	3	4	5	5	8	8	12
	Share of electrified railways	%	14.4	14.4	12.8	12.8	13.4	-	55.6	56.0	-
	Congestion (average number of hours spent in road congestion per year by a representative commuting driver)		20.5	19.2	19.4	18.1	18.0	-	28.9	28.8	-

			Year	EE	EU
Digital	Share of smart meters in total metering points [9] - electricity	% of total	2018	98.9	35.8
	Share of smart meters in total metering points [9] - gas	% of total	2018	11.6	13.1
	ICT used for environmental sustainability [10]	%	2021	62.2	65.9

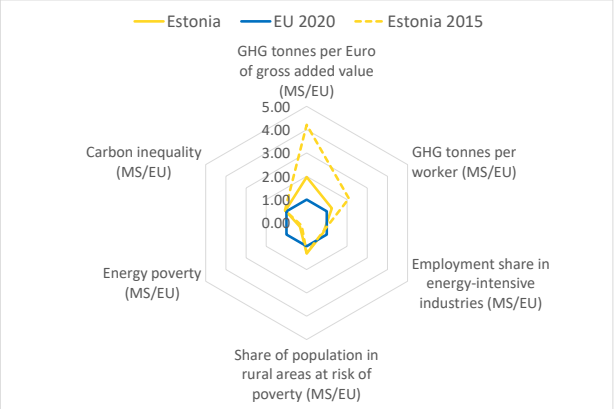
(1) The 2030 non-ETS GHG target is based on the Effort Sharing Regulation. The FF55 targets are based on the COM proposal to increase EU's climate ambition by 2030. Renewables and Energy Efficiency targets and national contributions under the Governance Regulation (Regulation (EU) 2018/1999). (2) Distance to target is the gap between Member States' 2030 target under the Effort Sharing Regulation and projected emissions, with existing measures (WEM) and with additional measures (WAM) respectively, as a percentage of 2005 base year emissions. (3) Percentage of total revenues from taxes and social contributions (excluding imputed social contributions). Revenues from the ETS are included in environmental tax revenues (in 2017 they amounted to 1.5% of total environmental tax revenues at the EU level). (4) Covers expenditure on gross fixed capital formation to be used for the production of environmental protection services (i.e. abatement and prevention of pollution) covering all sectors, i.e. government, industry and specialised providers. (5) The climate protection gap indicator is part of the European adaptation strategy (February 2021), and is defined as the share of non-insured economic losses caused by climate-related disasters.
(6) Sulphur oxides (SO2 equivalent), Ammonia, Particulates < 10µm, Nitrogen oxides in total economy (divided by GDP).
(7) Transportation and storage (NACE Section H). (8) Zero emission vehicles include battery electric vehicles (BEV) and fuel cell electric vehicles (FCEV). (9) European Commission Report (2019) 'Benchmarking smart metering deployment in the EU-28'.
(10) European Commission (2021). Each year the DESI is re-calculated for all countries for previous years to reflect any possible change in the choice of indicators and corrections to the underlying data. Country scores and rankings may thus differ compared with previous publications.
Source: Eurostat, JRC, European Commission, EEA, EAFO.

The green transition not only encompasses improvements to environmental sustainability, but also includes a significant social dimension. While measures in this regard include the opportunity for sustainable growth and job creation, it must also be ensured that no one is left behind and all groups in society benefit from the transition. Estonia's green transition can benefit from positive trends and some recent policy measures. However, energy-intensive sectors are sizeable and lower-income groups are likely to be particularly affected by the transition.

Estonia's recovery and resilience plan (RRP) and national energy and climate plan (NECP) outlines some reforms and investments contributing to a fair green transition. The RRP supports the green transition of companies by encouraging the uptake of green technologies through knowledge transfer, the organisation of proficiency training programmes in higher education and vocational education and training, and upskilling and reskilling. The RRP also contributes to developing and piloting more flexible training programmes that offer micro credentials and take into account the green economy's future needs. Estonia's NECP of 19 December 2019 includes grants for improving living conditions and energy efficiency and the possibility for local governments, to cover some housing costs for people in need, in addition to subsistence benefits.

The economy's carbon footprint has significantly decreased and although key energy-intensive sectors remain sizeable, the green economy and quality job creation potential is relatively large. The greenhouse gas (GHG) emissions intensity of the Estonian economy halved between 2015 and 2020 (in terms of gross value added), however, it remains double the EU average. The average carbon footprint per worker is 17.04 tonnes of GHG emissions (against 13.61 in the EU) (see Graph A6.1). The average carbon footprint of the top 10% of emitters is about 5.6 times higher than that of the bottom 50% of the population (against 5.3 times in the EU). The transition away from oil shale creates a risk for the jobs of around 20,000 people. The territorial just transition plan includes measures to mitigate the social and employment impact of this transition, including retraining and upskilling programmes for workers in the oil shale industry and effective job transition measures (see Annex 15). At the same time, the environmental goods and services sector provides jobs to a comparatively large share of the employed population (4.6% versus 2.1% in the EU) ([23]), and wind and solar energy has the potential for further green job opportunities ([24]).

Graph A6.1: **Fair green transition challenges**



Source: Eurostat, World Inequality Database

Ensuring access to affordable energy for lower-income households remains challenging. According to 2020 data, a relatively high share of the population living in rural areas (24.5%) is still at risk of poverty compared to the EU average (18.7%), despite falling from a peak of 26.5% in 2018 ([25]). The share of the population unable to keep their homes adequately warm increased from 2.0% in 2015 to 2.7% in 2020, still well below the EU average (8.0%). Lower-income groups are affected most by energy poverty (see Graph A6.2), and consumption patterns vary across the population.

Tax systems are key to ensuring a fair transition towards climate neutrality ([26])**.** Estonia's revenues from total environmental taxes were 2.5% of GDP in 2020 (against 2.2% in the EU, see also Annex 5) and the tax burden on low-income earners saw a significant decrease from

([23]) There is currently no common EU-wide definition of green jobs. The environmental goods and services sector (EGSS) accounts only report on an economic sector that generates environmental products, i.e. goods and services produced for environmental protection or resource management.

([24]) https://publications.jrc.ec.europa.eu/repository/handle/JRC126047

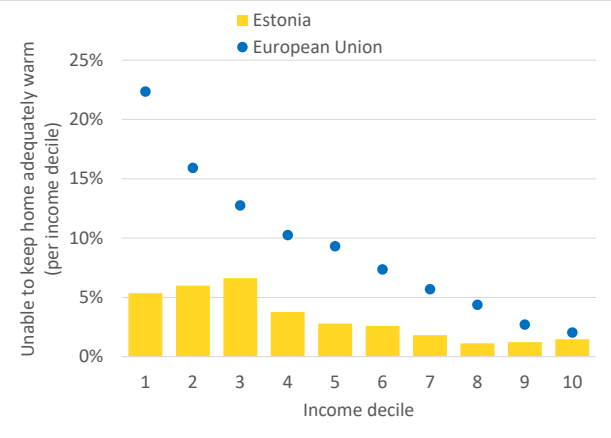
([25]) As a proxy for potential transport challenges in the context of the green transition (see COM(2021) 568 final).

([26]) COM(2021) 801 final.

36.9% in 2015 to 30.8% in 2020, which is close to the EU average of 31.6% (see Annex 17).

Estonia is one of the few Member States without an annual road vehicle tax. Introducing a tax on passenger cars and light commercial vehicles would, in line with the polluter-pays principle, make car ownership more costly and thus promote a faster renewal of the existing stock of vehicles and a shift towards less polluting transport modes. To minimise the adverse social impact of such a tax, safeguards could apply to low-income car owners.

Graph A6.2: **Energy poverty by income decile**



Source: Eurostat EU-SILC survey (2020)

ANNEX 7: RESOURCE EFFICIENCY AND PRODUCTIVITY

The efficient use of resources is key to ensuring competitiveness and open strategic autonomy, while minimizing the environmental impact. The green transition presents a major opportunity for European industry by creating markets for clean technologies and products. It will have an impact across the entire value chains in sectors such as energy and transport, construction and renovation, food and electronics, helping create sustainable, local and well-paid jobs across Europe.

Estonia continued steadily increasing its use of circular material. The circular (secondary) use of material grew from 11.6% in 2016 to 17.3% in 2020. Estonia performs above the EU average and has a positive trend of the indicator's performance over time.

Estonian resource productivity is well below the EU average. Resource productivity expresses how efficiently the economy uses material resources to produce wealth. Improving resource productivity can help to minimise negative impacts on the environment and reduce dependency on volatile raw material markets. Largely due to resource intensive energy production from oil shale, resource productivity in Estonia is the third lowest in the EU with EUR 0.93 at purchasing power standards (EUR-PPS) generated per kg of material consumed in 2020, compared with the EU average of 2.23 EUR-PPS per kg. Material intensity is more than twice the EU average.

Estonia is on track to decouple municipal waste generation from economic growth but falls behind its re-use and recycling targets. Estonia's GDP has grown steadily while waste generation per capita has decreased, indicating that the country is on track to relatively decouple total waste generation from economic growth. Estonia has made slow but steady progress over the past decade in stepping up its recycling rate. However, with only 28.9% of municipal waste recycled in 2020, the country remains far below the EU average of 47.8%.

Further measures can help Estonia improve its position in environmental technology. A successful transition to a circular economy requires social and technological innovation. Estonia ranked 18th on the 2021 Eco-Innovation Index, with a total score of 97, resulting in an 'average' eco-innovation performer status. The country performs below the average in three out of the five components of the Eco-Innovation Index; eco-innovation inputs, eco-innovation activities and resource efficiency outcomes. For eco-innovation outputs and socio-economic outputs, it performs above the EU average. Further measures such as sustainable product design, resource efficient production processes, digital solutions for industry, environmental problem-solving technologies and new circular business models can help Estonia to develop environmental technology.

Table A7.1:**Selected resource efficiency indicators**

Key indicators - Estonia

SUB-POLICY AREA	2015	2016	2017	2018	2019	2020	EU27	Latest year EU 27
Circularity								
Resource Productivity (Purchasing power standard (PPS) per kilogram)	0.8	0.8	0.8	0.8	0.9	0.9	2.2	2020
Material Intensity (kg/EUR)	1.2	1.2	1.3	1.3	1.1	1.1	0.4	2020
Circular Material Use Rate (%)	11.3	11.6	12.4	13.5	15.6	17.3	12.8	2020
Material footprint (Tones/capita)	24.6	24.1	28.4	30.3	27.8	-	14.6	2019
Waste								
Waste generation (kg/capita, total waste)	-	18,451	-	17,539	-	-	5,234	2018
Landfilling (% of total waste treated)	-	64.7	-	60.8	-	-	38.5	2018
Recycling rate (% of municipal waste)	28.3	28.1	28.4	28	30.8	28.9	47.8	2020
Hazardous waste (% of municipal waste)	-	39.9	-	46.9	-	-	4.3	2018
Competitiveness								
Gross value added in environmental goods and services sector (% of GDP)	4.4	4.9	4.7	4.5	4.6	-	2.3	2019
Private investment in circular economy (% of GDP)	-	0.2	-	-	-	-	0.1	2018

Source: Eurostat

The Digital Economy and Society Index (DESI) monitors EU Member States' digital progress. The areas of human capital, digital connectivity, the integration of digital technologies by businesses and digital public services reflect the Digital Decade's four cardinal points ([27]). This Annex describes Estonia's DESI performance. In its recovery and resilience plan (RRP), Estonia has allocated 21.5% of the funds to achieve digital objectives. It mainly supports the digital transformation of businesses and strengthens further the digitalisation of public services ([28]).

Estonia has a large and growing pool of digital experts and a population with relatively good digital skills. Estonia performs slightly above the EU average as regards the percentage of the population with at least basic digital skills and has a very high share of ICT specialists. However, 60% of Estonian companies recruiting ICT specialists report difficulties, confirming a skills gap still exists. With a relative high proportion of ICT graduates (8% compared to 3.9% at EU average), Estonia is taking other targeted measures to fill this gap: schemes to attract foreign ICT experts and upskilling and reskilling programmes ([29]).

Estonia still suffers from relatively poor connectivity, although this has improved significantly in recent years. Today, very high capacity network coverage is above the EU average. However, the country still lags in providing 5G commercial services because not all spectrum resources needed for 5G operation have been allocated yet.

Not all Estonian businesses take advantage of the digital technologies. The share of small and medium-sized companies with at least a basic digital intensity is close to the EU average, and their adoption of some advanced technologies lower than the EU average in some areas, while higher in others. Nevertheless, the Estonian business ecosystem includes many innovative and growing start-ups that are driving the country's growth and modernisation.

Estonia's digital public services, known as E-Estonia, are very advanced. With very high scores from the DESI for digital public services for people and businesses, Estonia is a strong EU front runner. The country is now working to make these services even more user-oriented and proactive (anticipating the needs of the users and making the first move).

([27]) 2030 Digital Compass: the European Way for the Digital Decade Communication, COM (2021) 118 final.

([28]) The share of financial allocation contributing to digital objectives has been calculated using Annex VII of the RRF Regulation.

([29]) See https://ec.europa.eu/eurostat/statistics-explained/index.php?title=ICT_specialists_-_statistics_on_hard-to-fill_vacancies_in_enterprises and https://digital-strategy.ec.europa.eu/en/policies/desi-estonia

Table A8.1:**Key Digital Economy and Society Index Indicators**

Human capital	Estonia DESI 2020	Estonia DESI 2021	Estonia DESI 2022	EU DESI 2022	EU top-performance DESI 2022
At least basic digital skills	**NA**	**NA**	**56%**	**54%**	**79%**
% individuals			2021	2021	2021
ICT specialists	**5.8%**	**6.2%**	**6.2%**	**4.5%**	**8.0%**
% individuals in employment aged 15-74	2019	2020	2021	2021	2021
Female ICT specialists	**24%**	**23%**	**23%**	**19%**	**28%**
% ICT specialists	2019	2020	2021	2021	2021
Connectivity					
Fixed Very High Capacity Network (VHCN) coverage	**57%**	**71%**	**73%**	**70%**	**100%**
% households	2019	2020	2021	2021	2021
5G coverage (*)	**NA**	**0%**	**18%**	**66%**	**99.7%**
% populated areas		2020	2021	2021	2021
Integration of digital technology					
SMEs with at least a basic level of digital intensity	**NA**	**NA**	**54%**	**55%**	**86%**
% SMEs			2021	2021	2021
Big data	**11%**	**10%**	**10%**	**14%**	**31%**
% enterprises	2018	2020	2020	2020	2020
Cloud	**NA**	**NA**	**51%**	**34%**	**69%**
% enterprises			2021	2021	2021
Artificial Intelligence	**NA**	**NA**	**3%**	**8%**	**24%**
% enterprises			2021	2021	2021
Digital public services					
Digital public services for citizens	**NA**	**NA**	**92**	**75**	**100**
Score (0 to 100)			2021	2021	2021
Digital public services for businesses	**NA**	**NA**	**98**	**82**	**100**
Score (0 to 100)			2021	2021	2021

(*) The 5G coverage indicator does not measure users' experience, which may be affected by a variety of factors such as the type of device used, environmental conditions, number of concurrent users and network capacity. 5G coverage refers to the percentage of populated areas as reported by operators and national regulatory authorities.

Source: Digital Economy and Society Index

This Annex provides a general overview of the performance of Estonia's research and innovation system. Estonia is a strong innovation performer according to the 2021 edition of the European Innovation Scoreboard ([30]), and its performance has been improving over time. The country was already among the group of strong innovation performers before, but it has passed the EU average for the first time. R&D intensity, at 1.79% of GDP, is still significantly lower than the EU average of 2.32% of GDP in 2020. In 2021, the government met its commitment to raise public sector R&D funding to 1% of GDP, faster than originally planned (2023).

Research & innovation capacity in the business sector remains weak. Business enterprise expenditure on R&D reached nearly 1% of GDP, which represents a significant increase from the previous year but still falls short of the 2% target. Estonia does not provide tax incentives for business R&D expenditure, and public support for business enterprise expenditure on R&D remains well below the EU average. While the amount of venture capital as a share of GDP is above the EU average, the relatively small business expenditure on R&D is reflected in the country's technological production. This production has increased over time but remains less than half the EU average. Moreover, the number of new graduates in science and engineering has decreased, creating a skills shortage to support business innovation.

Estonia has made an effort to strengthen links between science and business and the technology transfer ecosystem. As part of its new overarching R&D and entrepreneurship strategy, Estonia is reforming its innovation support structures, and R&I support services have been merged. However, there is scope to improve cooperation between universities and research institutes and the business sector. Recent initiatives to develop research and technology organisations are at an early stage and will take time to mature.

([30]) https://ec.europa.eu/docsroom/documents/45912

Table A9.1:**Key research, development and innovation indicators**

Estonia	2010	2015	2018	2019	2020	Compound annual growth	EU average
Key indicators as % of GDP							
R&D Intensity (GERD)	1.58	1.47	1.41	1.63	1.79	1.3	*2.32*
Public expenditure on R&D	0.77	0.77	0.79	0.74	*0.78*	0.1	*0.78*
Business expenditure on R&D (BERD)	0.79	0.68	0.60	0.87	0.98	2.2	*1.53*
Quality of the R&I system							
Scientific publications within the top 10% most cited worldwide, % of total in Estonia	7.3	8.1	9.0	:	:	2.7	9.9
PCT patent appl.-s, per billion of GDP (in PPS)	2.6	1.2	1.6	:	:	-1.1	3.5
Academia-business cooperation							
Public-private scientific co-publications, %	7.0	6.5	9.6	10.1	8.9	2.4	9.05
Human capital and skills availability							
New graduates in science & engineering per thousand pop. aged 25-34	12.5	11.8	10.0	9.6	:	-5.1	16.3
Public support for business enterprise expenditure on R&D (BERD)							
Public sector support for BERD as % of GDP	0.092	0.064	0.048	0.057	:	-5.3	0.196
Green innovation							
Share of environment-related patents in total patent applications filed under PCT (%)	18.4	11.1	20.0	:	:	1.1	12.8
Finance for innovation and Economic renewal							
Venture Capital (market stat.) as % of GDP	0.034	0.032	0.033	0.067	0.090	10.1	0.054
Employment in fast-growing enterprises in 50% most innovative sectors	3.0	3.2	4.3	4.5	:	4.4	5.5

Source: DG Research and Innovation - Common R&I Strategy and Foresight Service - Chief Economist Unit
Data: Eurostat, OECD, DG JRC, Science-Metrix (Scopus database and EPO's Patent Statistical database), Invest Europe

Productivity growth is a critical driver of economic prosperity, well-being and convergence over the long run. A major source of productivity for the EU economy is a well-functioning single market, where fair and effective competition and a business-friendly environment is ensured, in which small and medium enterprises (SMEs) can operate without difficulty. Businesses and industry rely heavily on robust supply chains and are facing bottlenecks that bear a negative impact on firms' productivity levels, employment, turnover and entry-exit rates. This may impact the Member States' capacity to deliver on Europe's green and digital transformation.

Estonia's labour productivity remains low but is rising steadily. Labour productivity rose faster in Estonia than in the rest of Europe, with a steady annual increase of 1.1% in 2019 and 1.9% in 2020. The country is ranked 17th for labour productivity in the EU. With the current 80.8% it has moved closer to the EU average from relatively low levels (36% 20 years ago). According to the Eesti Pank (Bank of Estonia), increasing labour productivity requires raising the share of investment in human capital and innovation and increased physical capital accumulation ([31]).

Estonia's business environment has improved but some barriers remain. According to the Eesti Pank, the number of corporate assessments for access to finance is currently at the highest level, compared to the last 8 years. Companies consider that the willingness of banks (among other lenders) to lend has improved. The companies most concerned are in accommodation, food service, and transport, as they were most affected by restrictions related to COVID-19 ([32]). Access to finance has improved significantly reaching the EU average for loans in 2020, while access to equity has remained above the EU average. However, late payments are the biggest barrier to SMEs' resilience and growth, according to the 2020 Eurobarometer ([33]). Estonia is an average performer in public procurement and SMEs are involved in public procurement more than the EU-27 average, with an increasing number of contractors every year (82% in Estonia vs. 76% in the EU) and bids (85% in Estonia vs 74% in the EU).

The Estonian economy is well integrated in the single market. This integration is above the EU average (the ratio of intra to extra-EU trade is 2.28 compared to 1.59 for the EU in 2021). Compliance in transposition is also above the EU average (Estonia is among the five countries with the lowest deficits in the EU) and the country has the lowest number of pending infringement cases in the EU (12 compared to 31 for the EU). Confidence in investment protection is on EU average level (56%).

Growth prospects are affected by global supply chain disruptions and labour shortages. The recovery from the COVID-19 crisis in Estonia has been one of the fastest in Europe, but growth prospects are hampered by global supply problems and a labour shortage. 21% of companies reported shortages in materials or equipment in 2021 (with industry and construction sector affected the most) compared to the EU average of 26%. However, the situation had worsened substantially compared to the previous year. Labour shortages will continue to be a bigger challenge (reported by 26% of companies compared to 14% in the EU). Estonia is tackling this by skills measures in the recovery and resilience plan, cohesion policy funds, and changes in national legislation to facilitate immigration of skilled workforce. Energy supply, especially an increasing the share of renewable energy from wind, remains a key factor for resilience and is addressed in the RRP as well.

([31]) Estonian Competitiveness Report 2021 Eesti Pank

([32]) Press release of 16.02.2022 Eesti Pank

([33]) SME Eurobarometer 2020 SMEs ,start-ups and entrepreneurship factsheets, Estonia

Table A10.1:**Key Single Market and Industry Indicators**

SUB-POLICY AREA	INDICATOR NAME	DESCRIPTION	2021	2020	2019	2018	2017	Growth rates	EU27 average*
HEADLINE INDICATORS									
Economic structure	Value added by source (domestic)	VA that depends on domestic intermediate inputs, % [source: OECD (TiVA), 2018]				57.29			**62.6%**
	Value added by source (EU)	VA imported from the rest of the EU, % [source: OECD (TiVA), 2018]				23.11			**19.7%**
	Value added by source (extra-EU)	% VA imported from the rest of the world, % [source: OECD (TiVA), 2018]				19.6			**17.6%**
Cost competitiveness	Producer energy price (industry)	Index (2015=100) [source: Eurostat, sts_inppd_a]	161.3	105.4	122.3	118.2	100.7	**60.2%**	**127.3**
RESILIENCE									
Shortages/supply chain disruptions	Material Shortage using survey data	Average (across sectors) of firms facing constraints, % [source: ECFIN CBS]	21	6	3	4	5	**320%**	**26%**
	Labour Shortage using survey data	Average (across sectors) of firms facing constraints, % [source: ECFIN CBS]	26	7	21	26	21	**24%**	**14%**
	Sectoral producer prices	Average (across sectors), 2021 compared to 2020 and 2019, index [source:Eurostat]						**n.a.**	**5.4%**
Strategic dependencies	Concentration in selected raw materials	Import concentration a basket of critical raw materials, index [source: COMEXT]	0.17	0.16	0.18	0.19	0.2	**-15%**	**17%**
	Installed renewables electricity capacity	Share of renewable electricity to total capacity, % [source:Eurostat, nrg_inf_epc]		19.60	16.20	12.50	13.20	**48%**	**47.8%**
Investment dynamics	Net Private investments	Change in private capital stock, net of depreciation, % GDP [source: Ameco]		10.2	7.7	6.8	7.5	**36.0%**	**2.6%**
	Net Public investments	Change in public capital stock, net of depreciation, % GDP [source: Ameco]		2.6	1.9	2.3	2.6	**0%**	**0.4%**
SINGLE MARKET									
Single Market integration	Intra-EU trade	Ratio of Intra-EU trade to Extra-EU trade, index [source: Ameco]	2.28	2.43	2.62	2.35	2.90	**-21%**	**1.59**
Professional services restrictiveness	Regulatory restrictiveness indicator	Restrictiveness of access to and exercise of regulated professions (professions with above median restrictiveness, out of the 7 professions analysed in SWD (2021)185 [source: SWD (2021)185; SWD(2016)436 final])	1				1	**0%**	**3.37**
Professional qualifications recognition	Recognition decisions w/o compensation	Professionals qualified in another EU MS applying to host MS, % over total decisions taken by host MS [source: Regulated professions database]	70.2						**45%**
Compliance - cooperation EC and MS	Transposition - overall	5 sub-indicators, sum of scores [source: Single Market Scoreboard]		Above average	On average	Above average	Above average		
	Infringements - overall	4 sub-indicators, sum of scores [source: Single Market Scoreboard]		Above average	On average	On average	On average		
Investment protection	Confidence in investment protection	Companies confident that their investment is protected by the law and courts of MS if something goes wrong, % of all firms surveyed [source: Flash Eurobarometer 504]	56						**56%**
BUSINESS ENVIRONMENT - SMEs									
Business demography	Bankruptcies	Index (2015=100) [source: Eurostat, sts_rb_a]		105.9	103.7	89.6	96.3	**10.0%**	**70.1**
	Business registrations	Index (2015=100) [source: Eurostat, sts_rb_a]		130.9	128.6	123.2	116.2	**0.127**	**105.6**

(Continued on the next page)

Table (continued)

	Late payments	Share of SMEs experiencing late payments in past 6 months, % [source: SAFE]	48.4	37.8	52.3	n.a.	n.a.	**-8%**	**45%**
Access to finance	EIF Access to finance index - Loan	Composite: SME external financing over last 6 months, index from 0 to 1 (the higher the better) [source: EIF SME Access to Finance Index]		0.56	0.27	0.36	0.36	**57.4%**	**0.56**
	EIF Access to finance index - Equity	Composite: VC/GDP, IPO/GDP, SMEs using equity, index from 0 to 1 (the higher the better) [source: EIF SME Access to Finance Index]		0.2	0.28	0.41	0.05	**290.8%**	**0.18**
	% of rejected or refused loans	SMEs whose bank loans' applications were refused or rejected, % [source: SAFE]	0	0	12.9	11.1	21.4	**-100%**	**12.4%**
Public procurement	SME contractors	Contractors which are SMEs, % of total [source: Single Market Scoreboard]		82	79	75	67	**22.4%**	**63%**
	SME bids	Bids from SMEs, % of total [source: Single Market Scoreboard]		85	84	68	58	**47%**	**70.8%**

(*) latest available

Source: See above in the table the respective source for each indicator in the column "Description".

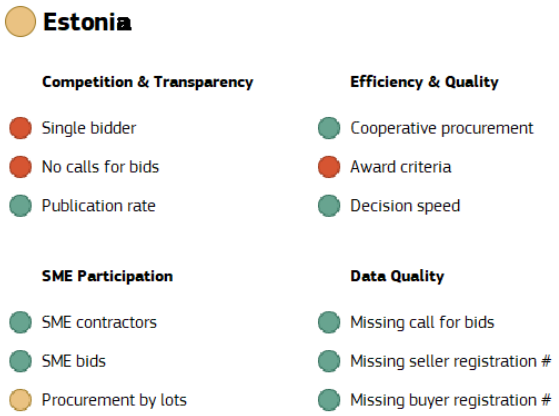
Good administrative capacity enables economic prosperity, social progress, and fairness. Public administrations at all government levels deliver crisis response, ensure the provision of public services and contribute to building the resilience for the sustainable development of the European economy.

Overall, Estonian public administration is among the most effective in the EU ([34]). The regulatory system is well developed, as shown by the values of evidence-based policymaking indicators that are above the EU average. The legislative process is considered open and transparent. Estonia performs rather well on public engagement and stakeholder consultations. Impact assessments are carried out consistently for all drafts of primary legislation, but evaluation during or after implementation are conducted case-by-case. The civil service demonstrates a high level of educational attainment and participation in adult learning, the gender balance in senior civil service management positions is well above the EU average.

Estonia's overall performance on public procurement is around the EU average. However, there is room for improvement given the relatively high share of negotiated procedures and contracts awarded where there was just a single bidder. There is also a high dependence on price as award criterion for public procurement where more qualitative criteria could be applied (see Graph A11.1).

Estonia ranks among the best for digitalisation of public administration services. E-government is used by 89% of internet users and this is increasing. Recent reforms aim to strengthen digital security and to give easier access to public services. The Estonian recovery and resilience plan (RRP) includes reforms and investments aiming to upgrade digital government services further, in particular in terms of user centricity and resilience (especially given growing cyber threats). The plan also includes measures to help businesses and public administration take advantage of the opportunities offered by the latest technologies. The plan also aims to improve data collection quality and management.

Graph A11.1: **Performance on the single market public procurement indicator**



The competition and transparency indicators are triple-weighted, whereas the efficiency and quality indicators have unitary weights. All others receive a 1/3 weighting in the SMS composite indicator.
Source: Single market scoreboard 2020 data.

The justice system performs efficiently. The length of court proceedings in civil, commercial and administrative cases is shorter than the EU average, while the number of pending cases is amongst the lowest in the EU. The quality of the justice system is overall good. Estonia is also among the best performing Member States when it comes to digitalisation of justice. As regards judicial independence, no systemic deficiencies have been reported ([35]).

([34]) Worldwide Governance Indicators, 2020

([35]) For more detailed analysis of the performance of the justice system in Estonia, see the 2022 EU Justice Scoreboard (forthcoming) and the country chapter for Estonia of the Commission's 2022 Rule of Law Report (forthcoming).

Table A11.1:**Public administration indicators – Estonia**

EE	Indicator (1)	2017	2018	2019	2020	2021	EU27
E-government							
1	Share of individuals who used internet within the last year to interact with public authorities (%)	88.0	88.0	88.0	89.0	89.0	70.8
2	2021 e-government benchmark´s overall score (2)	na	na	na	na	90.0	70.9
Open government and independent fiscal institutions							
3	2021 open data maturity index	na	na	na	na	94.2	81.1
4	Scope Index of Fiscal Institutions	51.4	51.4	51.4	51.4	na	56.8
Educational attainment level, adult learning, gender parity and ageing							
5	Share of public administration employees with tertiary education, levels 5-8 (3)	68.3	66.9	68.9	70.3	66.4	55.3
6	Participation rate of public administration employees in adult learning (3)	40.2	39.0	42.4	30.3	38.3	18.6
7	Gender parity in senior civil service positions (4)	8.0	9.4	4.4	1.0	3.0	21.8
8	Share of public sector workers between 55 and 74 years (3)	17.2	18.9	20.6	20.0	19.0	21.3
Public Financial Management							
9	Medium term budgetary framework index	0.72	0.72	0.72	0.72	na	0.72
10	Strength of fiscal rules index	1.4	1.4	1.4	1.4	na	1.5
11	Public procurement composite indicator	5.0	5.3	5.7	-0.3	na	-0.7
Evidence-based policy making							
12	Index of regulatory policy and governance practices in the areas of stakeholder engagement, Regulatory Impact Assessment (RIA) and ex post evaluation of legislation	2.19	na	na	2.17	na	1.7

(1) High values stand for good performance barring indicators # 7 and 8.
(2) Measures the user centricity (including for cross-border services) and transparency of digital public services as well as the existence of key enablers for the provision of those services.
(3) Break in the series in 2021.
(4) Defined as the absolute value of the difference between the share of men and women in senior civil service positions.

Source: ICT use survey, Eurostat (# 1); E-government benchmark report (# 2); Open data maturity report (# 3); Fiscal Governance Database (# 4, 9, 10); Labour Force Survey, Eurostat (# 5, 6, 8), European Institute for Gender Equality (# 7), Single Market Scoreboard public procurement composite indicator (# 11); OECD Indicators of Regulatory Policy and Governance (# 12).

ANNEX 12: EMPLOYMENT, SKILLS AND SOCIAL POLICY CHALLENGES IN LIGHT OF THE EUROPEAN PILLAR OF SOCIAL RIGHTS

The European Pillar of Social Rights provides the compass for upward convergence towards better working and living conditions in the EU. The implementation of its 20 principles on equal opportunities and access to the labour market, fair working conditions, social protection and inclusion, supported by the 2030 EU headline targets on employment, skills and poverty reduction, will strengthen the EU's drive towards a digital, green and fair transition. This Annex provides an overview of Estonia's progress in achieving the goals under the European Pillar of Social Rights.

Table A12.1:**Social Scoreboard for Estonia**

Social Scoreboard for ESTONIA		
Equal opportunities and access to the labour market	Early leavers from education and training (% of population aged 18-24) (2021)	9.8
	Individuals' level of digital skills (% of population 16-74) (2021)	56.0
	Youth NEET (% of total population aged 15-29) (2021)	11.2
	Gender employment gap (percentage points) (2021)	3.7
	Income quintile ratio (S80/S20) (2020)	5.0
Dynamic labour markets and fair working conditions	Employment rate (% population aged 20-64) (2021)	79.3
	Unemployment rate (% population aged 15-74) (2021)	6.2
	Long term unemployment (% population aged 15-74) (2021)	1.6
	GDHI per capita growth (2008=100) (2020)	129.3
Social protection and inclusion	At risk of poverty or social exclusion (in %) (2020)	22.8
	At risk of poverty or social exclusion for children (in %) (2020)	17.4
	Impact of social transfers (other than pensions) on poverty reduction (% reduction of AROP) (2020)	31.7
	Disability employment gap (ratio) (2020)	20.6
	Housing cost overburden (% of population) (2020)	4.4
	Children aged less than 3 years in formal childcare (% of under 3-years-olds) (2020)	26.7
	Self-reported unmet need for medical care (% of population 16+) (2020)	13.0

Critical situation | To watch | Weak but improving | Good but to monitor | On average | Better than average | Best performers

Update of 29 April 2022. 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 Joint Employment Report 2022. Due to changes in the definition of the individuals' level of digital skills in 2021, exceptionally only levels are used in the assessment of this indicator; NEET: neither in employment nor in education and training; GDHI: gross disposable household income.

Source: Eurostat

The performance of the Estonian labour market has remained strong, with a limited impact from the COVID-19 crisis, although there are regional differences. The employment rate in Estonia has recovered to 79.3% in 2021, but is not yet back to the pre-pandemic level (80.5% in 2019). To mitigate the impact of the crisis, Estonia introduced short-time work schemes that helped contain unemployment and its adverse social impacts. The long-term unemployment rate has picked up slightly from 2019 (1.6% of the active population in 2021) but is well below the EU average (2.8%). However, there are regional differences in unemployment, with higher rates than the national average in the north-eastern part of the country (6.2% in Estonia and 11.5% in the North-East in 2021). The Just Transition Fund aims to mitigate the impact of the transition from oil shale in North-eastern Estonia (see Annex 15). The European Social Fund Plus (ESF+) will support access to employment. Whereas Estonia is the best performer as regards the gender employment gap, it nonetheless continues to have one of the highest gender pay gaps in the EU (21.1% in Estonia versus the EU average of 13% in 2020). That rate is on a downward trend, partly because of reforms undertaken in recent years. There is scope for strengthening the capacity of social partners and social dialogue in general.

Estonia is generally performing well in education and training but skills shortages and mismatches remain. According to the EU Statistics on Income and Living Conditions (EU-SILC) survey, only 26.7% of children below the age of three were enrolled in childcare in 2020, a decline of 5.1 percentage points compared to 2019, in part due to the COVID-19 pandemic. The early school leaving rate was in line with the EU average, at 9.8% in 2021, while the rate for men was significantly higher than for women (12% versus 7.6% in 2021). Early school leaving was also higher in rural areas (12.3%), and among young people with disabilities (16.2%). The tertiary education attainment rate is relatively high (43.2% in 2021). Participation in adult learning (in the last 4 weeks) is also high based on the latest 2021 data (18.4% versus 10.8% in the EU). However, there are skill shortages in Estonia linked to factors such as the insufficient number of higher education and vocational education and training

graduates in certain fields (see Annex 13). The rate of people with basic or above basic digital skills is above the EU average. Overall, as identified by OSKA (skills forecasting system) sectoral reports, the need for digital up- and reskilling remains an important challenge across most economic sectors. The recovery and resilience plan (RRP) will contribute to upskilling the workforce's digital and green skills and modernising corresponding training curricula.

Poverty has been gradually decreasing from a high level, but some vulnerable groups remain at a high risk. The share of people at risk of poverty or social exclusion (AROPE) continued to decrease in 2020 to 22.8% (from 23.7% in 2019), closer to the EU average of 21.9%. At the same time, the impact of social transfers (excluding pensions) on poverty reduction rose to 31.7% in 2020, from 28.1% in 2019, and is now close to the EU average (32.7%). The at risk of poverty or social exclusion rate for children remains below the EU average (17.4% versus 24.2% in the EU). For older people (65+), however, poverty or social exclusion risks are very high, at 42.5% in 2020 (against the EU average of 28.9% in 2020). The poverty rate is especially high for older women (48.4%), despite their high employment rate. In addition to the very high gender pay gap, there is also a high gender gap in life expectancy. Women live 8.5 years longer than men, so many may spend their last years alone. In addition, 40.4% of people with disabilities are at risk of poverty or social exclusion, which is one of the highest rates in the EU (compared to the EU average of 28.9% in 2020). The poverty rate among non-standard workers, in particular temporary workers and the self-employed, is the second highest in the EU (25.2% compared to the EU average of 16.4% in 2019). The unemployment benefit scheme has gaps in coverage of people, in particular those with short work spells. The adequacy of minimum income benefits is low; it is 50.7% compared to the poverty threshold and 31.7% as a share of the income of a low-wage earner (the EU averages are 58.9% and 45.5% respectively). According to the EU-SILC survey, 13.1% of Estonians reported unmet medical needs in 2020, mainly due to waiting times, compared to the EU average of 1.7%. 5% of Estonians have no health insurance and 25% of health spending comes from out-of-pocket payments. Weak primary care and a shortage of health care workers contribute to unequal access to healthcare. 58.4% of the 65+ population in need of long-term care lacks assistance in personal care or household activities (EU: 46.5% in 2019). The out-of-pocket payments for long-term care are high accounting for 45% of disposable income (second highest in the EU in 2019). Health and social services are not provided in an integrated way. The RRP contains measures to address some long-term care issues. The European Social Fund+ will co-finance measures fostering social inclusion, including long-term care, contributing to achieving the 2030 EU headline target on poverty reduction.

This Annex outlines the main challenges for Estonia's education and training system in light of the EU-level targets of the European Education Area strategic framework and other contextual indicators, based on the analysis from the 2021 Education and Training Monitor. The Estonian education system continues to combine high performance with a high level of equity. However, continued success dependents on the future supply of teachers and addressing the substantial shortage and ageing in the profession will be crucial. The education system also struggles to produce a sufficient number of graduates to fill jobs requiring skilled workers.

Estonia's teaching staff is among the oldest in the EU, while half of novice teachers leave the profession. Half of Estonian teachers in primary and secondary schools are over 50 (EU average: 39%), and 9% are over 65 (EU average 1%) ([36]). The shortages and ageing of teachers concern all levels of education: 11% of teaching staff in higher education are over 65 and 12.6% are over 65 in vocational education and training. At the same time, only half of novice teachers remain in the profession for more than 5 years ([37]). The teacher shortage concerns both urban and rural areas and is especially acute for certain subjects (maths, sciences). Shortages of educational support specialists are also a concern, especially as the pandemic further increased the need for them. Currently, the number of admissions for these professions at universities is not sufficient to cover this need ([38]).

Teacher shortages have an impact on teacher qualification levels. If no qualified teachers can be recruited, school heads sign fixed-term contracts with candidates having at least secondary education. In 2020/2021, 57% of beginning teachers did not meet the qualification requirements ([39]). A newly adopted action plan on teachers contains different measures to address these challenges and is partly supported by the European Social Fund+ ([40]). The action plan focuses on career progression, working conditions, further developing flexible pathways into the profession, initial and in-service training of teachers and school leadership.

Graph A13.1: **Age of school teachers (primary and secondary education) by age group, 2019**

Source: UOE, educ_uoe_enra21

The number of graduates from vocational education and training and higher education cannot meet labour market needs. Against the backdrop of a shrinking population and a rising demand for skilled workers in specific fields, such as education, engineering and science, the education and training system does not produce enough graduates ([41]). In particular, Estonia has 16.5 tertiary graduates in science, technology,

([36]) Eurostat 2019, ISCED levels 1-3

([37]) Vaher, K., Selliov, R. (2019). Professional mobility and career paths of school teachers according to EHIS, Ministry of Education and Research, https://www.hm.ee/sites/default/files/opetajate_tooalane_liikuvus_kristel_vaher_ja_rena_selliov.pdf

([38]) National Audit Office (2020), Availability of Education Support Services, https://www.riigikontroll.ee/tabid/206/Audit/2516/language/en-US/Default.aspx.

([39]) Ministry of Education of Estonia, Development trends for the next generation of teachers until 2026, https://www.hm.ee/sites/default/files/jarelkasvu_arnengusuunad_aastani_2026_mai_2021.pdf

([40]) Roadmap 2022 on teachers https://www.hm.ee/sites/default/files/2022._opetajate_jarelkasvu_tegevuskava_toodokument.pdf

([41]) OSKA (2020a), Estonian Labour Market Today and Tomorrow 2019-2027 – Key Findings, https://oska.kutsekoda.ee/wp-content/uploads/2020/05/OSKA-study-%E2%80%9CEstonian-Labour-Market-Today-and-Tomorrow-2019%E2%80%9D.pdf.

OSKA (2020b), COVID-19 impact on the need for labour force and skills – Key Findings, https://oska.kutsekoda.ee/wp-content/uploads/2021/01/Key-findings_COVID19-study.pdf.

Table A13.1:**EU-level targets and other contextual indicators under the European Education Area strategic framework**

				2015		2021	
Indicator			**Target**	**Estonia**	**EU27**	**Estonia**	**EU27**
Participation in early childhood education (age 3+)			**96%**	**90.6% b**	**91.9%**	**91.5% 2019**	**92.8% 2019**
Low achieving 15-year-olds in:		**Reading**	**< 15%**	**10.6%**	**20.4%**	**11.1% 2018**	**22.5% 2018**
		Mathematics	**< 15%**	**11.2%**	**22.2%**	**10.2% 2018**	**22.9% 2018**
		Science	**< 15%**	**8.8%**	**21.1%**	**8.8% 2018**	**22.3% 2018**
Early leavers from education and training (age 18-24)	**Total**		**< 9 %**	**13.7%**	**11.0%**	**9.8%**	**9.7%**
	By gender	*Men*		16.4%	12.5%	12.0%	11.4%
		Women		10.9%	9.4%	7.6%	7.9%
	By degree of urbanisation	*Cities*		6.3%	9.6%	7.9%	8.7%
		Rural areas		20.3%	12.2%	12.3%	10.0%
	By country of birth	*Native*		13.8%	10.0%	9.6%	8.5%
		EU-born		: u	20.7%	: u	21.4%
		Non EU-born		: u	23.4%	: u	21.6%
Tertiary educational attainment (age 25-34)	**Total**		**45%**	**38.5%**	**36.5%**	**43.2%**	**41.2%**
	By gender	*Men*		28.3%	31.2%	33.1%	35.7%
		Women		49.2%	41.8%	54.3%	46.8%
	By degree of urbanisation	*Cities*		47.2%	46.2%	53.5%	51.4%
		Rural areas		27.1%	26.9%	31.3%	29.6%
	By country of birth	*Native*		38.0%	37.7%	41.5%	42.1%
		EU-born		: u	32.7%	: u	40.7%
		Non EU-born		46.2% u	27.0%	66.6% u	34.7%
Share of school teachers (ISCED 1-3) who are 50 years or over				45.2%	38.3%	49.9% 2019	38.9% 2019

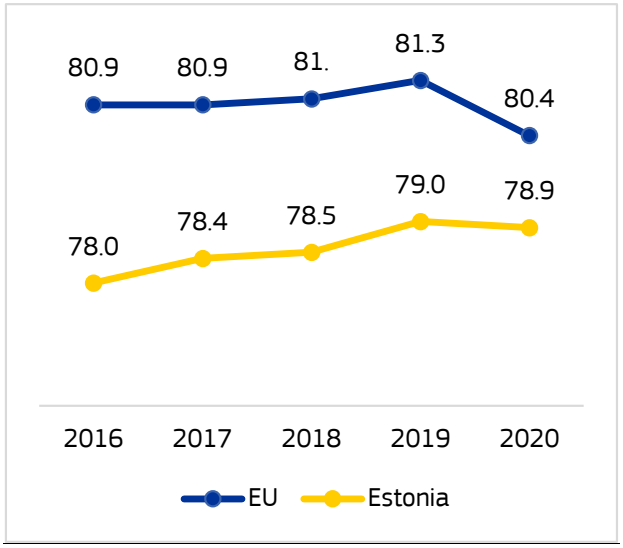
The 2018 EU average on PISA reading performance does not include ES; b = break in time series, u = low reliability, : = not available; Data is not yet available for the remaining EU-level targets under the European Education Area strategic framework, covering underachievement in digital skills, exposure of vocational educational training graduates to work based learning and participation of adults in learning.
Source: Eurostat (UOE, LFS); OECD (PISA).

engineering, and mathematics per 1 000 people aged 20-29, compared to 20.8 in the EU.

While early school leaving is in line with the EU average, it hides significant gender disparities as boys leave school early much more than girls (see Annex 12). The tertiary education attainment rate is relatively high in Estonia (43.2% in 2021), but gender differences continue. While 54.3% of women aged 25-34 graduated from higher education institutions, only 33.1% of men did. At 21.2 percentage points, the gender gap is the third highest in the EU (EU average: 11.1 percentage points). In the last decade, it has proven difficult to raise tertiary education attainment further. Tapping the potential of all population groups will be important to address the skills gap.

Especially relevant in light of the ongoing COVID-19 pandemic, resilient healthcare is a prerequisite for a sustainable economy and society. This Annex provides a snapshot of the healthcare sector in Estonia. Life expectancy in the country had increased strongly over the last two decades but fell in 2020 by more than 1 month due to COVID-19. As of 17 April 2022, Estonia reported 1.8 cumulative COVID-19 deaths per 1 000 inhabitants and 416 confirmed cumulative COVID-19 cases per 1 000 inhabitants. Treatable mortality is higher in Estonia than in the EU overall, but has decreased substantially over the last decade. Ischaemic heart disease is the first cause of death followed by cancer.

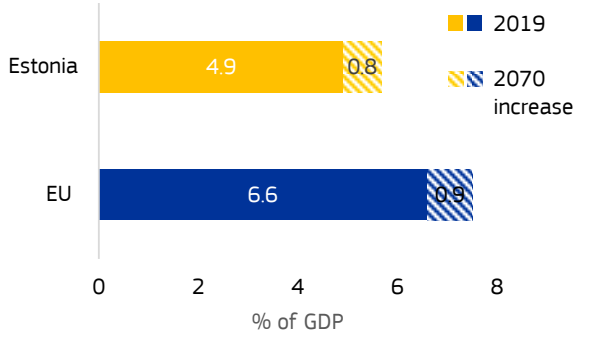
Graph A14.1: **Life expectancy at birth, years**



Source: Eurostat database

Health spending relative to GDP in Estonia is among the lowest in the EU. Public health expenditure is expected to increase by 0.8 percentage points between 2019 and 2070 (EU: 0.9) ([42]). Around three quarters of health spending in Estonia is financed through government and compulsory insurance schemes, with the remainder coming from out-of-pocket payments, mostly in the form of co-payments for medicines and dental care (see Annex 12). In 2019, 5% of the Estonian population had no health insurance.

Graph A14.2: **Projected increase in public expenditure on health care over 2019-2070 (AWG reference scenario)**



Source: European Commission/EPC (2021)

Estonia faces a shortage as well as an uneven distribution of health workers, which contributes to long waiting times for publicly funded services. Estonia has the highest level of unmet medical needs in the EU (see Annex 12). In 2019, Estonia had fewer doctors (3.5 per 1 000 population) and nurses (6.2 per 1 000 population) than the respective EU averages of 3.9 and 8.4. The numbers of graduating doctors and nurses has fallen in recent years.

Through its Recovery and Resilience Plan, Estonia plans to invest EUR 326.3 million (33.2% of the total RRP budget). This will be used to improve health infrastructure, notably the construction of the Northern Estonia Medical Campus and building capacity of health services via multipurpose medical helicopters. The reforms will support changing how health care is organised in Estonia, strengthening primary health care and updating the e-health institutional framework.

([42]) 'The 2021 Ageing Report: Economic and Budgetary Projections for the EU Member States (2019-2070)', European Commission (ECFIN) and Ageing Working Group (EPC).

Table A14.1:**Key health indicators**

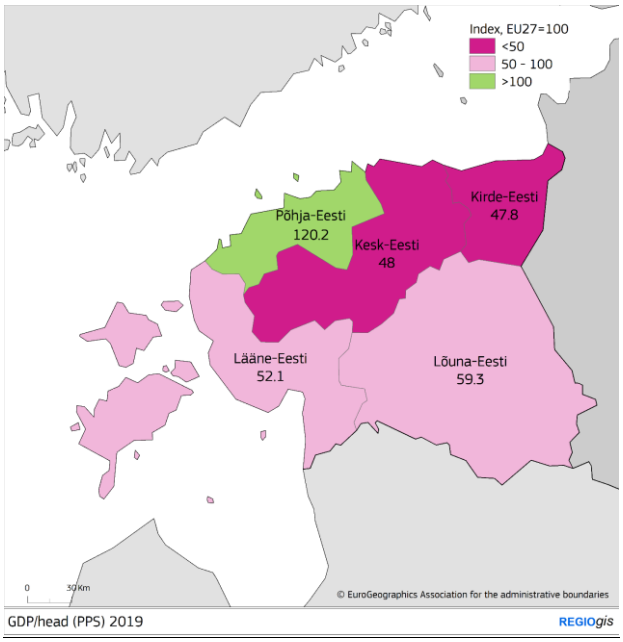
	2016	2017	2018	2019	2020	EU average (latest year)
Treatable mortality per 100 000 population (mortality avoidable through optimal quality healthcare)	143.0	136.6	133.5	129.4		92.1 (2017)
Cancer mortality per 100 000 population	287.6	286.8	292.3	279.5		252.5 (2017)
Current expenditure on health, % GDP	6.4	6.6	6.7	6.7		9.9 (2019)
Public share of health expenditure, % of current health expenditure	75.7	73.6	73.7	74.5		79.5 (2018)
Spending on prevention, % of current health expenditure	3.2	3.3	3.5	3.6		2.8 (2018)
Acute care beds per 100 000 population	344.3	337.8	331.8	331.8		387.4 (2019)
Doctors per 1 000 population *	3.5	3.5	3.5	3.5		3.8 (2018)
Nurses per 1 000 population *	6.1	6.2	6.3	6.2		8.2 (2018)
Consumption of antibacterials for systemic use in the community, daily defined dose per 1 000 inhabitants per day **	10.4	9.9	10.2	10.2	8.8	14.5 (2020)

Doctors' density data refer to practising doctors in all countries except FI, EL, PT (licensed to pratice) and SK (professionally active). Nurses' density data refer to practising nurses in all countries (imputation from year 2014 for FI) except IE, FR, PT, SK (professionally active) and EL (nurses working in hospitals only).
More information: https://ec.europa.eu/health/state-health-eu/country-health-profiles_en

Source: Eurostat Database; except: * Eurostat Database and OECD, ** ECDC.

The regional dimension is an important factor when assessing economic and social developments in Member States. Taking into account this dimension enables a well-calibrated and targeted policy response that fosters cohesion and ensures sustainable and resilient economic development across all regions. Estonia's regional outlook continues to be characterised by significant disparities between its capital region of Northern Estonia (Põhja-Eesti) and the rest of the country. In 2019, GDP per head (PPS) of Põhja-Eesti was well above the EU average at 120%. In the other four NUTS-3 regions, GDP per head ranged between 48% in both Central Estonia (Kesk-Eesti) and North-eastern Estonia (Kirde-Eesti) and 59% in Lõuna-Eesti (Graph A15.1).

Graph A15.1: **GDP per head (in PPS) in Estonia, NUTS3, 2019**



Source: European Commission

In the last decade, Estonia has experienced strong economic growth and convergence with the EU. Despite implementation of regional development programmes, the capital region is converging faster than the rest of the country. Economic activity is highly concentrated in Põhja-Eesti: its share in the national GDP continued to increase from 63.3% in 2015 to 66% in 2020. The development gap between Estonian regions remains sizeable and has not changed in the last 10 years. Without stronger support to lagging regions, this trend is likely to continue.

Like its Baltic neighbours, Estonia is experiencing depopulation in the more remote regions. Better job opportunities and higher salaries are driving migration. In 2020 the average monthly salary in Harju county (including Tallinn) was EUR 1 588, in Ida-Virumaa EUR 1 161 and in Põlvamaa EUR 1 229. In 2011-2019, the population of Kirde-Eesti dropped by 14.8%. Estonia's overall population remained stable between 2011 and 2021, but projections indicate that the country could experience a 5.6% population decline between 2021 and 2050. This trend puts pressure on Estonia's growth potential, its labour market and the maintaining of public infrastructure and services, with regional imbalances likely to worsen especially for the more rural areas of the country. In 2020, the share of young people neither in employment nor in education or training (NEET), the share of early school leavers, and the risk of poverty or social exclusion were all higher in rural areas.

Table A15.1:**Estonia, selected indicators at regional level**

NUTS 3 Region	GDP per head (PPS)	Productivity (GVA (PPS) per person employed)	Population growth	At-risk-of-poverty or social exclusion
	EU27=100, 2019	EU27=100, 2018	Total % change, 2011-2019	% of active population, 2019
European Union	100	100	1.8	21.90
Eesti	84	75	-0.2	24.30
Põhja-Eesti	120	94	8.9	16.50
Lääne-Eesti	52	50	-4.7	23.50
Kesk-Eesti	48	51	-7.4	20.60
Kirde-Eesti	48	55	-14.8	31.40
Lõuna-Eesti	59	56	-3.9	22.50

Gross Fixed Capital Formation reference year: 2019
Source: Eurostat, *EDGAR Database, Estonian Statistics.

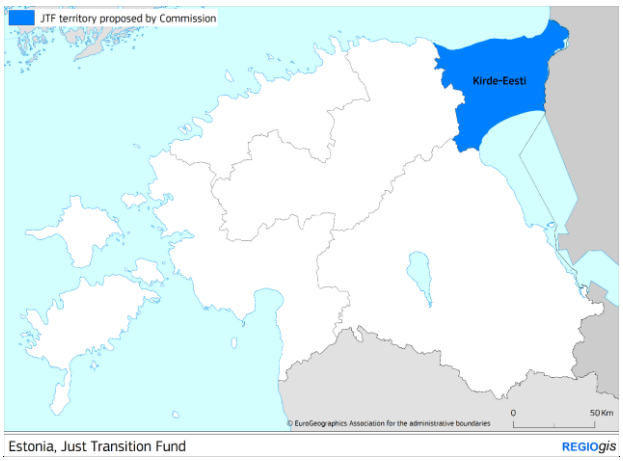
The urban-rural divide is not decreasing for many other reasons. Because of a lower population density, ICT providers are less inclined to deploy very high capacity electronic communications networks in rural areas. 84.8% of the urban population has fixed broadband, compared to 78.0% in rural areas (2020). 26.9% of people in rural areas are also at risk of poverty or social exclusion, higher than the EU average of 23.2% in 2020. In cities, this rate is 21%. People 65 years old or over are the group most at risk, with a 42.5% rate (EU 20.4%).

The transition from oil shale to renewable energy sources will continue in the coming years and will have a substantial socio-economic impact in Ida-Virumaa. Estonia

significantly reduced greenhouse gas emissions per capita, by 66.5% in 2020 compared to 1990, although at 8.8 tonnes per head its level is still above the EU average of 7.6 (2020). 56% of greenhouse gas emissions are produced by the oil shale energy sector, which is concentrated in the Ida-Viru county. The Just Transition Fund will contribute to address the socio-economic challenges in the region.

The COVID-19 pandemic had a significant impact on the Estonian economy and society as a whole, in particular in certain regions, although slightly milder than in most other Member States. Unemployment increased more in the northern region than in the rest of the country, due to the greater concentration of services more directly impacted by mobility restrictions, such as tourism, transport, restaurants, cultural and leisure activities.

Graph A15.2: **Territories most affected by the climate transition in Estonia**



Source: European Commission

ANNEX 16: KEY FINANCIAL SECTOR DEVELOPMENTS

This Annex provides an overview of key developments in Estonia's financial sector. The Estonian banking sector is highly concentrated and relatively small compared to other EU countries, but proportional to the size of the economy. Due to the high interconnectedness with neighbouring countries, it may be vulnerable to potential spillovers if there is a downturn in their financial sectors. It predominantly comprises subsidiaries of larger, well-capitalised Nordic banks. A smaller share of the financial sector is owned by Estonian residents. This share has increased in the past couple of years with the establishment of Luminor's head office in Estonia. This has also resulted in the total assets as a share of GDP increasing to 126.9% and the share of domestic banks to just over half of the sector. The assets of the five largest credit institutions account for over 90% of the total.

The financial sector has weathered the COVID-19 pandemic well. Banks operating in Estonia are among the best capitalised in the EU (the capital adequacy ratio stood at 26.4%). Banks' resilience is also boosted by their strong profitability (return on equity of 8.9%), which enables them to maintain their level of capitalisation and cover small loan losses with profits.

Estonian banks have on average one of the lowest non-performing loans ratio in the EU. The share of overdue loans or loans on payment holidays has shrunk considerably in 2021, enabling banks to reduce provisions they made to cover possible loan losses. This has supported their capacity to finance the economy. In 2021 deposits grew by nearly twice as much as private sector credit, lowering the loan-to-deposit ratio to 78%. Banks also expanded their funding mix by starting to issue bonds.

The build-up of risks in the real estate and construction sectors may harm the quality of the loan portfolio of banks. Rising incomes and savings, a pension system reform and strong confidence of households have given a lift to transaction activity in the housing market. Higher real estate prices coincided with intense growth in mortgage loans, although remained in line with nominal GDP growth. While household debt is moderate, banks' exposure to mortgage debt is relatively high. This makes banks vulnerable to any negative change in loan servicing by households if incomes fall or interest rates rise. The macroprudential stance is appropriate, although there is a need for a continued reassessment of the policy tools. The good position of the economy and financial sector means rebuilding buffers can start.

Preventing and combating money laundering has been a strategic priority for Estonia since 2016. In recent years, the country has

Table A16.1: **Financial soundness indicators**

	2017	2018	2019	2020	2021
Total assets of the banking sector (% of GDP)	106.8	101.5	103.8	128.1	126.9
Share (total assets) of the five largest bank (%)	90.3	91.0	93.0	93.7	-
Share (total assets) of domestic credit institutions (%)[1]	25.9	27.3	49.5	49.6	50.6
Financial soundness indicators:[1]					
- non-performing loans (% of total loans)	1.9	1.3	1.6	1.6	1.3
- capital adequacy ratio (%)	30.6	31.0	26.3	27.8	26.4
- return on equity (%)	9.2	9.8	8.3	7.4	8.9
NFC credit growth (year-on-year % change)	5.5	4.0	3.0	3.1	7.3
HH credit growth (year-on-year % change)	7.0	6.6	6.4	5.0	7.8
Cost-to-income ratio (%)[1]	46.3	45.3	52.5	52.6	53.8
Loan-to-deposit ratio (%)[1]	89.8	93.5	90.0	76.7	78.0
Central bank liquidity as % of liabilities	0.5	0.3	0.1	6.4	5.7
Private sector debt (% of GDP)	106.2	101.7	99.0	104.4	-
Long-term interest rate spread versus Bund (basis points)	-	-	-	48.1	43.7
Market funding ratio (%)	23.3	24.6	24.3	22.2	-
Green bond issuance (bn EUR)	-	-	-	-	-

(1) Last data: Q3 2021.
Source: ECB, Eurostat, Refinitiv.

taken several steps to reduce the risks of misuse of its economy, in the banking system and in the growing crypto-asset sector. The authorities have taken legislative and institutional steps, including amending the Anti-Money Laundering/Countering the Financing of Terrorism (AML/CFT) Act, tightening licensing requirements for virtual asset service providers and revamping the financial intelligence unit. An updated assessment of risks was completed in 2021, and measures are being implemented to mitigate those risks. Estonia's recovery and resilience plan includes the establishment of the strategic analysis function of the financial intelligence unit. AML/CFT act, tightening licensing requirements for virtual asset service providers and revamping the financial intelligence unit. An updated assessment of risks was completed in 2021, and measures are being implemented to mitigate those risks. Estonia's recovery and resilience plan includes setting up strategic analysis function in the financial intelligence unit.

This Annex provides an indicator-based overview of Estonia's tax system. It includes information on the tax structure, i.e. the types of tax that Estonia derives most revenue from, the tax burden for workers, and the progressivity and redistributive effect of the tax system. It also provides information on tax collection and compliance and on the risks of aggressive tax planning ([43]).

Estonia's tax revenues are relatively low in relation to GDP. Total tax revenue was 34% of GDP in 2020 compared to the EU average of 40.1%. Labour taxes generated revenue of 18.1% of GDP (somewhat below the EU average), while consumption taxes generated revenue of 13.3% of GDP (somewhat above the EU). Very little revenue is generated from recurrent taxes on immovable property (0.2% of GDP compared to the EU average of 1.2%). In environmental taxation, Estonia is one of the few Member States without an annual road vehicle tax, but it applies relatively high excise duties on road fuels.

Reforms have reduced the total tax burden on low wages. In particular, the tax wedge for workers earning 50% of the average wage was lowered gradually from 37.3% in 2010 to 31.4% in 2021, which is below the EU average. (The tax wedge measures the difference between the wage cost for employers and the net wage for employees ([44])). At higher income levels, the tax wedge in Estonia is also below the EU average (see Graph A17.1), for single workers and for second earners. The ability of the tax and benefits system to reduce inequality (as measured by the Gini coefficient) was much closer to the EU average in 2020, thanks to the income support measures taken by the government in response to the COVID-19 crisis.

Estonia is doing well in digitalising the tax administration. Outstanding tax arrears have increased slightly by 0.2 percentage points to 6.3% of total net revenue. This is significantly below the EU average of 31.8%, but that average is inflated by very large values in a few Member States. The Annual Report on Taxation 2021 shows that the rate of tax return e-filing is close to 100% in Estonia ([45]). Nevertheless, the potential to ensure better services for taxpayers could be explored, for example, by introducing behavioural insights to increase tax collection. The VAT gap (an indicator of the effectiveness of VAT enforcement and compliance) has remained relatively stable in Estonia at 4.5%, significantly below the EU gap of 10.5%. Lastly, the average forward-looking effective corporate income tax rates were below the EU average in 2020.

([43]) For more data on tax revenues as well as the methodology applied see European Commission, Taxation trends in the European Union: data for the EU Member States, Iceland, Norway and United Kingdom: 2021 edition, https://data.europa.eu/doi/10.2778/843047 and the 'Data on Taxation' webpage (data https://ec.europa.eu/taxation_customs/taxation-1/economic-analysis-taxation/data-taxation_en). For more details on VAT GAP see European Commission, "VAT gap in the EU: report 2021", https://data.europa.eu/doi/10.2778/30877

([44]) The tax wedge is defined as the sum of the personal income taxes and the employee's and employer's social security contributions net of family allowances, expressed as a percentage of total labour costs (the sum of the gross wage and social security contributions paid by the employer). It is calculated for specific types of taxpayers – in terms of household composition and income level expressed as % of average wage. Data on tax wedges can be consulted in the 'Tax and benefit database' https://europa.eu/economy_finance/db_indicators/tab/

([45]) European Commission, Directorate-General for Taxation and Customs Union, Annual Report on Taxation 2021: review of taxation policies in the EU Member States, 2021, https://data.europa.eu/doi/10.2778/294944 (see section 2.1.4 Improving tax administration)

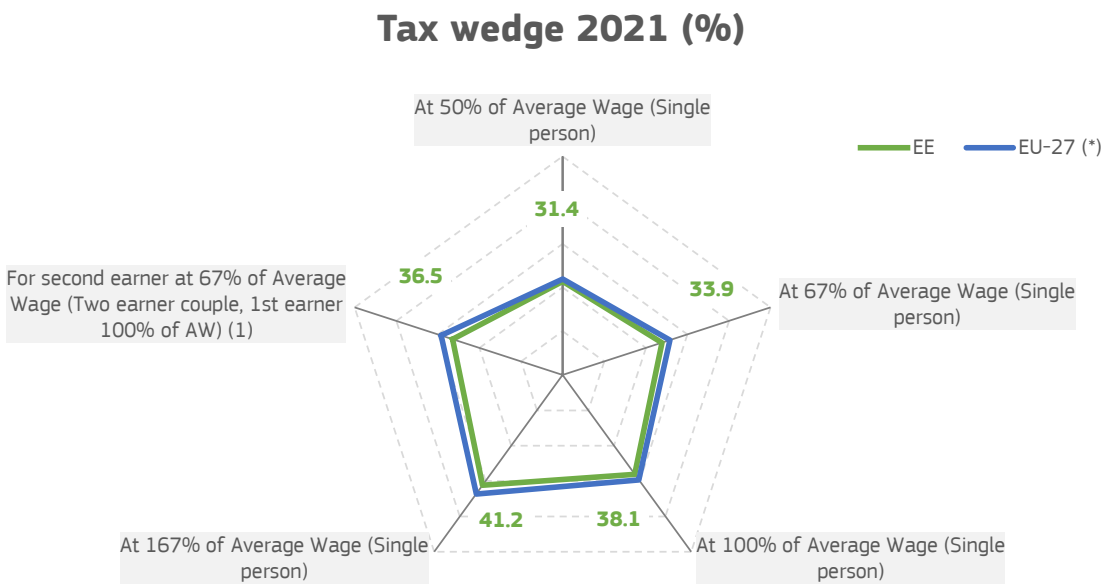
Table A17.1:**Indicators on taxation**

		Estonia					EU-27				
		2010	2018	2019	2020	2021	2010	2018	2019	2020	2021
Tax structure	Total taxes (including compulsory actual social contributions) (% of GDP)	33.2	33.0	33.5	34.0	34.4	37.9	40.1	39.9	40.1	
	Labour taxes (as % of GDP)	17.7	16.7	17.0	18.1		20.0	20.7	20.7	21.5	
	Consumption taxes (as % of GDP)	13.2	13.5	13.9	13.3		10.8	11.1	11.1	10.8	
	Capital taxes (as % of GDP)	2.3	2.8	2.6	2.7		7.1	8.2	8.1	7.9	
	Total property taxes (as % of GDP)	0.4	0.3	0.3	0.3		1.9	2.2	2.2	2.3	
	Recurrent taxes on immovable property (as % of GDP)	0.3	0.2	0.2	0.2		1.1	1.2	1.2	1.2	
	Environmental taxes as % of GDP	2.9	2.7	3.2	2.4		2.4	2.4	2.4	2.2	
Progressivity & fairness	Tax wedge at 50% of Average Wage (Single person) (*)	37.3	29.8	30.5	30.8	31.4	33.9	32.4	32.0	31.5	31.9
	Tax wedge at 100% of Average Wage (Single person) (*)	40.1	36.2	37.0	37.3	38.1	41.0	40.2	40.1	39.9	39.7
	Corporate Income Tax - Effective Average Tax rates (1) (*)		17.0	17.0	17.0			19.8	19.5	19.3	
	Difference in GINI coefficient before and after taxes and cash social transfers (pensions excluded from social transfers)	6.4	5.6	5.3	8.0		8.4	7.9	7.4	8.3	
Tax administration & compliance	Outstanding tax arrears: Total year-end tax debt (including debt considered not collectable) / total revenue (in %) (*)		6.1	6.3				31.9	31.8		
	VAT Gap (% of VTTL)		4.0	4.5				11.2	10.5		
Financial Activity Risk	Dividends, Interests and Royalties (paid and received) as a share of GDP (%)			5.2	5.8			10.7	10.5		
	FDI flows through SPEs (Special Purpose Entities), % of total FDI flows (in and out)		4.1	3.7	3.4			47.8	46.2	36.7	

(1) Forward-looking Effective Tax Rate (OECD)
(*) EU-27 simple average as there is no aggregated EU-27 value

Source: European Commission and OECD.

Graph A17.1: **Indicators on tax wedge**



The tax wedge measures the difference between the total labour cost of employing a worker and the worker's net earnings: sum of personal income taxes and employee and employer social security contributions, net of family allowances, expressed as a percentage of total labour costs (the sum of the gross wage and social security contributions paid by the employer).
(1) The second earner average tax wedge measures how much extra personal income tax (PIT) plus employee and employer social security contributions (SSCs) the family will have to pay as a result of the second earner entering employment, as a proportion of the second earner's gross earnings plus the employer SSCs due on the second earner's income. For a more detailed discussion see OECD (2016), Taxing Wages 2016, OECD Publishing, Paris. http://dx.doi.org/10.1787/tax_wages-2016-en
(*) EU-27 simple average as there is no aggregated EU-27 value.
Source: European Commission

Table A18.1:**Key economic and financial indicators**

	2004-07	2008-12	2013-18	2019	2020	2021	forecast 2022	forecast 2023
Real GDP (y-o-y)	8.4	-1.7	3.2	4.1	-3.0	8.3	1.0	2.4
Potential growth (y-o-y)	5.9	0.6	2.8	4.1	3.6	3.5	2.4	2.4
Private consumption (y-o-y)	9.8	-2.7	3.9	4.1	-2.5	6.4	2.5	1.5
Public consumption (y-o-y)	4.1	1.2	2.1	3.0	3.0	3.9	2.0	0.3
Gross fixed capital formation (y-o-y)	13.3	-4.1	2.3	6.1	19.9	3.3	-7.0	5.0
Exports of goods and services (y-o-y)	14.8	5.4	2.9	6.5	-5.0	19.8	3.0	4.9
Imports of goods and services (y-o-y)	16.6	2.0	3.3	3.8	0.9	20.6	-0.6	4.3
Contribution to GDP growth:								
Domestic demand (y-o-y)	10.5	-2.9	3.0	4.1	4.4	5.0	-0.4	2.1
Inventories (y-o-y)	0.5	-0.6	0.3	-1.5	-1.2	2.8	-1.6	-0.3
Net exports (y-o-y)	-2.5	2.3	-0.2	2.1	-4.3	-0.5	2.9	0.6
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	0.0	-0.7	0.2	0.5	0.1	0.5	0.0	-0.1
Capital accumulation (y-o-y)	3.3	1.4	1.3	1.4	1.7	1.7	1.2	1.3
Total factor productivity (y-o-y)	2.6	-0.1	1.3	2.2	1.7	1.3	1.3	1.2
Output gap	6.4	-4.0	0.3	2.0	-4.5	0.0	-1.5	-1.5
Unemployment rate	7.2	11.6	6.7	4.5	6.9	6.2	6.8	6.9
GDP deflator (y-o-y)	7.9	3.5	3.0	3.2	-0.3	5.5	8.1	3.2
Harmonised index of consumer prices (HICP, y-o-y)	4.6	4.5	1.9	2.3	-0.6	4.5	11.2	2.5
Nominal compensation per employee (y-o-y)	15.7	3.3	6.3	8.4	5.3	7.6	7.0	4.5
Labour productivity (real, hours worked, y-o-y)	6.3	1.1	2.6	3.6	3.2	0.2	4.5	0.4
Unit labour costs (ULC, whole economy, y-o-y)	8.5	3.4	4.5	5.5	5.5	-0.6	6.7	3.0
Real unit labour costs (y-o-y)	0.5	-0.1	1.5	2.2	5.8	-5.7	-1.3	-0.1
Real effective exchange rate (ULC, y-o-y)	6.7	0.7	3.8	2.6	.	.	.	.
Real effective exchange rate (HICP, y-o-y)	2.0	0.9	2.2	0.0	0.6	1.5	.	.
Net savings rate of households (net saving as percentage of net disposable income)	-8.9	3.8	5.9	8.7	12.7	.	.	.
Private credit flow, consolidated (% of GDP)	25.1	1.9	4.7	3.4	3.6	.	.	.
Private sector debt, consolidated (% of GDP)	104.4	130.7	110.9	99.0	104.4	.	.	.
of which household debt, consolidated (% of GDP)	36.1	49.7	39.5	38.6	41.8	.	.	.
of which non-financial corporate debt, consolidated (% of GDP)	68.3	81.0	71.4	60.4	62.5	.	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (2)	.	5.6	1.8	1.5	1.5	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	-6.5	1.9	1.5	2.2	1.5	1.9	7.7	7.7
Corporations, gross operating surplus (% of GDP)	32.9	30.3	30.6	29.1	28.1	30.4	30.7	30.9
Households, net lending (+) or net borrowing (-) (% of GDP)	-6.4	1.0	1.6	2.3	4.2	2.1	0.1	0.5
Deflated house price index (y-o-y)	.	-10.5	5.7	4.4	6.9	.	.	.
Residential investment (% of GDP)	5.3	3.1	4.1	4.9	5.5	4.7	.	.
Current account balance (% of GDP), balance of payments	-12.6	-1.0	1.2	2.5	-0.3	-1.1	1.3	2.3
Trade balance (% of GDP), balance of payments	-7.9	3.0	3.4	4.2	0.5	0.3	.	.
Terms of trade of goods and services (y-o-y)	1.8	-0.3	0.6	-0.3	0.9	0.3	-1.3	0.7
Capital account balance (% of GDP)	1.2	3.1	1.5	1.7	2.1	9.2	.	.
Net international investment position (% of GDP)	-78.4	-65.8	-40.0	-22.8	-21.5	-12.2	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) (1)	-16.8	-16.2	16.6	30.9	42.3	40.7	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) (1)	79.4	93.1	72.8	59.7	72.4	69.6	.	.
Export performance vs. advanced countries (% change over 5 years)	57.5	29.3	7.6	0.2	18.1	.	.	.
Export market share, goods and services (y-o-y)	7.9	1.3	0.7	3.1	5.6	9.0	-1.6	0.6
Net FDI flows (% of GDP)	-6.4	-5.0	-2.3	-3.9	-10.4	1.5	.	.
General government balance (% of GDP)	2.3	-0.8	-0.1	0.1	-5.6	-2.4	-4.4	-3.7
Structural budget balance (% of GDP)	.	.	-0.1	-0.8	-3.4	-3.3	-3.8	-3.0
General government gross debt (% of GDP)	4.6	6.9	9.7	8.6	19.0	18.1	20.9	23.5

(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.

Source: Eurostat and ECB as of 2022-05-02, where available; European Commission for forecast figures (Spring forecast 2022)

This annex assesses fiscal sustainability risks for Estonia over the short, medium and long term. It follows the same multi-dimensional approach as the 2021 Fiscal Sustainability Report, updated on the basis of the Commission 2022 spring forecast.

Table 1 presents the baseline debt projections. It shows the projected government debt and its breakdown into the primary balance, the snowball effect (the combined impact of interest payments and nominal GDP growth on the debt dynamics) and the stock-flow adjustment. These projections assume that no new fiscal policy measures are taken after 2023, and include the expected positive impact of investments under Next Generation EU.

Graph 1 shows four alternative scenarios around the baseline, to illustrate the impact of changes in assumptions. The 'historical SPB' scenario assumes that the structural primary balance (SPB) gradually returns to its past average level. In the 'lower SPB' scenario, the SPB is permanently weaker than in the baseline. The 'adverse interest-growth rate' scenario assumes a less favourable snowball effect than in the baseline. In the 'financial stress' scenario, the country temporarily faces higher market interest rates in 2022.

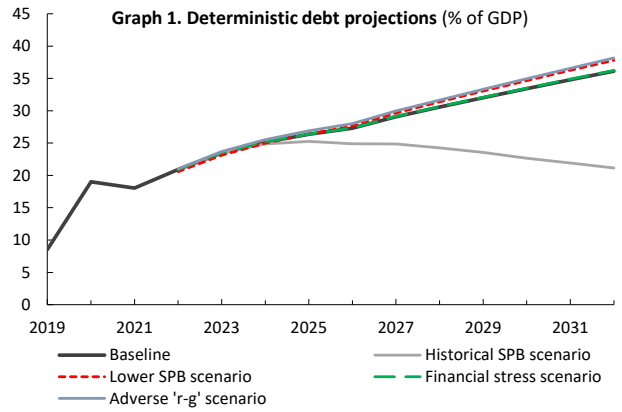
Graph 2 shows the outcome of the stochastic projections. These projections show the impact on debt of 2 000 different shocks affecting the government's budgetary position, economic growth, interest rates and exchange rates. The cone covers 80% of all the simulated debt paths, therefore excluding tail events.

Table 2 shows the S1 and S2 fiscal sustainability indicators and their main drivers. S1 measures the consolidation effort needed to bring debt to 60% of GDP in 15 years. S2 measures the consolidation effort required to stabilise debt over an infinite horizon. The *initial budgetary position* measures the effort required to

Table A19.1: **Debt sustainability analysis for Estonia**

Table 1. Baseline debt projections	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Gross debt ratio (% of GDP)	**8.6**	**19.0**	**18.1**	**20.9**	**23.5**	**25.2**	**26.4**	**27.3**	**29.1**	**30.6**	**32.0**	**33.4**	**34.8**	**36.1**
Change in debt	0.3	10.4	-0.9	2.9	2.6	1.7	1.2	0.9	1.8	1.5	1.4	1.4	1.4	1.3
of which														
Primary deficit	*-0.1*	*5.6*	*2.3*	*4.3*	*3.5*	*2.9*	*2.5*	*2.2*	*2.7*	*2.6*	*2.6*	*2.6*	*2.5*	*2.5*
Snowball effect	*-0.5*	*0.3*	*-2.3*	*-1.5*	*-1.0*	*-1.3*	*-1.3*	*-1.2*	*-0.9*	*-1.2*	*-1.2*	*-1.2*	*-1.2*	*-1.1*
Stock-flow adjustment	*1.0*	*4.6*	*-0.9*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Gross financing needs (% of GDP)	1.3	10.7	2.5	5.5	5.0	4.6	4.4	4.2	4.8	5.0	5.1	5.3	5.4	5.5

Graph 1. Deterministic debt projections (% of GDP)



Graph 2. Stochastic debt projections (% of GDP)

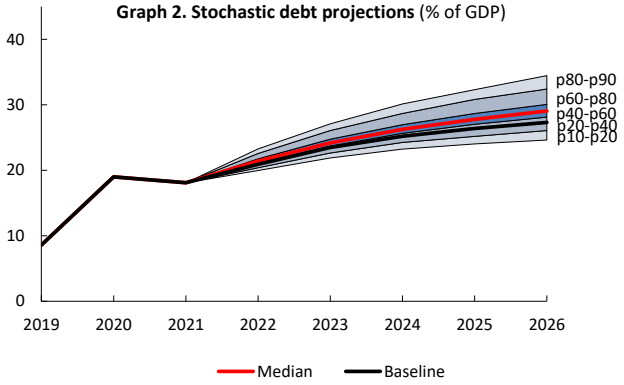


Table 2. Breakdown of the S1 and S2 sustainability gap indicators

		S1	**S2**
Overall index (pps. of GDP)		**-1.5**	**1.6**
of which			
Initial budgetary position		1.8	2.8
Debt requirement		-2.9	
Ageing costs		-0.4	-1.3
of which	*Pensions*	*-0.6*	*-1.9*
	Health care	*0.2*	*0.7*
	Long-term care	*0.1*	*0.3*
	Others	*-0.1*	*-0.3*

Source: European Commission.

cover future interest payments, the *ageing costs* component accounts for the need to absorb the projected change in ageing-related public expenditure such as pensions, health care and long-term care, and the *debt requirement* measures the additional adjustment needed to reach the 60% of GDP debt target.

Finally, the heat map presents the overall fiscal sustainability risk classification (Table A19.2)**.** The *short-term risk category* is based on the S0 indicator, an early-detection indicator of fiscal stress in the upcoming year. The *medium-term risk category* is derived from the debt sustainability analysis (DSA) and the S1 indicator. The DSA assesses risks to sustainability based on several criteria: the projected debt level in 10 years' time, the debt trajectory ('peak year'), the plausibility of fiscal assumptions and room for tighter positions if needed ('fiscal consolidation space'), the probability of debt not stabilising in the next 5 years and the size of uncertainty. The *long-term risk category* is based on the S2 indicator and the DSA.

Overall, short-term risks to fiscal sustainability are low. The Commission's early-detection indicator (S0) does not signal major short-term fiscal risks (Table A19.2).

Medium-term risks to fiscal sustainability are low. Both elements of the Commission's medium-term analysis lead to this conclusion. First, the debt sustainability analysis (DSA) shows that government debt would rise from around 21% of GDP in 2022 to about 36% of GDP in 2032 in the baseline, hence remaining low (Table 1). The low sensitivity of the debt path to possible shocks to fiscal, macroeconomic and financial variables, as illustrated by alternative scenarios and stochastic simulations, confirms this risk assessment (Tables A19.1 and A19.2). Moreover, the sustainability gap indicator S1 signals that no fiscal adjustment is needed to reach a debt ratio of 60% of GDP in 15 years' time (Table 2). Overall, the low risk reflects the remaining low debt ratio, despite an increasing trend.

Long-term risks to fiscal sustainability are low. Over the long term, both the sustainability gap indicator S2 (at 1.6 pps. of GDP) and the DSA point to low risks. The S2 indicator suggests that, to stabilise debt over the long term, a limited consolidation effort would be needed, mainly driven by the unfavourable initial budgetary position and the projected increase of health care spending (Table 2).

Table A19.2:**Heat map of fiscal sustainability risks for Estonia**

Short term	Medium term										Long term	
				Debt sustainability analysis (DSA)								
					Deterministic scenarios							
Overall (S0)	Overall (S1+DSA)	S1	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	Overall (S2+DSA)
LOW	LOW	LOW	LOW	Overall	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
				Debt level (2032), % GDP	36	21	38	38	36			
				Debt peak year	2032	2025	2032	2032	2032			
				Fiscal consolidation space	94%	72%	95%	94%	94%			
				Probability of debt ratio exceeding in 2026 its 2021 level						100%		
				Difference between 90th and 10th percentiles (pps. GDP)						10		

(1) Debt level in 2032: green: below 60% of GDP, yellow: between 60% and 90%, red: above 90%. (2) The debt peak year indicates whether debt is projected to increase overall over the next decade. Green: debt peaks early; yellow: peak towards the middle of the projection period; red: late peak. (3) Fiscal consolidation space measures the share of past fiscal positions in the country that were more stringent than the one assumed in the baseline. Green: high value, i.e. the assumed fiscal position is plausible by historical standards and leaves room for corrective measures if needed; yellow: intermediate; red: low. (4) Probability of the debt ratio exceeding in 2026 its 2021 level: green: low probability, yellow: intermediate, red: high (also reflecting the initial debt level). (5) The difference between the 90th and 10th percentiles measures uncertainty, based on the debt distribution under 2000 different shocks. Green, yellow and red cells indicate increasing uncertainty.

Source: European Commission (for further details on the Commission's multi-dimensional approach, see the 2021 Fiscal Sustainability Report).