Council of the
European Union

Brussels, 25 May 2023
(OR. en)

9791/23
ADD 1

ECOFIN 496
UEM 131
SOC 370
EMPL 248
COMPET 506
ENV 553
EDUC 197
RECH 221
ENER 276
JAI 695
GENDER 84
ANTIDISCRIM 82
JEUN 117
SAN 291

COVER NOTE

From:	Secretary-General of the European Commission, signed by Ms Martine DEPREZ, Director
date of receipt:	24 May 2023
To:	Ms Thérèse BLANCHET, Secretary-General of the Council of the European Union
No. Cion doc.:	SWD(2023) 626 final
Subject:	COMMISSION STAFF WORKING DOCUMENT 2023 Country Report - Finland Accompanying the document Recommendation for a COUNCIL RECOMMENDATION on the 2023 National Reform Programme of Finland and delivering a Council opinion on the 2023 Stability Programme of Finland

Delegations will find attached document SWD(2023) 626 final.

Encl.: SWD(2023) 626 final

EUROPEAN
COMMISSION

Brussels, 24.5.2023
SWD(2023) 626 final

COMMISSION STAFF WORKING DOCUMENT

2023 Country Report - Finland

Accompanying the document

Recommendation for a COUNCIL RECOMMENDATION

on the 2023 National Reform Programme of Finland and delivering a Council opinion on the 2023 Stability Programme of Finland

{COM(2023) 626 final}

European Commission

Finland

2023 Country Report

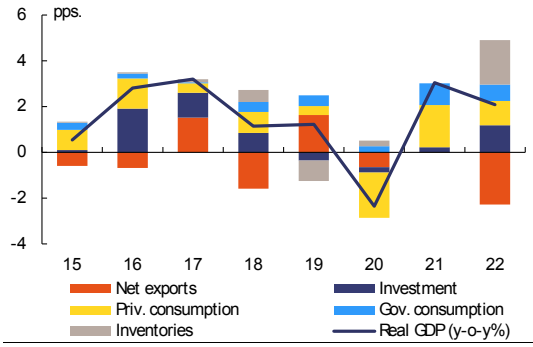
ECONOMIC AND EMPLOYMENT SNAPSHOT

The Finnish economy slows down before an expected pick-up in the second half of 2023

Following a swift recovery after the COVID-19 pandemic, the Finnish economy entered a technical recession in the second half of 2022. Against the background of Russia's war of aggression against Ukraine, real GDP growth for the last two quarters of the year was negative, which qualifies as a 'technical recession'. However, real annual GDP grew by 2.1% in 2022 (see Annex 20). In both 2021 and 2022, growth was supported by domestic demand. Last year, a build-up of inventories also noticeably contributed to growth (see Graph 1.1). The start of 2023 has been marked by rather negative economic sentiment in industry, retail trade and construction. Consumer confidence has also been low. Inflationary pressures, higher interest rates and tighter financing conditions are set to weigh on economic performance in the near term. However, the external environment is projected to improve, and economic activity is expected to pick up in the second half of 2023.

Exports have remained relatively resilient after the start of Russia's war of aggression against Ukraine. In 2022, the Finnish exports of goods to Russia accounted for 2.6% compared to 5.4% in 2021. According to the Finland Chamber of Commerce ([1]), in November 2022, only 4% of export companies had business in Russia, compared to 24% in May. A few studies ([2]) ([3]) found that larger Finnish companies had not been seriously affected by the suspension of their trade relations with Russia. Overall, considerable nominal growth of exports to other EU countries and the US implies that a share of exporting businesses successfully entered or expanded their activities in other markets. At the same time, at the end of 2022, imports from Russia were approximately 80% lower than a year before and mostly comprised nickel.

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



Source: European Commission

Inflation spiked in 2022, reaching its peak in the fourth quarter. Annual Harmonised Index of Consumer Prices (HICP) inflation stood at a record 7.2% compared to 2.1% in 2021. Significant jumps in gas and electricity prices put annual energy inflation above 30% and

([1]) Chamber of Commerce's export director survey - Suomikauppakamari

([2]) https://datapilotti.fi/datahuone-sota-ukrainassa-vaikuttanut-venajan-kauppaa-kayneisiin-suomalaisyrityksiin-vain-vahan/

([3]) War in Ukraine: Impact on Finnish companies trading with Russia – Follow-up report – datahuone.com (datapilotti.fi)

were the main driver behind the overall increase in the price level. However, in 2022, inflation remained below that of the euro area level due to the country's limited dependency on gas and the coordinated wage bargaining system. As wage increases agreed for 2023 remain below the forecasted HICP inflation, in particular core inflation, real incomes are set to decline, weighing on consumer spending together with the higher interest rates.

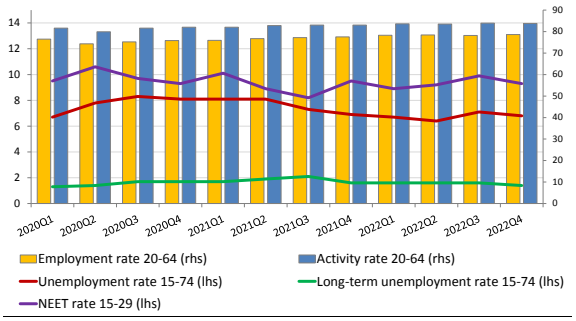
Increased public spending and weaker growth put pressure on public finances. After falling to 0.9% of GDP in 2022, due to strong revenue performance, nominal GDP growth and the gradual withdrawal of COVID-19 measures, the general government deficit is forecast to increase to 2.6% of GDP in 2023 and to remain at that level in 2024. These projections take into account the additional defence spending announced by the Finnish government against the backdrop of Russia's war of aggression against Ukraine, and the cost of providing protection to people fleeing Ukraine as well as measures to lessen the effects of high energy prices. The debt-to-GDP ratio is set to rise from 73.0% in 2022 to 73.9% in 2023 and 76.2% in 2024 (see Annex 20).

The labour market performs well, but structural challenges remain

The Finnish labour market performed strongly in 2022. The unemployment rate fell to 6.8 % in 2022 compared to 7.6% in 2020 and 2021. This is a historically low rate given the high rate of joblessness following the 2007-2008 financial crisis: only in 2019 was unemployment somewhat lower, before the COVID-19 crisis. At the same time, the overall number of available jobs remained high: although the number of vacancies declined in the second half of 2022, this points to significant skills mismatches and labour shortages in some sectors (see Section 'Further priorities ahead' and Annex 14). The employment rate stood at 78.6% in the last quarter of 2022 (see Graph 1.2).

Finland continues to perform well across most dimensions of the Social Scoreboard accompanying the European Pillar of Social Rights. In 2022, adult participation in learning over the past 4 weeks was high at 25.2%, while, according to the latest available data for 2021, 79% of the population aged 16-74 had basic or above basic digital skills, one of the highest rates in the EU (see also Annex 10). The country also continues to perform strongly on most social indicators (see Annex 14). However, self-reported unmet needs for medical care remain well above the EU average (4.4% vs 2% in 2021).

Graph 1.2: **Employment, activity and unemployment**



Source: Eurostat; Labour Force Survey

Despite favourable social developments, some groups in Finland are still in a weak labour market position. The disability employment gap ([4]) decreased to 19.0 percentage points (pps) in 2022 and youth unemployment fell by 2.9 pps to pre-pandemic levels (14.2% in 2022). However, the share of non-EU-born people in Finland who are unemployed stood at 13.7% in

([4]) The difference of the employment rate of persons without disabilities and the employment rate of persons with disabilities.

2022, significantly above that of native-born (6.4%). Although the gender employment gap remained among the lowest in the EU, at 1.2 pps in 2022, the gender pay gap (16.5% in 2021) still lies above Finland's Nordic peers and the EU average. Recent research suggests that child home care benefits may negatively affect the labour market participation of women and undermine their career and salary prospects ([5]). The planned social security reform is aimed at addressing the issue and, in the interim report released in March by the Social Security Committee, several proposals support the reconciliation of childcare with gainful employment. Better integrating underrepresented groups into the labour market will be key for Finland in reaching its national employment rate target by 2030 (see Annex 14).

Labour and skills shortages pose challenges to Finland's potential for competitiveness and growth. The highest share of reported shortages is in the services, construction, ICT and technology, education and health and social care sectors. At the same time, tertiary educational attainment for people aged 25-34 stood at 40.7% in 2022 and is below the EU average (42.0%). Labour shortages in Finland will be further aggravated by population ageing, relatively low regional labour mobility and a lower level of migration compared to its Nordic peers.

Finland struggles with long-standing productivity issues

The current business model and various structural challenges hinder productivity growth. Finland is behind its Nordic peers and the Baltic countries in terms of trade openness, i.e. the value of its exports (and imports) compared to the GDP, while in general tradable sectors tend to be more productive (see Annex 12). Finland's trade openness has deteriorated over the last two decades pointing to unfavourable structural changes in the economy. These are mostly related to the ICT sector contracting and, consequently, a larger share of services where productivity tends to be lower. Other important industries – forestry, metal and machinery – also seem to have been losing export markets, in terms of volumes and relative prices. Furthermore, some studies point out that the quality of exports ([6]) has actually decreased over time ([7]) ([8]). Moreover, SMEs are less involved in international trade compared to the OECD average, which is also reflected in large productivity differences between companies within the same sectors.

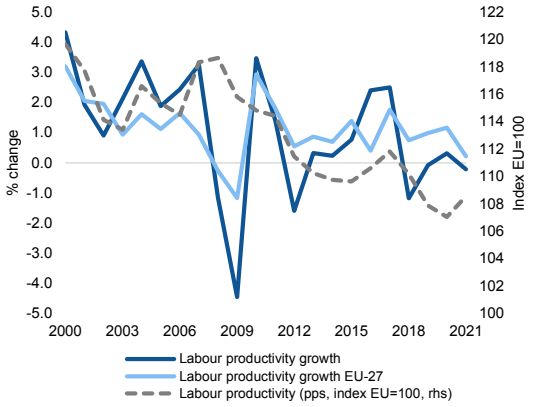
([5]) Paying Moms to Stay Home: Short and Long Run Effects on Parents and Children (doria.fi) ; New study: Effects of child home care allowance are negative - VATT Institute for Economic Research.

([6]) Quality could be explained by parameters such as product or service sophistication and required high tech and high skill intensity. The share of final goods versus raw or intermediate goods is also an indicator of export quality.

([7]) Oinonen, Sami; Virén, Matti E. E. Why is Finland lagging behind in export growth? Bank of Finland Economics Review, No. 5/2022.

([8]) Koski, H. and V. Kaitila (2021). Miksi vientimme Kiinaan muuttui raaka-ainevetoiseksi? (etla.fi)

Graph 1.3: **Labour productivity**



(1) Productivity level: GDP per hour worked in pps (index, EU-27=100); growth rates: annual growth of real GDP per hour worked.
Source: European Commission (Ameco)

Labour productivity has been stagnating. Since 2008, the growth of labour productivity was well below the EU (weighted) average. Consequently, labour productivity dropped substantially compared to the EU, and now stands only slightly above the EU aggregate (see Graph 1.3). This is tightly linked to the negative structural changes in the Finnish economy, i.e. more people are now employed in sectors which generate lower value added (mostly services). Labour shortages in more productive sectors, e.g. ICT, and the lack of tertiary graduates and skill shortages aggravate the problem (see Section 'Further priorities ahead'). Furthermore, Finland has a rather compressed wage distribution, which means that differences in wages between low-skilled and high-skilled employees are relatively small. This implies less efficient labour allocation and adds pressure on productivity ([9]). On the other hand, the coordinated two-tier wage bargaining system (and previously, the Competitiveness Pact) helped to keep wage growth in line with productivity developments and sustain competitiveness. The 2022 agreement on public wages in the municipal sector could somewhat weaken the relatively high degree of wage coordination.

There have been no major improvements in total factor productivity ([10]). This is partially explained by lower spending on R&D compared to the period before the 2007-2008 great financial crisis (see Annex 11). Finland aims to increase R&D spending to 4% of GDP (compared to actual spending of 3.0% of GDP in 2021 and 3.7% in 2009). Achieving this requires a clear commitment from the government concerning public investment in R&D, better coordinating support between the agencies that administer grants for R&D, and increasing the R&D labour force ([11]). At the same time, while Finland is an innovation leader in the EU based on the data on patent registration, businesses seem to be struggling with commercialisation of their new products and services ([12]).

It is still important for Finland to focus on investments that support productivity growth, also in light of a rapidly ageing society. However, in Finland, gross fixed capital formation is tilted towards construction rather than investment in equipment and intangibles (e.g. intellectual property), which are important for productivity growth. Achieving carbon neutrality also requires additional investments, which might be better labelled as those driving change rather than increasing efficiency. In addition, compared to its peers, the country is less successful in attracting foreign direct

([9]) IMF (2023), Finland: 2022 Article IV Consultation.

([10]) A measure of productivity accounting for effects in total output not caused by traditionally measured inputs of labour and capital.

([11]) OECD (2022), OECD Economic Surveys: Finland 2022, OECD Publishing, Paris, https://doi.org/10.1787/516252a7-en

([12]) Finnish Productivity Board (2022). Wages and Competitiveness Depend on Productivity. How Can We Foster Productivity Growth?

investment, which usually supports export and productivity growth. This could be partially explained by the high level of taxation overall and Finland's geographical position. Addressing the above-mentioned challenges requires several reforms (see Section 'Further priorities ahead'). Otherwise, the lower potential growth and resulting moderate public revenues might make it challenging for a country with an ageing society to ensure the proper functioning of the welfare state.

Ageing remains a challenge for the economy and public finances

The projected rapid ageing is a major societal and economic challenge. Finland's fertility rate has declined sharply and is in the lower half of the EU ranking. Recent studies ([13]) point to an increased lifetime childlessness, especially among those with medium and low levels of education. Net migration is also relatively low, though the authorities are seeking to at least double the current volume of work-based immigration by 2030 ([14]). However, the slow processing of applications for work permits by the immigration services have been a recurrent issue, and it has been reflected upon in the Finnish recovery and resilience plan (RRP). At the same time, the OECD pointed to broader challenges for the migrant integration system ([15]).

The share of the workforce in the Finnish population is projected to shrink considerably. According to Statistics Finland, the working age population reached its peak in 2009. In the 2010s, the working age population shrank by 136 000 people (3.8%) and by 2040 it is expected to have shrunk by another 76 000 people. Additionally, there are significant regional differences in demographic dynamics as population growth is concentrated in the capital region while some regions are experiencing depopulation (see Annex 17). According to the 2021 Ageing Report of the European Commission, the old-age dependency ratio (the ratio of people over 65 to people of working age, i.e. 20-64 years old) in Finland is among the highest in the EU, at 38.9 people aged 65 or older per 100 people aged 20 to 64. This ratio is projected to be higher than in its Nordic peers over the next decades. Between 2019 and 2030, the old-age dependency ratio is projected to reach 46.8. The availability of sufficiently skilled labour force will therefore be a key issue for Finland. This will place particular demands on developments in the labour market, on the education system and on work-based immigration.

The cost of ageing weighs on long-term fiscal sustainability. The ageing of the population puts a structural burden on public finances, largely related to the costs of health and long-term care and pensions ([16]). According to the 2021 Ageing Report, the total cost of ageing is projected to rise from 26.5% of GDP in 2019 to close to 28% of GDP in 2030. Beyond the need for the welfare system to care for the growing number of older people, the ageing society raises other economic challenges, such as the employment rate

([13]) The highly educated often have two children — childlessness and high numbers of children more commonly seen among low- and medium-educated persons - Flux Consortium

([14]) Roadmap for Education-based and Work-based Immigration 2035 - Valto (valtioneuvosto.fi)

([15]) https://www.oecd.org/els/mig/Finding-the-Way-Finland.pdf

([16]) The Ministry of Finance has estimated that without a change in economic policy the cost of ageing will lead to the share of government debt to GDP exceeding 100% in 15 years: Uudistuva ja kestävä Suomi : Valtiovarainministeriön virkamiespuheenvuoro 2022 - Valto (valtioneuvosto.fi).

for older people. Despite a recent positive trend, Finland's employment rate for people close to retirement is lower than in its Nordic peers. For people aged 60-64, the employment rate of 56% is almost 5 pps lower than in Denmark and over 10 pps lower than in Sweden. The lower employment rate for older people may be partly due to the fact that Finland has had several pathways to early retirement in the past, i.e. unemployment benefits, unemployment pension, disability pension and early retirement pension. Finland recently reformed its pension system (2017) and phased out early retirement pathways, leaving in place only disability pension, partial old-age pension and years-of-service pension. Furthermore, the government has decided on some measures to increase the employment rate of people aged over 55.

The financial sector is sound, but household indebtedness is high and interest rates are rising

The banking sector remains sound and resilient, but there are vulnerabilities. Domestic lenders are sufficiently capitalised and provide a solid foundation for financing the Finnish economy. The non-performing loans ratio is low and on a decreasing trend. Despite the overall positive performance of Finland's banking sector, there are some structural vulnerabilities, including the above-average reliance on wholesale funding and the high level of household debt. Risks to financial stability remain limited, despite significant cross-border exposures, especially with other Nordic and Baltic neighbours. There are no direct exposures to Russia, Ukraine or Belarus. The banking sector is heavily exposed to real estate, and the borrowers' debt-to-income ratio is one of the highest in the EU. Risks present in the housing market may affect the banking sector, as both households and professional investors finance a significant share of their real estate transactions with debt (see also Annex 18).

Housing market developments are of limited concern overall. Finnish households are heavily in debt and the household debt-to-GDP ratio remains above both prudential and fundamentals-based benchmarks, with about three quarters of their debt being mortgage debt. While the household indebtedness ratio remained broadly stable in 2022, and associated risks appear to be limited, almost all housing loans are at variable interest rates, which exposes households to the rising interest rates. The rising mortgage interest rates have dampened the Finnish property market, both residential and commercial. Year-on-year growth in house prices slowed from 4.5% at the end of 2021 to 1% in mid-2022. However, a temporary drop in mortgage lending will not solve the issue of household debt. Although household debt risks are lessened by the overall resilience of household balance sheets, they should not be underestimated in an environment with rising interest rates. The Finnish authorities have taken steps to address these vulnerabilities, including through legislation and macroprudential measures.

Finland is making progress with its ambitious green agenda

Finland has adopted the most ambitious climate target in the EU. The new Climate Act, which entered into force in 2022, enshrines Finland's carbon-neutrality target for 2035 into law. Finland's planned phase-out of coal use in energy by 2029 is on track. However, achieving Finland's climate

targets will require continued policy efforts and major public and private sector investment. Due in part to cold weather and long distances, Finland's economy is one of the most energy-intensive in the EU (see Annexes 5 and 9). The main emitting sectors of energy, industry, transport and buildings will all need to help reduce Finland's greenhouse gas emissions. Major bottlenecks for renewable energy investments include lengthy permit and spatial planning procedures, though a time-limited fast-track procedure for environmental and water permits entered into force for the period 2023-2026.

Finland's share of renewables in its energy mix is the second highest in the EU. In 2021, the share of renewables in Finland's energy mix was 46%, while the share of renewables in the electricity mix was even higher at 54%. Renewable energy investment demand is booming as also evidenced by the successful calls for applications for new energy technologies and energy infrastructure launched by the Finnish authorities as part of the RRP. Additional renewables capacity is expected to be added in the coming years, mainly in (offshore) wind power and in other renewable energy sources including solar. Diversification away from Russian energy imports has progressed well: before February 2022, approximately 60% of Finland's energy imports came from Russia, while by March 2023, the Treasury reported that almost all energy flows from Russia to Finland had stopped ([17]). Moreover, natural gas only accounts for 6% of Finland's energy mix, which has limited the country's dependency on Russia from the outset. In terms of energy infrastructure, a challenge is presented by the fact that a major share of renewable energy is generated in different regions from where most consumption takes place.

Finland's building stock is relatively energy-efficient compared to the EU average, but fossil fuels are still prominently used for heating. Finland is planning to phase out fossil-oil heating by 2030, but the publication of the corresponding action plan has been delayed until the autumn of 2023. The public budget available for replacing fossil-oil domestic heating was increased by EUR 40 million in 2022 ([18]), though shortages of skilled labour and supply chain issues may cause delays in replacing fossil-oil heating systems.

Overall, Finland performs very well on the United Nations' Sustainable Development Goals (SDGs). It performs well on all four dimensions of sustainability (Annex 1), including environmental sustainability, fairness, productivity and macroeconomic stability. Finland performs above the EU average on 12 out of the 16 SDGs for which sufficient data exists. However, it is moving away from the targets associated with SDG 2 (Zero hunger), SDG 11 (Sustainable cities and communities) and SDG 15 (Life on land). Finland is making progress on three SDGs where it performs below the EU average: SDG 7 (Affordable and clean energy), SDG 12 (Responsible consumption and production) and SDG 14 (Life below water).

([17]) Republic of Finland, State Treasury: '2022 Debt Management Annual Review'; https://www.treasuryfinland.fi/annualreview2022/the-finnish-ruxit-decoupling-from-russian-energy-speeds-up-energy-transition/

([18]) https://ym.fi/-/fossiilisen-lammityksen-vaihtajia-tuetaan-40-lisamiljoonalla-ely-keskuksen-avustus-laajenee-syksylla-maakaasulammityksen-vaihtajiin

Box 1:

Energy policy response in Finland

Finland has adopted several support measures to cushion the impact of energy-price inflation on households and businesses. The Commission 2023 Spring Forecast projects the country's gross budgetary costs to amount to 0.3% of GDP in 2023 ([19]). Most measures do not fully preserve the price signal and are not targeted to the most vulnerable.

Some of the measures reduced government revenue, such as a fixed-term tax credit for electricity and a temporary lowering of the VAT on electricity to 10% (between December 2022 and April 2023), while others increased expenditure, such as temporary financial support for electricity for households and supplementary child benefit. It has been announced that some of the measures are to expire in 2023, while others by the end of 2024.

Finland applies the EU solidarity contribution in line with Council Regulation (EU) 2022/1854 ([20]).

On security of energy supply, Finland has introduced an energy saving campaign from autumn 2022 in addition to targeted energy efficiency programmes, providing more funding for energy renovations and electric vehicle recharging stations. A floating liquefied natural gas terminal was procured and has been made available on a long-term basis since winter 2022.

([19]) For 2022, gross budgetary costs of measures amounted to 0.1% of GDP. Some of the measures outlined in this box were already in place in 2022.

([20]) I.e. the application of a mandatory temporary solidarity contribution at a rate of at least 33% to the extraordinary and unexpected profits of businesses active in the extraction of crude petroleum, natural gas, coal, and refinery sectors. It is calculated on taxable profits, as determined under national tax rules in the fiscal year starting in 2022 and/or in 2023, which are above a 20% increase of the average yearly taxable profits in 2018-2021.

THE RECOVERY AND RESILIENCE PLAN IS UNDERWAY

Finland's recovery and resilience plan (RRP) aims to address the key challenges related to the green and digital transition, labour market, education and skills, R&I, competitiveness and healthcare. It consists of 18 reforms and 37 investments that are supported by EUR 1.82 billion in grants representing 0.7% of GDP (see Annex 3 for more details).

The implementation of Finland's recovery and resilience plan is underway. While the implementation in general is on track, the Operational Arrangements between the Commission and Finland have not been signed yet and no payment requests have been submitted under the RRP, which points to the need for efforts to catch up with the agreed payment request schedule. Therefore, a formal assessment of the achievement of the milestones and targets for 2021 and 2022 has yet to be completed. Finland submitted an amendment of its plan in January 2023 which was approved by the Council on 14 March 2023. This amendment was done in the context of the update of the maximum financial contribution available for Member States under the Recovery and Resilience Facility. The allocation for Finland was reduced by EUR 263 million in June 2022. As a result, the funding was reduced proportionally across the four pillars of the plan. To cater for the funding under REPowerEU ([21]), another amendment to the RRP is planned in 2023. The following, more detailed review of measures being implemented under the RRP in no way implies formal Commission approval or rejection of any payment requests.

On the path to carbon neutrality

Finland's RRP takes the country's ambitious 2035 carbon-neutrality target as a starting point. Half of the plan's financial allocation is dedicated to the green transition.

The plan includes reforms and investment measures to reduce carbon emissions in the four major emitting sectors – energy, industry, transport and buildings. Measures include boosting the generation of renewable energy, decarbonising industry, reducing emissions from buildings and promoting low- and zero-emission forms of transport. Other measures target emissions reduction, skills development and the development of new technologies in sectors relevant to the green transition.

The new Climate Act entered into force in 2022, anchoring the 2035 carbon-neutrality target into law. The investment programmes included in the first two components of the RRP to boost renewable energy technologies and related infrastructure have been launched. In addition, to expand infrastructure for low-carbon vehicles, the calls for the installation of electric vehicle chargers and hydrogen refuelling stations were launched and selection of successful applicants has taken place.

([21]) Also see Annex 4.

Increasing competitiveness through digital and green transitions, research & innovation

The plan includes substantial investments promoting digitalisation, research, development and innovation (RDI). Measures help strengthen RDI intensity, raising the share of national RDI expenditure to 4% of GDP by 2030 and increasing the ambition level of RDI activities, in line with the National Roadmap for RDI adopted in spring 2020. In 2021 and 2022, Business Finland and the Academy of Finland allocated funding to leading companies, SMEs, and local and regional research infrastructures through calls that promote green transition and investments in R&I infrastructure for sustainable growth and digitalisation. The selected projects will be completed by the end of 2025.

Promoting the digital transition is a cross-cutting theme across the plan. Specific measures focus on digital infrastructure, accelerating digital and data economy and digital security (also see Annex 13).

Regarding the digital infrastructure, the Digirail project aims to digitalise rail transport. The test laboratory was set up in 2022. Furthermore, a new broadband aid programme was launched in 2022 when the new Act on Broadband Construction Aid entered into force and first applications were approved.

Several major ongoing projects are accelerating the digital economy. Finland's real-time economy (RTE) programme aims to promote the digitalisation of companies and to improve their day-to-day management and enable the transfer of electronic documents (financial statements, procurement messages, e-invoices and digital receipts). The programme has already increased the use of e-invoicing in companies and municipalities with an extensive e-invoicing campaign. Also, further development of the residential and commercial property information system started in 2021. This information will also help develop the positive credit register, for which the related legal act entered into force in August 2022.

Addressing challenges related to labour market, skills development and healthcare

The RRP includes measures to address challenges related to labour shortages in key sectors and relatively high unemployment, therefore helping implement the European Pillar of Social Rights. A key measure, the Nordic Model of Employment Services, was launched in May 2022. It requires people who are unemployed do more active job searches on the one hand, and the employment services to have more frequent and personal contact with jobseekers on the other. In 2022, the law on setting up the intermediate labour market operator came into force. This public company is tasked with helping people with partial work ability find employment. Furthermore, the phasing out of the 'unemployment tunnel' (the right to additional days of unemployment security for those close to the retirement age) between 2023 and 2025 will help increase the available workforce. The law came into force in the beginning of 2023 and is expected to yield the employment of 8 300 people by the end of 2029. To attract foreign talent and address skills and labour shortages in certain sectors, the plan supports streamlining permit procedures for work and education visas. A fast track

was launched in June 2022, offering a pledge to provide resident permits for specialists, growth entrepreneurs and their families in 14 days. The plan also supports increasing the staff in Ohjaamo One Stop centres for young people to help increase their offer of education, health and social services.

In the social and healthcare area, the plan aims to improve resilience and equal access to services, while making the system more cost-effective. The plan helps reform healthcare and social services by reorganising their provision at regional level through the establishment of 22 ([22]) well-being services counties. The new administrative structure was completed in 2022. In January 2023, the provision of health and social services was transferred from the municipalities to these counties. The related investments aim to gradually reduce the delays further accumulated during the pandemic and help implement the '7-day care guarantee' which mandates access to non-urgent care no later than 7 days after the initial assessment of need for care. The law on the 7-day care guarantee was passed in January 2023 and will come into force gradually, with full implementation envisaged for November 2024. Finland aims to help achieve this target by means of better availability and use of digital services. The plan also includes measures to enhance the knowledge base of health and social services, in order to improve the cost effectiveness of the system, and to address the risks to the sustainability of the social and healthcare system posed by the ageing population.

The plan also supports expanding the education and skills of the labour force. The related measures contribute to the ongoing reform of continuous learning, supporting, in particular, the green and digital transitions, under-represented groups with low levels of skill, as well as matching the labour market's needs. At least 7 800 people will participate in training programmes to respond to changes in working life. Support is envisaged for developing green and digital skills projects and training courses for career counsellors. At least 600 study places will be created at post-secondary level, targeted at sectors experiencing labour shortages, such as health and long-term care, education, technology and ICT.

([22]) 21 well-being services counties and the City of Helsinki, responsible for organising health, social and rescue services within its own area.

Box 2:

List of key deliverables under the RRP in 2023-2024

- Award of grants for energy, energy infrastructure and industry decarbonisation projects
- Publication of the action plan for phasing out fossil oil heating
- At least 6 400 more dwellings have gained access to high-speed broadband (100/100 Mbit/s)
- Exchange of digital business information in structured form is fully operational (as part of the development of real-time economy)
- Digital platform for civilian cybersecurity training is publicly available
- Award of grants for selected projects promoting research, development and innovation
- Creation of at least 600 study places at post-secondary level, targeted at sectors experiencing labour shortages
- Participation of at least 7 800 people in training programmes to respond to changes in working life
- Increasing the number of job search interviews from 1 000 000 to 2 000 000 per year
- Operationalisation of the intermediate labour market operator
- Expansion of programmes enhancing mental health and ability to work to new regions, workplaces and occupational healthcare units

FURTHER PRIORITIES AHEAD

Beyond the challenges addressed by the RRP, Finland faces further challenges not sufficiently covered in the plan. Some measures were introduced recently (see Annex 2 on progress on CSRs), but more action is needed, particularly on strengthening public finances, access to healthcare and long-term care services and the shortage of skills and workers. Moreover, the social security system needs to be redesigned to address some of Finland's key social and economic challenges. In addition, the government's ambitious green targets call for more investment in several sectors, also taking into account the relatively small size of the financial allocation for Finland under the RRF (0.7% of GDP). Addressing these challenges will also help Finland make further progress in achieving the SDGs related to good health and well-being, affordable and clean energy, climate action, and decent work and economic growth.

Finland's public finances need strengthening

The weaker outlook for public finances in Finland, coupled with slower economic growth, points to the need to contain spending and increase revenues (see Annex 19). The current structure of Finland's general government finances was set when the country had more favourable demographic and economic conditions. However, in the future, the public sector's financing base might not be sufficient to ensure the appropriate funding of public services, especially in the medium to long term (see Annex 21). The outlook review by the Ministry of Finance, published in December 2022, stated that significant spending and revenue adjustments are needed – at least EUR 9 billion over the next two four-year parliamentary terms, to put general government finances back on a sustainable path. In this context, in March 2023 ([23]), the Ministry of Finance published an expenditure and structural review, as well as a tax survey, proposing a broad set of measures for the government to consider after the April 2023 parliamentary elections. Conducting regular spending and structural reviews, as well as tax expenditure reviews, could provide useful policy options for consolidating public finances ([24]). These could, for example, help ensure cost efficiency when implementing the health and social services reform and increase public revenues by phasing out reduced VAT rates and revising excise duties and energy and transport taxation.

Re-engineering of the social security system needs to continue

Finland has an effective and inclusive social welfare system with a high level of social protection, but it is complex

([23]) Expenditure and structural survey (in Finnish), Tax survey (in Finnish), Outlook review by Ministry of Finance officials 2022 "An innovative and sustainable Finland" (in Finnish).

([24]) Designing and implementing a regular spending review process is partly supported through a project funded by the EU via the Technical Support Instrument, managed by the European Commission Directorate General for Structural Reform Support – DG REFORM.

and includes some incentive traps. After a slight rise in 2020, the share of people at risk of poverty or social exclusion (AROPE) decreased to a record low level of 14.2% in 2021. Spending on social protection is among the highest in the EU at 24.6% of GDP (2021), which makes Finland less vulnerable overall regarding social inequalities (see Annex 5). The impact of social benefits in reducing poverty reached 57.6% in 2021. However, the system is complex for lawmakers, implementing organisations and beneficiaries alike. There is a large number of benefits, which are based on differing criteria, granted through differing procedures and disbursed at different times. Furthermore, the delivery of services is fragmented to various organisations and authorities. Allowing more flexibility to combine different benefits, services and work income would increase incentives for beneficiaries to take up work. Finland has taken steps to address these issues, including by implementing the income registry in 2019 to reduce bureaucratic traps. More employment measures have been introduced to provide incentives for the inactive to take up work including measures for people aged over 55, which have been effective since January 2023.

The RRP recalls the commitment of the authorities to pursue the social security reform. A parliamentary committee with a 7-year mandate (2020-2027) was tasked with preparing the plan for a long-term structural and operational reform of the social security system as a whole. The Social Security Committee representatives are from all parties in Parliament. In addition, the committee has permanent external experts as well as representatives from the labour market and business interest groups. In its first years, it produced several studies to identify the main problems of the current social security system. An interim report released in March 2023, just before the end of the parliamentary term, called for harmonising and consolidating some existing benefits into one basic social security benefit as the next step in the reform process. The report also proposes several further studies to explore the issues in more depth. The planned reform of the current system is expected to reduce complexity, increase efficiency and allow for more flexibility to increase the incentives for beneficiaries to take up work.

Labour and skills shortages are becoming increasingly acute

Labour and skills shortages are among the key economic challenges Finland needs to address. While Finland's unemployment rate has recently remained slightly above the EU average, the number of open vacancies has increased rapidly, reflecting skills mismatches and labour shortages, as well as an increase in part-time employment contracts, in many sectors, including scientific and technical activities, ICT, healthcare and social services. According to the Finnish Federation of Technology Industries (Technology Finland), at least 130 000 new ICT specialists are needed, due to the increasing demand resulting from innovation and digitalisation of companies. In the second half of 2022, 44% of employers in the services sector and 39% of employers in construction reported that labour shortages were a factor limiting their activities ([25]). Addressing skills shortages with reskilling and upskilling policies will help Finland reach its national 2030 target on adult participation in learning.

Easing labour and skills shortages will require efforts to be stepped up.

([25]) European Business and Consumer Survey (EU-BCS).

Measures to improve the attractiveness of professions experiencing severe shortages would be warranted by means of i) large-scale investment in upskilling and reskilling as part of the green and digital transitions, and ii) attracting foreign workers (also taking into account the lower employment rate of foreign-born women when compared to other groups) through the ongoing 'Talent Boost' programme (which targets skilled people that want to work in Finland, and also focuses on attracting international students). In parallel, the planned reform of the social security system should aim to improve the incentives to take up work. This should also help Finland reach its national target on poverty reduction by 2030 (see Annex 14). The labour market and the economy at large would further benefit from measures to get under-represented groups into work or training. The large difference – 12 percentage points in 2022 – between the employment rates of foreign-born and native workers points to challenges in labour market integration. Therefore, it is relevant to consider measures to integrate migrants into the labour market, including displaced people fleeing Ukraine, similar to measures in the 'Talent Boost' programme.

The social and healthcare sector faces critical staff shortages

The social and health care sector faces significant challenges, partially addressed under the RRP. While Finland performs well on most social indicators, self-reported unmet medical needs remain high. In 2022, 6,5% of the Finnish population reported unmet medical care needs. This is higher than in 2021 (4.4%) when it was well above the EU average of 2%. Waiting times for primary and specialised care have been long, further aggravated by the COVID-19 pandemic, and shortages of social and healthcare staff. In terms of healthcare personnel, Finland has fewer professionally active doctors than the EU average, and while it used to have a higher number of nurses than the EU average, staff shortages in nursing have grown dramatically in recent years (see also Annex 16). In 2020, the Ministry of Finance estimated that a total of 200 000 people would need to be recruited in the social and healthcare sector by 2035, out of which at least 10% would need to be foreign-born workers.

Staff shortages remains a critical issue. According to a recent national Occupational Barometer ([26]), 25% of the occupations assessed suffer from labour shortages. Three quarters of those in the top 15 list are from the social and healthcare sector. Since the beginning of the COVID-19 pandemic, employment in the health sector has decreased by 6% in Finland, while it increased in the EU on average by 7%. Especially the shortage of nurses has rapidly increased. There were on average 8 051 open vacancies in the first half of 2022 for nurses and 15 495 for practical nurses ([27]). Difficulties in attracting and retaining workers are mainly due to poor pay and working conditions, although an agreement was negotiated between the social partners in October 2022 to increase wages ([28]).

Amid already severe staff shortages in the health sector, some health and social services reforms require additional recruitment. One of these reforms is the requirement for a gradual increase of care personnel in the long-term care units from

([26]) TOP 15 (ammattibarometri.fi)

([27]) Ammattibarometri

([28]) Tällainen on kolmevuotinen SOTE-sopimus ja palkkaohjelma (jhl.fi) / Tällainen on kolmevuotinen SOTE-sopimus ja palkkaohjelma (jhl.fi)

0.5 per patient in 2020 to 0.7 in 2023. The target was postponed from April to December 2023 due to shortage of workforce. In November 2022 the estimated additional recruitment need for nursing personnel to fulfil the increase to 0.7 in the carer/patient ratio in the long-term care units was 2900 full-time persons ([29]).

Finland is implementing a comprehensive social and health services reform, partly supported by the RRP. The reform is expected to improve the availability and quality of basic public social and healthcare services. In parallel, a law was passed in January 2023, tightening the care guarantee to improve access to non-urgent primary care by reducing the waiting time to 7 days. In October 2022, 42% of the patients in the worst performing region in northern Finland had access to care within 7 days. In all regions, some patients waited over 3 months ([30]). To solve the imbalance between the tightening legislative requirements in the sector and the scarcity of workers to implement these requirements, more measures are warranted.

In February 2023, the Government launched a roadmap to address the availability of social and healthcare sector personnel ([31]). The roadmap envisages measures to i) increase the intake of students in education programmes for the social and healthcare sector, and ii) reform the division of responsibilities in the field, and the organisation of work at workplaces. The aim is to allow social and healthcare professionals to focus their work on duties corresponding to their education. Consequently, the roadmap recommends an increase in the number of assisting and support service personnel. The roadmap also aims to i) boost international recruitment and work-based immigration, ii) improve work ability ([32]) and well-being at work, and iii) exploit technological solutions in innovative ways.

Tackling negative trends in education is urgent

Since 2006, a negative trend in average results of the OECD's international assessment survey (PISA) has been observed (see Annex 15)**.** Despite the overall performance of students in basic skills remaining high, Finland's indicators, particularly in reading, represent the sharpest decrease among PISA-participating countries. The gap in reading performance has widened since PISA 2009 and is closely related to a student's socio-economic status and whether or not they come from a migrant background, which calls for more support to be given to learning in the education system.

The teaching profession in Finland is becoming less attractive. The numbers applying to become class teachers nearly halved between 2013 and 2019. This situation is particularly concerning for early childhood education and care (ECEC) where staff shortages pose a serious challenge to the expected increase in ECEC participation. This is mainly due to low salary levels, poor working conditions and restrictive admission into the profession. Finnish

([29]) Vanhusten ympärivuorokautisen hoidon henkilöstön määrä nousee, mutta kotihoidossa asiakaskäynnit ja rekrytoinnit kääntyneet laskuun - Tiedote - THL

([30]) Hoitoonpääsy perusterveydenhuollossa - THL

([31]) Tiekartta 2022–2027 - Sosiaali- ja terveysalan henkilöstön riittävyyden ja saatavuuden turvaaminen (valtioneuvosto.fi)

([32]) Work ability comprises the physical and mental health and abilities, skills and knowledge, values as well as motivation, management and working conditions (Työterveyslaitos)

authorities are taking steps to address some of these issues by increasing teacher salaries in ECEC and expanding tertiary education offer with 400 extra study places on early childhood education, with 10% of these places being supported by the RRP.

Low tertiary educational attainment among young people has been a long-standing issue for Finland. It is significantly lower compared with many other advanced OECD economies, including its Nordic peers. This is due to the very limited availability of study places in universities relative to demand and a restrictive admission process resulting in a high number of applications being rejected. During 2015-2020, overall, universities in Finland accepted only 30% of applicants, while universities of applied sciences accepted 33%. These are the lowest rates among the 14 OECD countries reporting admission rates. The government has been tackling this issue for many years, and recently has committed to increasing the share of higher education graduates to at least 50% of the 25-34 age group by 2030 to meet society's needs (The Vision for Higher Education and Research 2030). The student admission process was reformed in 2018, but little is known about its impact, which the Finnish authorities are currently assessing. According to the OECD ([33]), the relatively low number of higher education graduates is the major bottleneck to innovation.

Achieving higher enrolment numbers requires a clear long-term plan. It should focus on how to increase the number of study places to meet current and future skills demand and include a strong commitment to greater funding. Implementing such a long-term plan could include a revision of the current higher education funding system to prioritise financial allocations for the skills areas most in demand, while ensuring delivery of quality education and research.

Green ambitions need to be matched by investments and shortened permitting procedures

The RRP focuses on reducing greenhouse gas emissions in four key emitting sectors, but more investments are required for Finland to achieve its ambitious climate goals. This is the case for all emitting sectors, including energy, industry, buildings and transport, where large additional investment needs exist in order to achieve overall carbon neutrality targets. The procurement of a floating liquefied natural gas terminal which has been available since winter 2022, strengthened Finland's security of energy supply (see Annex 7). Beyond this, reduction in Finland's reliance on fossil fuels is essential to improve security of supply. While no longer importing Russian gas, one of the two nuclear power plants in Finland remains entirely dependent on Russian fuel, adding to the challenge of EU energy dependence on Russia.

Lengthy permitting and related procedures risk throttling renewable energy investments. While Finland's share of renewables in the energy mix is already high (see Annex 6), the planned increase in renewable energy to meet the 2035 carbon neutrality target is expected to require large investments in and effective management of network infrastructure. Streamlining permit procedures for renewable energy plants by removing process-related barriers, especially for administrative procedures, could speed up

([33]) OECD (2022), OECD Economic Surveys: Finland 2022, OECD Publishing, Paris, https://doi.org/10.1787/516252a7-en

the roll-out of investments. There are indications that the high energy prices have led to increased investment by industry in energy efficient technologies, including in the chemical industry. Creating high-value added clean tech products with renewable energy could form a strong basis for Finland's competitiveness, but the permitting system needs to support innovative technologies. Strong interconnections between Finland and neighbouring countries are needed to ensure a well-functioning electricity market in the whole region and to increase the projected contribution of renewable energy to the energy mix.

Timely implementation of the measures included in the fossil-free transport roadmap is required for Finland to achieve its objective of reducing emissions from transport by 50% by 2030 compared to 2005. Following higher-than-expected sales of electric vehicles in Finland in 2021 and 2022, the government has revised upwards its target for electric vehicles in the vehicle fleet. However, a further roll-out of electric vehicles beyond the most densely populated areas of the country requires an electric vehicle charging network to be completed across the country. Given the long distances and sparsely populated areas in some regions, the necessary investments are unlikely to happen on market terms. Grid transmission capacity and availability of land could limit the further adoption of electric vehicles, particularly the electrification of heavy-duty vehicles. Further investment needs in transport include improving the efficiency of the public transport system, which has suffered from underinvestment during the pandemic, and electrifying the rail network. At the same time, the transport network has a large and increasing maintenance deficit.

In the context of the green transition, labour shortages in key sectors have increased in recent years. These shortages are linked to a lack of relevant skills, creating bottlenecks in the transition to a net-zero economy. In 2022, labour shortages were reported in Finland for 37 occupations that required specific skills or knowledge for the green transition, including insulation workers, civil engineers, and plumbers and pipe fitters ([34]). The job vacancy rate increased across key sectors, such as construction (from 1.4% in 2015 to 2.5% in 2021) and manufacturing (from 1.2% in 2015 to 1.4% in 2021), with both sectors standing below the EU average of 3.6% and 1.9%, respectively, in 2021 ([35]). In 2022, labour shortages were reported as a factor constraining production in industry (for 24.4% of firms) and construction (for 35.5% of firms) ([36]). Upskilling and reskilling for the green transition, including for the people most affected, and promoting inclusive labour markets are essential policy levers for accelerating the transition to net-zero and ensuring its fairness (see Annex 8).

Finland continues to underperform in certain aspects of the circular economy, particularly on material use. Finland has the highest material footprint in the EU-27, at 34 tonnes per head in 2020 against an EU-27 average of 13.7 tonnes per head.

([34]) Data on shortages are based on European Labour Authority (2023), *EURES Report on labour shortages and surpluses 2022*. National authorities report through a questionnaire, based on administrative data and other sources as submitted by the EURES National Coordination Offices (definitions of shortages differ, thus data is not comparable across countries and covers a wide variety of sectors). Skills and knowledge requirements are based on the ESCO (European Skills Competences and Occupations) taxonomy on skills for the green transition (for occupations at ISCO 4-digit level of which there are 436 in total). Examples are identified based on their ESCO 'greenness' score and relevant sectors.

([35]) Eurostat (JVS_A_RATE_R2).

([36]) European Business and Consumer Survey.

Resource productivity in Finland is also the fourth lowest in the EU at 1 power purchasing standard per kilogram against an EU-27 average of 2.3 in 2021. On the circular material use rate the country is the third lowest performer (2% of all materials). Finland made considerable progress in curbing its landfill rate over recent years, but did so by increasing incineration capacity (63% of all municipal waste treated in 2021). Overall municipal waste increased between 2016 and 2021, from 504 kg per head to 609 kg per head. This suggests that Finland's economic growth is not yet decoupled from waste generation (see Annex 9).

KEY FINDINGS

Finland's RRP includes measures to address a series of Finland's structural challenges through:

- helping reduce greenhouse gas emissions in the most relevant sectors through reforms and investments;
- supporting high-speed broadband connectivity, reforming the continuous learning framework and promoting digital skills;
- investing in research, development and innovation (RDI);
- supporting initiatives to address Finland's labour and skills shortages, and tackling structural unemployment.

Finland should proceed with the steady implementation of its revised recovery and resilience plan and swiftly finalise the REPowerEU chapter with a view to rapidly starting its implementation.

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

- taking steps to strengthen public finances, including the regular conduct of spending and structural reviews, as well as tax expenditure reviews;
- pursuing the healthcare and social services reform and ensuring it achieves the objectives of improving equal access to services and increasing the cost-effectiveness of the healthcare and social care sector;
- addressing labour and skills shortages, in particular to support the green and digital transition, and to improve the service delivery in the health and social care sector;
- reforming the social security system to increase the efficiency of social benefits, improve incentives to work and support sustainability of public finances in the long term, thereby lessening the impacts of population ageing;
- ensuring quality and a more supportive basic education system, increasing enrolment numbers in higher education to meet current and future skills demand and boosting human and social capital and innovation to increase productivity;
- promoting further investments to ensure progress is made towards meeting the 2035 target for carbon neutrality, particularly in renewable energy and sustainable transport, speeding up the circular economy transition, and strengthening the capacity of the land use sector for carbon removals;
- speeding up permitting and environmental procedures to ensure the timely deployment of renewable energy investments.

ANNEXES

LIST OF ANNEXES

LIST OF TABLES

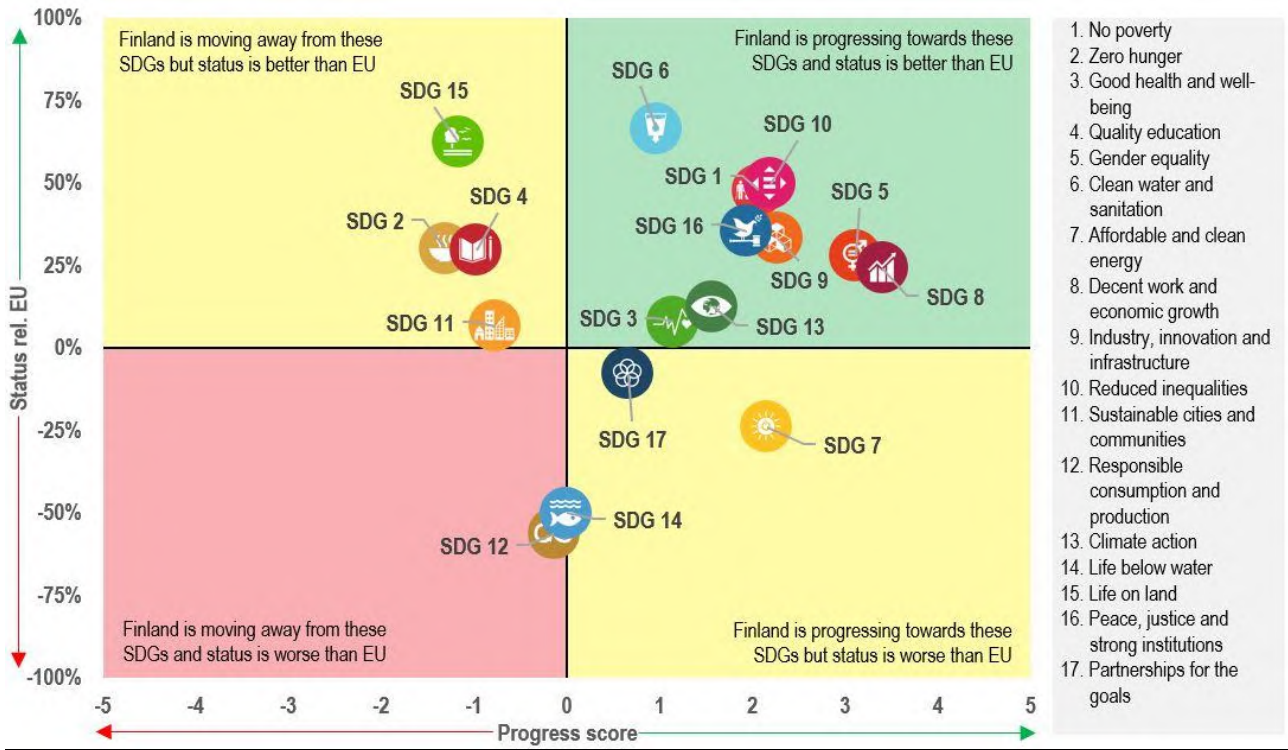
LIST OF GRAPHS

LIST OF MAPS

This Annex assesses Finland'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 and the environmental crisis, 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 the SDGs in an EU context.

While Finland is improving on most of the SDG indicators related to *environmental sustainability*, it still scores below the EU average on SDG 7 (Affordable and clean energy), SDG 12 (Responsible consumption and production) and SDG 14 (Life below water). At the same time, it is moving away from SDG 2 (Zero hunger), SDG 11 (Sustainable cities and communities) and SDG 15 (Life on land). Finland's obesity rate (SDG 2) is above the EU average (20.9% of the population aged over 18 vs 16.5% in the EU) after increasing from 18.3% in 2014 to 20.9% in 2019. In terms of SDG 15 (Life on land), Finland's share of forested area compared to total land area decreased from 71.3% in 2015 to 69.9% in 2018. On the positive side, Finland performs well and is improving on SDG 9 (Industry, innovation and infrastructure) and SDG 13

Graph A1.1:**Progress towards the SDGs in Finland in the last 5 years**



For detailed datasets on the various SDGs, see the annual Eurostat report 'Sustainable development in the European Union'; for details on the extensive country-specific data on the short-term progress of Member States: Key findings - Sustainable development indicators - Eurostat (europa.eu). The status of each SDG in a country is the aggregation of all the indicators for the specific goal compared to the EU average. A high status does not mean that a country is close to reaching a specific SDG, but signals that it is doing better than the EU on average. The progress score is an absolute measure based on the indicator trends over the past 5 years. The calculation does not take into account any target values as most EU policy targets are only valid for the aggregate EU level. Depending on data availability for each goal, not all 17 SDGs are shown for each country.

Source: Eurostat, latest update of early April 2023, except for the EU Labour Force Survey (LFS) indicators released on 27 April 2023. Data mainly refer to 2016-2021 or 2017-2022.

(Climate action). Moreover, Finland is catching up with the EU average on SDG 7 (Affordable and clean energy), SDG 12 (Responsible production and consumption) and SDG 14 (Life below water). In particular, Finland increased its share of renewable energy in gross final energy consumption (SDG 7) from 38.9% in 2016 to 43.1% in 2021, while its energy import dependency decreased from 47.9% in 2015 to 42% in 2020. The first pillar of the recovery and resilience plan (RRP) includes investments in clean energy (SDG 7), decarbonisation of industry (SDG 9) and biodiversity (SDGs 14 and 15). On the reform side, the Climate Act entered into force in 2022 (SDG 13).

Finland performs well on SDG indicators related to *fairness* (SDGs 1, 3, 4, 5, 8, 10) and is improving on SDG 7 (Affordable and clean energy). Finland performs well on the indicator for people at risk of poverty or social exclusion (SDG 1; 14.2% of population in 2021 compared to 16.5% in 2016 and the EU average of 21.7% in 2021) and on smoking prevalence (SDG 3; 15% of the population aged over 15 in 2020 compared to 19% in 2014 and to the EU average of 25% in 2020). In addition, Finland has improved on participation in early childhood education (SDG 4; 90.9% in 2020 compared to 79.8% in 2015), the gender employment gap (SDG 5; 2% in 2021 compared to 3.2% in 2016 and an EU average of 10.8% in 2021) and the employment rate (SDG 8; 76.8% in 2021 compared to 72.4% in 2016 and an EU average of 73.1% in 2021). The RRP includes measures to support the ongoing reform of health and long-term care, aiming to improve the health and well-being status, in Component P4C1 (Social welfare and health care services).

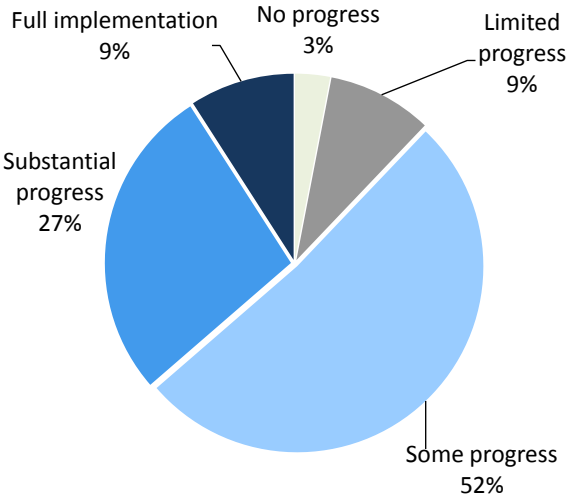
Finland performs well on all SDGs on *productivity* (SDGs 4, 8, 9). Compared to the EU average (53.9%), Finland performs very well in digital skills with a 79.2% share of adults with at least basic digital skills in 2021 (SDG 4). Finland's long-term unemployment rate decreased over recent years, falling to 1.8% in 2021 from 2.9% in 2016 (SDG 8). While Finland's spending on R&D increased from 2.72% of GDP in 2016 to 2.98% in 2021, it is still below the 2009 peak of 3.73% and the national target of 4% (SDG 9). The RRP includes measures to further improve Finland's productivity by boosting spending on research, development and innovation through funding packages to promote the green and digital transition, notably in Components P3C3 (Research infrastructure) and P3C4 (Strengthening competitiveness) of the plan.

Finland performs well on SDG indicators related to *macroeconomic stability* (SDGs 8 and 16) but still needs to catch up on SDG 17, when comparing its performance to the EU's. Finland increased its real GDP per capita from EUR 35 330 per capita in 2016 to EUR 37240 in 2021 (SDG 8). Finland performs well on the independence of the justice system and the Corruption Perceptions Index (SDG 16). However, Finland is moving away from the official development assistance goal (SDG 17) with a drop of 0.55% of GDP in 2015 to 0.47% in 2020 compared to an increase in the EU average from 0.42% to 0.5% over the same period.

As the SDGs form an overarching framework, any links to relevant SDGs are either explained or depicted with icons in the other Annexes.

The Commission has assessed the 2019-2022 country-specific recommendations (CSRs) ([37]) addressed to Finland as part of the European Semester. These recommendations concern a wide range of policy areas that are related to 11 of the 17 Sustainable Development Goals (see Annexes 1 and 3). The assessment considers the policy action taken by Finland to date ([38]) and the commitments in its recovery and resilience plan (RRP) ([39]). At this stage of RRP implementation, 88% of the CSRs focusing on structural issues from 2019-2022 have recorded at least 'some progress', while 9% recorded 'limited progress' (see Graph A2.1). As the RRP is implemented further, considerable progress in addressing structural CSRs is expected in the years to come.

Graph A2.1:**Finland's progress on the 2019-2022 CSRs (2023 European Semester)**



Source: European Commission

([37]) 2022 CSRs: EUR-Lex - 32022H0901(26) - EN - EUR-Lex (europa.eu)

2021 CSRs: EUR-Lex - 32021H0729(27) - EN - EUR-Lex (europa.eu)
2020 CSRs: EUR-Lex - 32020H0826(26) - EN - EUR-Lex (europa.eu)
2019 CSRs: EUR-Lex - 32019H0905(26) - EN - EUR-Lex (europa.eu)

([38]) Including policy action reported in the national reform programme and in Recovery and Resilience Facility (RRF) reporting (twice a year reporting on progress in implementing milestones and targets and resulting from the payment requests assessment).

([39]) 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 considers the degree of implementation of the measures included in the RRP and of those carried out outside of the RRP at the time of assessment. Measures laid down in the Annex of the adopted Council Implementing Decision on approving the assessment of the RRP, which are not yet adopted or implemented but considered 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 A2.1: **Summary table on 2019-2022 CSRs**

Finland	Assessment in May 2023*	RRP coverage of CSRs until 2026**	Relevant SDGs
2019 CSR 1	**Some progress**		
Ensure that the nominal growth rate of net primary government expenditure does not exceed 1.9 % in 2020, corresponding to an annual structural adjustment of 0.5 % of GDP.	Not relevant anymore	Not applicable	SDG 8, 16
Improve the cost-effectiveness of and equal access to social and healthcare services.	Some progress	Relevant RRP measures planned as of 2021, 2023, 2024, and 2025	SDG 3, 8, 16
2019 CSR 2	**Some progress**		
Improve incentives to work	Some progress	Relevant RRP measures planned as of 2022, 2023, 2024, and 2025	SDG 8
and enhance skills	Some progress	Relevant RRP measures planned as of 2021, 2022, 2023, 2024, and 2025	SDG 4
and enhance active inclusion, notably through well-integrated services for the unemployed and the inactive.	Substantial progress	Relevant RRP measures planned as of 2022, 2023, 2024, and 2025	SDG 8
2019 CSR 3	**Some progress**		
Focus investment-related economic policy on research and innovation, taking into account regional disparities,	Substantial progress	Relevant RRP measures planned as of 2021, 2022, 2023, 2025 and 2026	SDG 9, 10, 11
focus investment-related economic policy on low carbon and energy transition, taking into account regional disparities,	Some Progress	Relevant RRP measures planned as of 2021, 2022, 2023, 2024, 2025 and 2026	SDG 7, 9, 10, 11, 13
and focus investment-related economic policy on sustainable transport, taking into account regional disparities	Some Progress	Relevant RRP measure planned as of 2022, 2024, and 2026	SDG 10, 11
2019 CSR 4	**Some progress**		
Strengthen the monitoring of household debt	Substantial Progress	Relevant RRP measure planned as of 2023, 2025, and 2026	SDG 8
and establish the credit registry system	Some Progress	Relevant RRP measure planned as of 2023, 2025, and 2026	SDG 8
2020 CSR 1	**Some progress**		
Take all necessary measures, in line with the general escape clause of the Stability and Growth Pact, to effectively address the COVID-19 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	SDG 8, 16
Address shortages of health workers to strengthen the resilience of the health system	Some progress	Relevant RRP measure planned as of 2021, 2022 and 2023	SDG 3
and improve access to social and health services.	Some progress	Relevant RRP measure planned as of 2021, 2023, 2024 and 2025	SDG 3
2020 CSR 2	**Some progress**		
Strengthen measures to support employment and	Some progress	Relevant RRP measure planned as of 2021, 2022, 2023, 2024 and 2025	SDG 8
bolster active labour market policies.	Some progress	Relevant RRP measure planned as of 2022, 2023, 2024 and 2025	SDG 4
2020 CSR 3	**Some progress**		
Take measures to provide liquidity to the real economy, in particular to small and medium-sized enterprises.	Full Implementation	Relevant RRP measure planned as of 2021, 2022, 2023, 2024, 2025 and 2026	SDG 8, 9
Front-load mature public investment projects and	Full implementation		SDG 8, 16
promote private investment to foster the economic recovery.	Full implementation		SDG 8, 9
Focus investment on the green and digital transition, in particular on clean and efficient production and use of energy,	Some progress	Relevant RRP measure planned as of 2021, 2022, 2023, 2025 and 2026	SDG 7, 9, 13
sustainable and efficient infrastructure	Limited progress	Relevant RRP measure planned as of 2021, 2022, 2023, 2024, 2025 and 2026	SDG 7, 9, 11, 13
as well as research and innovation.	Some progress	Relevant RRP measure planned as of 2021, 2022, 2023, 2025 and 2026	SDG 9
2020 CSR 4	**Limited progress**		
Ensure effective supervision and enforcement of the anti-money laundering framework.	Limited progress	Relevant RRP measure planned as of 2025 and 2026	SDG 8, 16
2021 CSR 1	**Substantial Progress**		
In 2022, maintain a supportive fiscal stance, including the impulse provided by the Recovery and Resilience Facility, and preserve nationally financed investment.	Substantial Progress	Not applicable	SDG 8, 16
When economic conditions allow, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions and ensuring fiscal sustainability in the medium term.	Substantial Progress	Not applicable	SDG 8, 16
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.	Substantial Progress	Not applicable	SDG 8, 16
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.	Some Progress	Not applicable	SDG 8, 16

(Continued on the next page)

Table (continued)

2022 CSR 1	**Some Progress**		
In 2023, ensure that the growth of nationally financed primary current expenditure is in line with an overall neutral policy stance, taking into account continued temporary and targeted support to households and firms most vulnerable to energy price hikes and to people fleeing Ukraine. Stand ready to adjust current spending to the evolving situation.	No Progress	Not applicable	SDG 8, 16
Expand public investment for the green and digital transitions, and for energy security taking into account the REPowerEU initiative, including by making use of the Recovery and Resilience Facility and other Union funds.	Substantial Progress	Not applicable	SDG 8, 16
For the period beyond 2023, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions.	Substantial Progress	Not applicable	SDG 8, 16
Present policy proposals for the social security reform, aiming to increase the efficiency of the system of social benefits, improving incentives to work, and also supporting long-term sustainability of public finances.	Limited Progress		SDG 1, 2, 10
2022 CSR 2			
Proceed with the implementation of its recovery and resilience plan, in line with the milestones and targets included in the Council Implementing Decision of 29 October 2021.	RRP implementation is monitored by assessing RRP payment requests and analysing reports published twice a year on the achievement of the milestones and targets. These are to be reflected in the country reports.		
Proceed with the implementation of the agreed 2021-2027 cohesion policy programme for Finland, and swiftly finalise the negotiations with the Commission of the 2021-2027 cohesion policy programming documents for the Åland Islands and the Just Transition Fund with a view to starting their implementation.	Progress on the cohesion policy programming documents is monitored under the EU cohesion policy.		
2022 CSR 3	**Some Progress**		
Reduce overall reliance on fossil fuels and diversify imports of fossil fuels.	Some Progress	Relevant measures planned as of 2021,2022 2023, 2024, 2025 and 2026	SDG 7, 9, 13
Accelerate the deployment of renewables, including by further streamlining permitting procedures,	Some Progress	Relevant measures planned as of 2021,2022, 2023 and 2026	SDG 7, 8, 9, 13
and boost investment in the decarbonisation of industry	Some Progress	Relevant measures planned as of 2021, 2022, 2023, 2024, 2025 and 2026	SDG 7, 9, 13
and transport, including electrification of the transport sector.	Substantial Progress	Relevant measures planned as of 2021, 2022, 2023, 2024, 2025 and 2026	SDG 11
Develop energy infrastructure to increase security of supply.	Some Progress	Relevant measures planned as of 2021, 2022, 2023, 2025 and 2026	SDG 7, 9, 13

Note:

* See footnote ([39]).

** RRP measures included in this table contribute to the implementation of CSRs. Nevertheless, additional measures outside the RRP are necessary to fully implement CSRs and address their underlying challenges. Measures indicated as 'being implemented' are only those included in the RRF payment requests submitted and positively assessed by the European Commission.

Source: European Commission.

The Recovery and Resilience Facility (RRF) is the centrepiece of the EU's efforts to help it recover from the COVID-19 pandemic, speed up the twin transition and strengthen resilience against future shocks. The RRF also contributes to implementation of the SDGs and helps to address the Country Specific Recommendations (see Annex 2). Finland submitted its initial recovery and resilience plan (RRP) on 27 May 2021. The Commission's positive assessment on 4 October 2021 and Council's approval on 29 October 2021 paved the way for disbursing 2.1 billion in grants under the RRF over the 2021-2026 period.

Since the entry into force of the RRF Regulation and the assessment of the national recovery and resilience plans, geopolitical and economic developments have caused major disruptions across the EU. In order to effectively address these disruptions, the (adjusted) RRF Regulation allows Member States to amend their recovery and resilience plan for a variety of reasons. In line with article 11(2) of the RRF, the maximum financial contribution for Finland was moreover updated on 30 June 2022 to an amount of EUR 1.82 billion in grants.

Table A3.1: **Key elements of the Finland's RRPs**

	Current RRP
Scope	Revised plan (Article 18)
CID adoption date	14 March 2023
Total allocation	EUR 1.82 billion in grants (0,7% of GDP)
Investments and reforms	37 investements and 18 reforms
Total number of milestones and targets	131

Source: European Commission

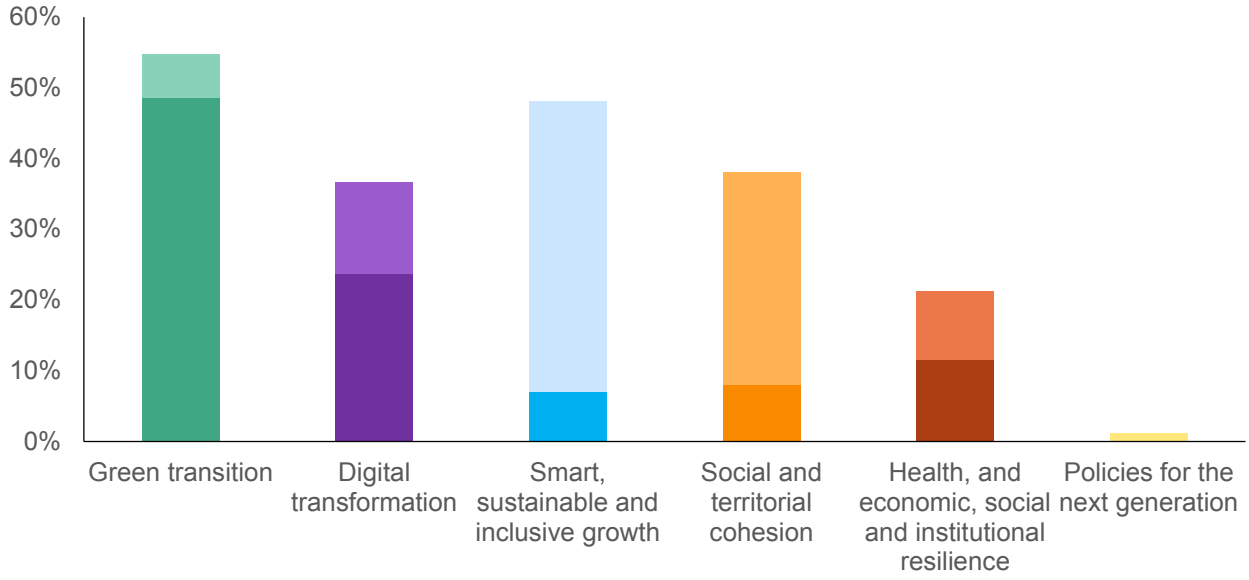
In this context, Finland submitted an amended RRP to the Commission on 26 January 2023 take account of the revised maximum financial contribution, in line with Article 18 of the RRF Regulation. The allocation for Finland was reduced by EUR 263 million. Consequently, Finland reduced funding proportionally across the four pillars of the plan. Cuts concerned 20 measures in the plan.

EUR 271 million has so far been disbursed to Finland under the RRF. The Commission disbursed EUR 271 million to Finland in pre-financing on 21 January 2022, equivalent to 13% of the initial financial allocation.

Finland's progress in implementing its plan is published in the Recovery and Resilience Scoreboard ([40]). The Scoreboard also gives an overview of the progress made in implementing the RRF as a whole, in a transparent manner. The graphs below show the current state of play of the milestones and targets to be reached by Finland and subsequently assessed as satisfactorily fulfilled by the Commission.

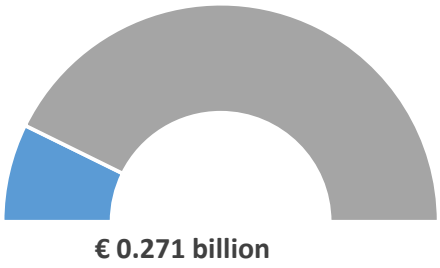
([40]) https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html

Graph A3.1:**Share of RRF funds contribution to each policy pillar**



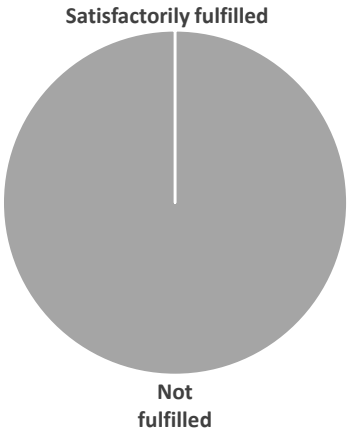
Note: Each measure contributes towards two policy areas of the six pillars, therefore the total contribution to all pillars displayed on this chart amounts to 200% of the estimated cost of the RRP. The bottom part represents the amount of the primary pillar, the top part the amount of the secondary pillar.
Source: RRF Scoreboard https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html

Graph A3.2:**Total grants disbursed under the RRF**



Note: This graph displays the amount of grants disbursed so far under the RRF. Grants are non-repayable financial contributions. The total amount of grants given to each Member State is determined by an allocation key and the total estimated cost of the respective RRP.
Source: RRF Scoreboard https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html

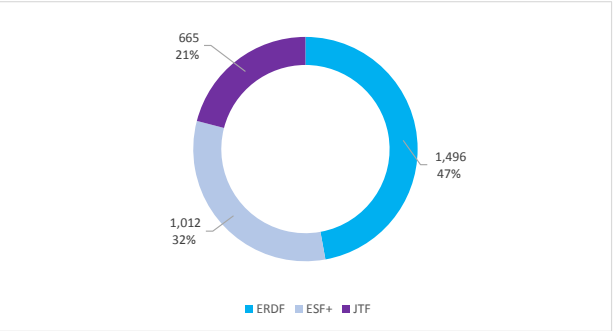
Graph A3.3:**Fulfilment status of milestones and targets**



This graph displays the share of satisfactorily fulfilled milestones and targets. A milestone or target is satisfactorily fulfilled once a Member State has provided evidence to the Commission that it has reached the milestone or target and the Commission has assessed it positively in an implementing decision.
Source: RRF Scoreboard https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html

The EU budget of over EUR 1.2 trillion for 2021-2027 is geared towards implementing the EU's main priorities. Cohesion policy investment amounts to EUR 392 billion across the EU and represents almost a third of the overall EU budget, including around EUR 48 billion invested in line with REPowerEU objectives.

Graph A4.1:**Cohesion policy funds 2021-2027 in Finland: budget by fund**

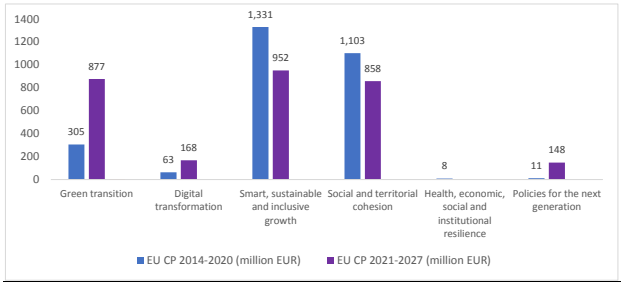


(1) million EUR in current prices, % of total; (total amount including EU and national co-financing)
Source: European Commission, Cohesion Open Data

In 2021-2027, in Finland, cohesion policy funds ([41]) **will invest EUR 877 million in the green transition and EUR 168 million in the digital transformation as part of the country's total allocation of EUR 3.2 billion.** In particular, the European Regional Development Fund (ERDF) ([42]) will enhance R&D and innovation in line with regional smart specialisation strategies, harness digitalisation and SME growth and accelerate the greening of the economy by promoting energy efficiency, climate change adaptation and resource efficiency. Close to 11 000 companies will be supported. Particular attention should be paid to activation measures to improve the quality of project applications. The Just Transition Fund (JTF) will invest in the diversification of regional economies and in the re- and upskilling of the workforce in regions most affected by transition from peat to cleaner energy sources. The JTF will help Finland to fulfil its commitment to halve the use of peat in its energy mix by 2030. The European Social Fund Plus (ESF+) will support adult learning, re- and upskilling and promoting employment with investments worth almost EUR 365 million, of which EUR 64 million is targeted at developing green skills and jobs and EUR 38 million at developing digital skills.

Of the investments mentioned above, EUR 184 million will be invested in line with REPowerEU objectives. This is on top of the EUR 162 billion dedicated to REPowerEU under the 2014-2020 budget**.** EUR 184 million (2021-2027) and EUR 153 million (2014-2020) is for improving energy efficiency; and EUR 9 million (2014-2020) is for renewable energy, storage and smart grids.

Graph A4.2:**Synergies between cohesion policy funds and the RRF with its six pillars in Finland**



(1) million EUR in current prices (total amount, including EU and national co-financing)
Source: European Commission

In 2014-2020, cohesion policy funds make EUR 1.5 billion available to Finland ([43]) with absorption of 84% ([44]). Including national financing, the total investment amounts to EUR 2.9 billion - around 0.2% of GDP for 2014-2020.

Finland continues to benefit from cohesion policy flexibility to support recovery, step up convergence and provide vital support to

([41]) European Regional Development Fund (ERDF), European Social Fund+ (ESF+), Just Transition Fund (JTF) and Interreg, on Cohesion Open Data.

([42]) ERDF's expected achievements from the 2021-2027 programmes.

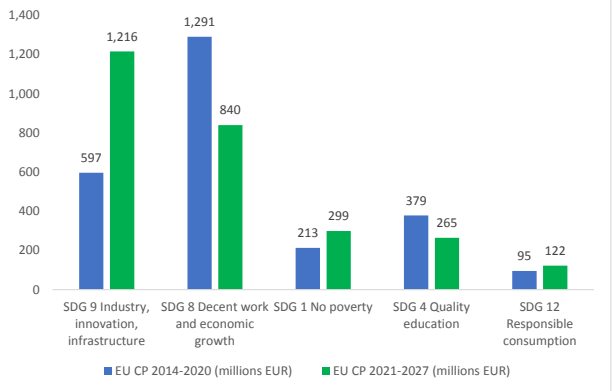
([43]) Cohesion policy funds include the ERDF, ESF. According to the 'N+3 rule', the funds committed for 2014-2020 must be spent by 2023. REACT-EU is included in all figures. Data source: Cohesion Open Data.

([44]) 2014-2020 Cohesion policy EU payments by MS is updated daily on Cohesion Open Data.

regions following the COVID-19 pandemic. The Recovery Assistance for Cohesion and the Territories of Europe instrument (REACT-EU) ([45]) under NextGenerationEU provides EUR 171 million on top of the 2014-2020 cohesion policy allocation for in Finland. REACT-EU financed over 1 400 digitalisation, green economy and human capital projects. More than 1 000 companies were selected for support, and almost 8 500 new jobs are expected to be added. Human capital projects will reinforce the ability of workers, businesses and entrepreneurs to adapt to a digital economy. With SAFE (Supporting Affordable Energy), the 2014-2020 cohesion policy funds may also be mobilised by Finland to support vulnerable households, jobs and companies particularly affected by high energy prices.

In both 2014-2020 and 2021-2027, cohesion policy funds have contributed substantially to the Sustainable Development Goals (SDGs). These funds support 11 of the 17 SDGs, notably SDG 9 'industry, innovation and infrastructure' and SDG 8 'decent work and economic growth' ([46]).

Graph A4.3:**Cohesion policy funds contribution to the SDGs in 2014-2020 and 2021-2027 in Finland**



(1) 5 largest contributions to SDGs in million (EUR) current prices
Source: European Commission

Other EU funds make significant resources available for Finland. The common agricultural policy (CAP) made EUR 8 billion available in 2014-2022, and will continue to support Finland with EUR 4.4 billion in 2023-2027. The two CAP Funds (European Agricultural Guarantee Fund and European Agricultural Fund for Rural Development), contribute to the European Green Deal while ensuring long-term food security. They promote social, environmental and economic sustainability and innovation in agriculture and rural areas, in coordination with other EU funds. The European Maritime and Fisheries Fund made EUR 74 million available to Finland in 2014-2020 and the European Maritime, Fisheries and Aquaculture Fund makes EUR 71.8 million available in 2021-2027.

Finland also benefits from other EU programmes, notably the Connecting Europe Facility, which under CEF 2 (2021-2027) has so far allocated EU funding of EUR 101 million to 13 specific projects on strategic transport networks. Similarly, Horizon Europe has so far allocated nearly EUR 332 million to Finnish R&I actors, while in the previous programming period, Horizon 2020 earmarked EUR 1.5 billion. The Public Sector Loan Facility established under the Just Transition Mechanism makes EUR 35.3 million of grant support from the Commission available for projects located in Finland for 2021-2027,

([45]) REACT-EU allocation on Cohesion Open Data.

([46]) Other EU funds contribute to the implementation of the SDGs. In 2014-2022, this includes both the European Agricultural Fund for Rural Development (EARDF) and the European Maritime and Fisheries Fund (EMFF).

which will be combined with loans from the EIB to support investments by public sector entities in just transition regions.

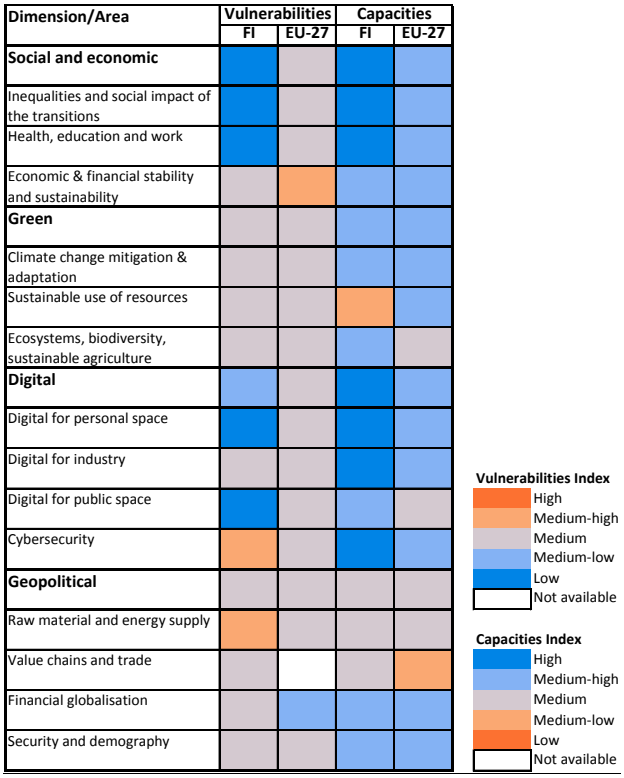
The Technical Support Instrument (TSI) supports Finland in designing and implementing growth-enhancing reforms, including for implementing its RRP. Finland has received support since 2019. Examples include building capacity to bring anticipatory innovation to public policymaking, for integrating migrants across society in areas such as cultural and social life, for labour market policies and multilingualism, for accelerating permitting for renewable energy and for developing Do No Significant Harm (DNSH) guidelines to support the implementation of the green transition ([47]).

([47]) Country factsheets on reform support are available here.

This Annex illustrates Finland's relative resilience capacities and vulnerabilities using the Commission's resilience dashboards (RDB) ([48]). Comprising a set of 124 quantitative indicators, the RDB provide broad indications of Member States' ability to make progress across four interrelated dimensions: social and economic, green, digital, and geopolitical. The indicators show vulnerabilities ([49]) and capacities ([50]) that can become increasingly relevant, both to navigate ongoing transitions and to cope with potential future shocks. In doing so, the RDB help to identify areas for further analysis to build stronger and more resilient economies and societies. They are summarised in Table A5.1 as synthetic resilience indices, which illustrate the overall relative situation for each of the four dimensions and their underlying areas for Finland and the EU-27 ([51]).

According to the set of resilience indicators under the RDB, Finland generally displays a lower level of vulnerabilities than the EU average. Finland shows low vulnerabilities in the social and economic dimension of the RDB, medium-low vulnerabilities in the digital dimension, and medium vulnerabilities in the green and geopolitical dimensions. It has higher vulnerabilities than the EU average in the areas 'financial globalisation', 'cybersecurity' and 'raw material and energy supply' (due to the high supplier concentration in base metals and energy carriers). Finland has lower vulnerabilities in all areas of the social and economic dimension and in some areas of the digital dimension, such as the digitalisation of personal and public space ([52]).

Table A5.1: **Resilience indices summarising the situation across RDB dimensions and areas**



(1) Data are for 2021, and EU-27 refers to the value for the EU as a whole. Data underlying EU-27 vulnerabilities in the area 'value chains and trade' are not available as they comprise partner concentration measures that are not comparable with Member States' level values.
Source: JRC Resilience Dashboards - European Commission

Compared to the EU average, Finland shows an overall similar yet slightly higher level of capacities across all RDB indicators. It has overall high resilience capacities in the social and economic and the digital dimensions, medium-high capacities in the green dimension and medium capacities in the geopolitical dimension. Finland shows stronger capacities than the EU average in most areas of the social and economic dimension and all

([48]) For details see https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en; see also 2020 Strategic Foresight Report (COM(2020) 493).

([49]) Vulnerabilities describe features that can exacerbate the negative impact of crises and transitions, or obstacles that may hinder the achievement of long-term strategic goals.

([50]) Capacities refer to enablers or abilities to cope with crises and structural changes and to manage the transitions.

([51]) This Annex is linked to Annex 1 on SDGs, Annex 6 on the green deal, Annex 8 on the fair transition to climate neutrality, Annex 9 on resource productivity, efficiency and circularity, Annex 10 on the digital transition and Annex 14 on the European pillar of social rights.

([52]) For example, relative to the EU and other countries, Finland shows the lowest vulnerabilities with regard to AROPE, the income quintile share ratio, the gender employment gap, enterprises without ICT training programs and people not having access to digital public services.

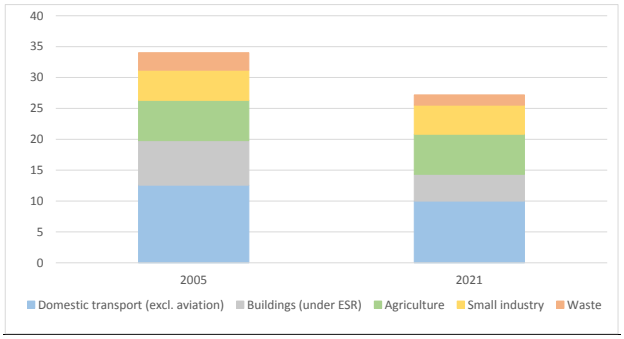
areas of the digital dimension ([53]), but also in the areas 'ecosystems, biodiversity and sustainable agriculture' and 'value chains and trade'. There is room for improving capacities compared to the EU level in the area 'sustainable use of resources' where Finland lags behind the EU level mainly due to its relatively low resource and energy productivity and the low circular material use rate.

([53]) This is due to its high impact of social transfers on poverty reduction and the high expenditures on education, health and social protection, but also when it comes to the low standardised preventable and treatable mortality, and the high digital competences of adults and young people.

Finland's green transition requires continued action on several aspects including promoting energy efficiency and restoring its natural carbon sinks. Implementation of the European Green Deal is well underway in Finland; this Annex provides a snapshot of the key areas involved. ([54])

Finland has not yet defined all the climate policy measures it needs to reach its 2030 climate target for the effort sharing sectors ([55]). Data for 2021 on greenhouse gas emissions in these sectors are expected to show the country generated less than its annual emission allocations ([56]). Current policies in Finland are projected to reduce these emissions by 31% relative to 2005 levels in 2030, and the additional measures tabled would reduce emissions by 34 %. This is not a sufficient reduction to reach the effort sharing target even before the target was raised to meet the EU's 55% objective, let alone Finland's new target to reduce emissions by 50% ([57]). In its revised recovery and resilience plan (RRP), Finland has allocated half of its Recovery and Resilience Facility grants to key reforms and investments to attain climate objectives ([58]). Finland's has its own climate target of achieving carbon neutrality by 2035. In July 2022, a new Climate Change Act entered into force, specifying targets for reducing greenhouse gas emissions. Based on the recommendations of its climate change panel, these targets comprise reductions of 60% by 2030, 80% by 2040 and at least 90%, aiming for 95%, by 2050 compared to 1990 levels. The land use sector is also included within the scope of the act.

Graph A6.1:**Thematic – greenhouse gas emissions from the effort sharing sectors in Mt CO2eq, 2005-2021**



Source: European Environmental Agency.

The deteriorating capacity of the land use sector for net carbon removals has brought Finland off-track with regard to its 2030 carbon removal target. Net removals have fallen since 2015, and even turned into net emissions in 2021. Despite this trend, Finland's forests contribute the biggest share of net carbon removals. For 2030, Finland's land use, land-use change and forestry (LULUCF) net

([54]) The overview in this Annex is complemented by the information provided in Annex 7 on energy security and affordability, Annex 8 on the fair transition to climate neutrality and environmental sustainability, Annex 9 on resource productivity, efficiency and circularity, Annex 11 on innovation, and Annex 19 on taxation.

([55]) Member States' greenhouse gas emission targets for 2030 ('effort sharing targets') were increased by Regulation (EU) 2023/857 (the Effort Sharing Regulation) amending Regulation (EU) 2018/842, aligning the action in the concerned sectors with the objective to reach EU-level, economy-wide greenhouse gas emission reductions of at least 55% relative to 1990 levels. The Regulation sets national targets for sectors outside the current EU Emissions Trading System, notably: buildings (heating and cooling), road transport, agriculture, waste, and small industry. Emissions covered by the EU ETS and the Effort Sharing Regulation are complemented by net removals in the land use sector, regulated by Regulation (EU) 2018/841 (the Land Use, Land Use Change and Forestry (LULUCF) Regulation) amended by Regulation (EU) 2023/839.

([56]) Finland's annual emission allocations for 2021 were some 29.0 Mt CO_2eq, and its approximated 2021 emissions were at 27.2 Mt (see European Commission, *Accelerating the transition to climate neutrality for Europe's security and prosperity: EU Climate Action Progress Report 2022*, SWD(2022)343).

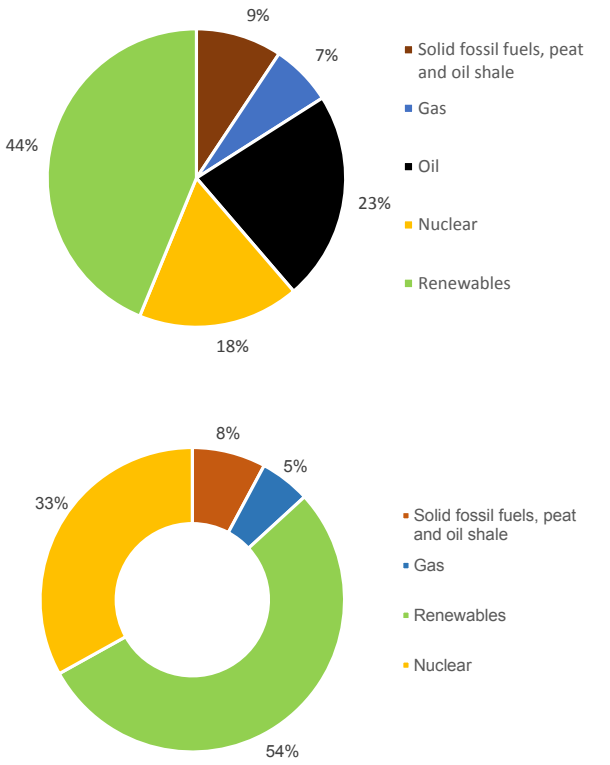
([57]) See the information on the distance to the 2030 climate policy target in Table A6.1. Existing and additional measures as of 15 March 2021.

([58]) For example, investments in interconnectors, RES (wind energy in particular) and hydrogen.

removal target implies the removal of 17 754 kt CO_2eq (see Table A6.1) ([59]).

In 2021, renewable energy sources made up a significant part of Finland's energy mix, having considerably increased their share compared to 2020, reaching 44%, followed by oil at 23% and nuclear at 18%. Coal represents 9% while natural gas remains stable at 7%. In the electricity mix, renewables are even more dominant, providing 54% of total electricity, with the share of nuclear standing at 33%. The shares of coal and natural gas remain relatively low at 8% and 5%, respectively. Finland has committed to phasing out coal use by 2029 and achieving carbon neutrality by 2035.

Graph A6.2:**Energy mix (top) and electricity mix (bottom), 2021**



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

Finland is one of the EU-27 leaders in renewable energy. The main forms of renewable energy used are bioenergy, fuels from forest industry side streams and other wood-based fuels, hydropower, wind power and ground heat. Finland´s NECP sets a 51% target of renewable sources in gross final energy consumption by 2030, which was considered as adequate. Finland will need to increase its renewable energy target in the updated NECP to reflect the more ambitious EU climate and energy targets in the Fit for 55 Package and in the REPowerEU Plan. Finland's RRP includes an amendment to its Climate Act, which has anchored the country's ambitious 2035 target into law. The phase-out of coal use in energy and a reform in energy taxation will help promote cleaner technologies. The plan supports the green transition through

([59]) This value is indicative and will be updated in 2025 (as mandated by Regulation (EU) 2023/839).

investments of EUR 319 million in decarbonisation of the energy sector, namely in energy transmission and distribution and in new energy technologies. Furthermore, EUR 136 million will be invested in low-carbon hydrogen along the hydrogen value chain as well as in carbon capture, storage and recovery. On green transportation, EUR 13.6 million will be invested in supporting private and public charging points for electric cars, gas charging and refuelling infrastructure.

Finland's energy efficiency targets for 2030 will need to be strengthened. Finland's NECP targets for final and primary energy consumption (FEC and PEC) were both considered low in ambition in the 2020 Commission assessment. Based on the energy consumption trajectory for 2018-2021, Finland is expected to be on track to meet its 2030 target for PEC and is expected to be on track to meet its 2030 target for FEC, as these were notified in its NECP ([60]). Strengthening ambition under the plan has become even more urgent in light of the 'Fit for 55' and the REPowerEU objectives. Finland performed outstandingly in fulfilling its energy savings obligation, set out under Article 7 of the Energy Efficiency Directive, for the 2014-2020 period. Despite these positive observations, next steps for Finland include focusing its attention on moderate energy demand in households and services sectors, where the final energy demand has been increasing. In its RRP, Finland included several measures targeting energy efficiency. Energy efficiency in the industrial sector will benefit from investment measures and reforms, focusing on the green transition, resource efficiency, electrification and reducing carbon footprint of the industry.

Finland's transition to sustainable mobility has taken off recently. Sales of zero-emission vehicles have recently started to increase. In 2021, Finland's share of zero-emission vehicles in new passenger car registrations surpassed the EU average for the first time, and their share in the national fleet of vehicles has rapidly caught up with the EU average over recent years. The electrification of transport has to go hand in hand with a higher density of charging points.

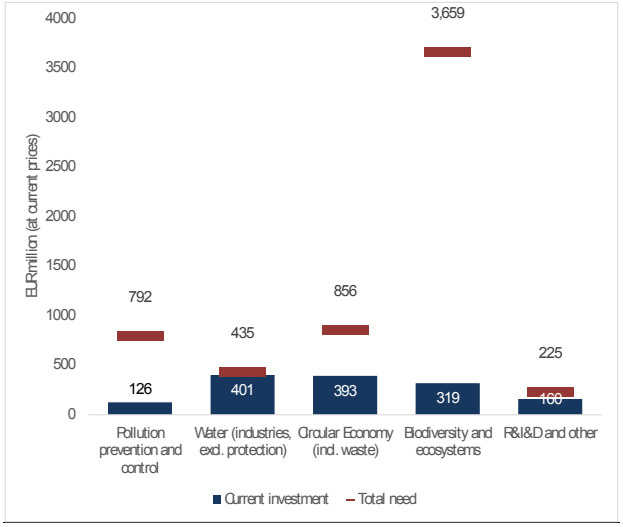
Finland would benefit from investing more in environmental protection and in measures protecting biodiversity. Between 2014 and 2020, Finland's environmental investment needs ([61]) were estimated at EUR 5.96 billion, while investment stood at EUR 1.39 billion, leaving a gap of EUR 4.57 billion, per year (see Graph A6.4) ([62]). The gap is particularly large for biodiversity and ecosystems – EUR 3.65 billion per year. Looking ahead, Finland would need to cater for higher financing needs on, e.g. protecting and restoring ecosystems, preventing waste, and drinking water and sanitation. Furthermore, Finland needs more effective measures to reduce chemical and nutrient pollution on surface water, including through better integrating related objectives into other policy areas (agriculture, transport, energy).

([60]) After the conclusion of the negotiations for a recast EED, the ambition of both the EU and national targets as well as of the national measures for energy efficiency to meet these targets is expected to increase.

([61]) Environmental objectives include pollution prevention and control, water management and industries, circular economy and waste, biodiversity and ecosystems (European Commission, 2022, Environmental Implementation Review, country report Finland)

([62]) When also accounting for needs estimated at EU level only (e.g. water protection, higher circularity, biodiversity strategy).

Graph A6.3:**Thematic – environmental investment needs and current investment, p.a. 2014-2020**



Source: European Commission.

In view of the expected impacts of climate change, Finland's climate adaptation policies are not up to date. In a warming climate, Finland might be more prone to infrastructure damage from increased rainfall. Furthermore, it will have to adapt its forest management practices, in particular to periods of drought, wildfires and pests. The sectors particularly at risk from climate impacts include biodiversity, housing, energy, coastal protection, forestry, fish farming, reindeer herding, game management, health, tourism, transport, and water management (for the latter, adaptive capacity is considered high). While some sectors have so far benefited from climate change (e.g. lower heating costs, faster growing forests, extended growing season for crops), risks and adaptation needs have not always been recognised. More proactive, rather than reactive, approaches, accompanied by practical information and guidance, would help better manage the climate change impacts. Finland adopted its climate adaptation plan in 2014; it is scheduled for update in 2024.

Finland still provides fossil fuel and other environmentally harmful subsidies that could be considered for reform, while ensuring food and energy security and mitigating social effects. Fossil fuel subsidies in Finland amounted to EUR 1.2 billion in 2021, a 26% increase since 2015, which puts low carbon alternatives at a disadvantage. Environmentally harmful subsidies have been identified, via an initial assessment, in the agriculture, forestry and fishing, electricity, gas, steam and air conditioning, transportation and storage, mining and quarrying, manufacturing, construction, water supply, sewerage, waste management and services sectors. Examples of such subsidies include the energy tax relief for companies in agriculture and forestry for gas oil, reduced energy tax rate for light fuel oil used in mobile machinery, excise tax exemption on the use of natural gas, including for industrial consumers or the refund scheme for energy-intensive industry under conditions ([63]). Continuing to map all environmentally harmful subsidies would help Finland prioritise candidates for reform.

([63]) Fossil fuel figures in EUR of 2021 from the 2022 State of the Energy Union report. Initial assessment of environmentally harmful subsidies done by the Commission in the 2022 toolbox for reforming environmentally harmful subsidies in Europe, using OECD definitions, and based on the following datasets: OECD Agriculture Policy Monitoring and Evaluations; OECD Policy Instruments for the Environment (PINE) Database; OECD Statistical Database for Fossil Fuels Support; IMF country-level energy subsidy estimates. Annex 4 of the toolbox contains detailed examples of subsidies on the candidates for reform.

Table A6.1: **Indicators tracking progress on the European Green Deal from a macroeconomic perspective**

									'Fit for 55' 2030 target/value	Distance WEM	Distance WAM
			2005	2017	2018	2019	2020	2021			
Progress to policy targets	Greenhouse gas emission reductions in effort sharing sectors [1]	Mt CO_2eq; %; pp	33.9	-11%	-12%	-13%	-17%	-	-50.0%	-19	-16
	Net carbon removals from LULUCF [2]	kt CO_2eq	-28,448	-11,023	-1,799	-6,716	-9,113	487	-17754	n/a	n/a
			2005	2017	2018	2019	2020	2021	National contribution to 2030 EU target		
	Share of energy from renewable sources in gross final consumption of energy [3]	%	29%	41%	41%	43%	44%	43%	51%		
	Energy efficiency: primary energy consumption [3]	Mtoe	33.6	32.3	32.8	32.1	29.9	31.5	34.8		
	Energy efficiency: final energy consumption [3]	Mtoe	25.2	25.3	25.8	25.4	23,,3	24.8	24.9		
			Finland						EU		
			2016	2017	2018	2019	2020	2021	2019	2020	2021
Fiscal and financial indicators	Environmental taxes (% of GDP)	% of GDP	3.1	3.0	2.9	2.8	2.7	2.5	2.4	2.2	2.2
	Environmental taxes (% of total taxation) [4]	% of taxation	7.1	6.9	6.9	6.6	6.5	5.8	5.9	5.6	5.5
	Government expenditure on environmental protection	% of total exp.	0.4	0.4	0.4	0.4	0.4	0.4	1.7	1.6	1.6
	Investment in environmental protection [5]	% of GDP	0.3	0.3	0.3	0.2	-		0.4	0.4	0.4
	Fossil fuel subsidies [6]	EUR2021bn	0.9	1.0	1.0	1.2	1.2	1.2	53.0	50.0	-
	Climate protection gap [7]	score 1-4					0.7	0.8			1.5
Climate	Net greenhouse gas emissions	1990 = 100	82.0	79.0	81.0	77.0	68.0	67.0	76.0	69.0	72.0
	Greenhouse gas emission intensity of the economy	kg/EUR10	0.32	0.30	0.30	0.28	0.25	-	0.31	0.30	0.26
	Energy intensity of the economy	kgoe/EUR10	0.17	0.17	0.17	0.16	0.16	-	0.11	0.11	-
Energy	Final energy consumption (FEC)	2015=100	104.0	104.6	106.5	105.1	96.5	102.7	102.9	94.6	-
	FEC in residential building sector	2015=100	107.9	116.4	114.9	113.7	106.7	121.4	101.3	101.3	106.8
	FEC in services building sector	2015=100	105.6	108.1	112.5	110.1	101.4	112.4	100.1	94.4	100.7
Pollution	Smog-precursor emission intensity (to GDP) [8]	tonne/EUR10	1.04	0.97	0.90	0.88	0.73	-	0.93	0.86	-
	Years of life lost due to air pollution by PM2.5	per 100.000 inh.	45.1	19.6	88.2	33.7	12.4	-	581.6	544.5	-
	Years of life lost due to air pollution by NO_2	per 100.000 inh.	18.5	13.3	25.8	17.7	1.5	-	309.6	218.8	-
	Nitrates in ground water	mg NO_3/litre	-	-	-	-	-	-	21.0	20.8	-
Biodiversity	Terrestrial protected areas	% of total	9.9	15.0	-	13.2	13.2	13.3	26.2	26.4	26.4
	Marine protected areas	% of total	10.0	-	-	11.0	-	11.0	10.7	-	12.1
	Organic farming	% of total utilised agricultural area	10.5	11.4	13.1	13.5	13.9	16.1	8.5	9.1	-
			2017	2018	2019	2020	2021	2022	2020	2021	2022
Mobility	Share of zero-emission vehicles [9]	% in new registrations	0.4	0.6	1.7	4.4	10.3	16.1	5.4	8.9	10.7
	Number of AC/DC recharging points (AFIR categorisation)		-	-	-	3941	4837	5711	188626	330028	432518
	Share of electrified railways	%	55.4	56.2	56.2	56.2	56.2	56.6	56.6	n/a	56.6
	Hours of congestion per commuting driver per year		18.1	18.4	18.3	18.8	n/a	n/a	28.7	n/a	n/a

Sources: (1) Historical and projected emissions, as well as Member States' climate policy targets and 2005 base year emissions under the Effort Sharing Decision (for 2020) are measured in global warming potential (GWP) values from the 4th Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC). Member States' climate policy targets and 2005 base year emissions under the Effort Sharing Regulation (for 2030) are in GWP values from the 5th Assessment Report (AR5). The table above shows the base year emissions 2005 under the Effort Sharing Decision, using AR4 GWP values. Emissions for 2017-2021 are expressed in percentage change from 2005 base year emissions, with AR4 GWP values. 2021 data are preliminary. The table shows the 2030 target under Regulation (EU) 2023/857 that aligns it with the EU's 55% objective, in percentage change from 2005 base year emissions (AR5 GWP). Distance to target is the gap between Member States' 2030 target (with AR5 GWP values) and projected emissions with existing measures (WEM) and with additional measures (WAM) (with AR4 GWP values), in percentage change from the 2005 base year emissions. Due to the difference in global warming potential values, the distance to target is only illustrative. The measures included reflect the state of play as of 15 March 2021.

(2) Net removals are expressed in negative figures, net emissions in positive figures. Reported data are from the 2023 greenhouse gas inventory submission. 2030 value of net greenhouse gas removals as in Regulation (EU) 2023/839 amending Regulation (EU) 2018/841 (LULUCF Regulation) – Annex IIa, kilotons of CO2 equivalent, based on 2020 submissions.

(3) Renewable energy and energy efficiency targets and national contributions are in line with the methodology established under Regulation (EU) 2018/1999 (Governance Regulation).

(4) Percentage of total revenue from taxes and social contributions (excluding imputed social contributions). Revenue from the EU Emissions Trading System is included in environmental tax revenue.

(5) Expenditure on gross fixed capital formation for the production of environmental protection services (abatement and prevention of pollution) covering government, industry, and specialised providers.

(6) European Commission, Study on energy subsidies and other government interventions in the European Union, 2022 edition.

(7) The climate protection gap refers to the share of non-insured economic losses caused by climate-related disasters. This indicator is based on modelling of the current risk from floods, wildfires and windstorms as well as earthquakes, and an estimation of the current insurance penetration rate. The indicator does not provide information on the split between the private/public costs of climate-related disasters. A score of 0 means no protection gap, while a score of 4 corresponds to a very high gap (EIOPA, 2022).

(8) Sulphur oxides (SO2 equivalent), ammonia, particulates < 10 µm, nitrogen oxides in total economy (divided by GDP).

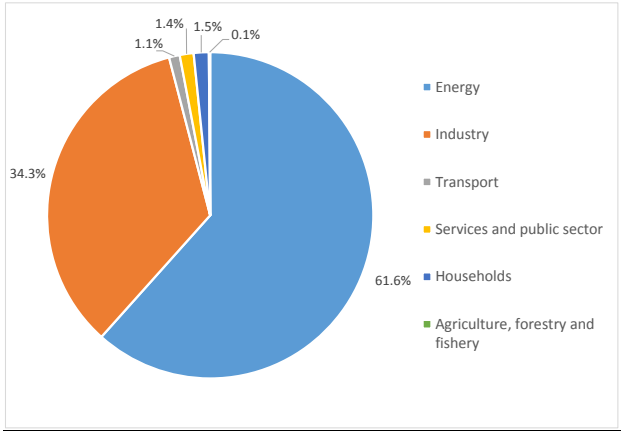
(9) Battery electric vehicles (BEV) and fuel cell electric vehicles (FCEV).

Finland has been involved in various initiatives for closer regional cooperation aimed at accelerating the roll-out of offshore wind energy, setting generation capacity goals and looking into the potential for decarbonising its gas system by integrating renewable and low-carbon gases. This Annex ([64]) sets out actions carried out by Finland to achieve the REPowerEU objectives, including through the implementation of its recovery and resilience plan, in order to improve energy security and affordability while accelerating the clean energy transition, and contributing to enhancing the EU's competitiveness in the clean energy sector ([65]).

Diversifying Finland's gas supply is no mean feat, but the country has strengthened its security of supply through the Inkoo floating storage and regasification unit (FSRU). The Memorandum of Understanding signed in 2022 between Estonia and Finland guarantees cooperation and contains an agreement to rent a FSRU for a period of ten years in either of the two countries, assessed as of significant importance in Annex 3 to the REPower Communication.

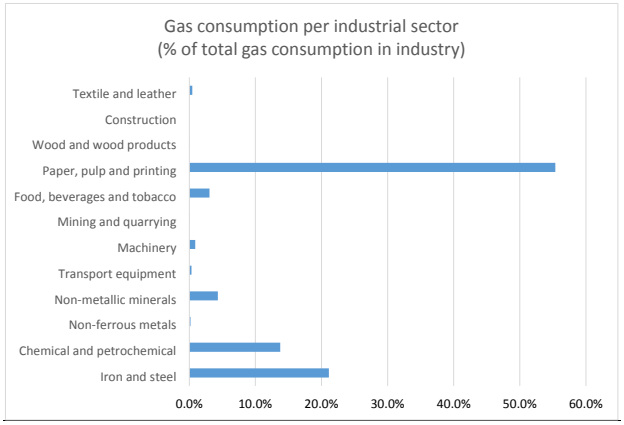
The commissioning of the Baltic connector in 2019 effectively ended Finland's isolation, connecting its grid to the EU gas grid and ensuring the entire region's security of supply. In conjunction with other key Projects of Common Interest (PCIs) in the Baltic region, the Baltic connector has helped decrease Finland's dependence on Russian gas in a region historically dependent on a single supplier. In cooperation with Estonia and in agreement with the Baltic countries, Finland leased an additional liquefied natural gas terminal to meet the additional short-term gas needs of the Baltic region. This ties in with its policy of phasing out fossil fuels by 2035 but comes with a risk of importing liquefied natural gas (LNG) originating from Russia until then. Finland imported 264,65 million cubic meters LNG from Russia in 2022. Over the period August 2022 – March 2023, 56% of gas consumption has been saved in (country) compared to the previous 5-years average.

Graph A7.1:**Share of gas consumption per sector, 2021**



Source: Eurostat

Graph A7.2:**Gas consumption per industrial sector, 2021 (% of total gas consumption in industry)**



Source: Eurostat

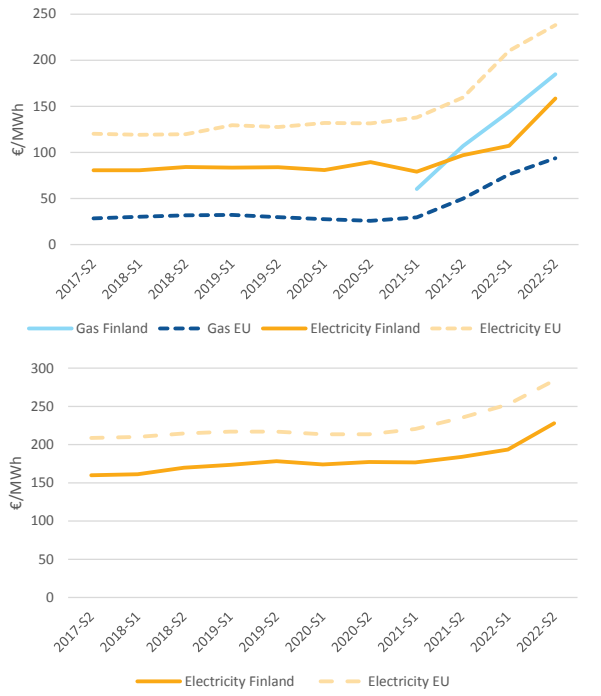
In the Baltic Sea region, the commissioning of electricity PCIs between Finland, Sweden and Poland and the Baltic countries has already made it possible to end the isolation

([64]) It is complemented by Annex 6 as the European Green Deal focuses on the clean energy transition, by Annex 8 on the actions taken to mitigate energy poverty and protect the most vulnerable ones, by Annex 9 as the transition to a circular economy will unlock significant energy and resource savings, further strengthening energy security and affordability, and by Annex 12 on industry and single market complementing ongoing efforts under the European Green Deal and REPowerEU.

([65]) in line with the Green Deal Industrial Plan COM(2023) 62 final, and the proposed Net-Zero Industry Act COM(2023) 161 final

of the Baltic countries and couple the Nordic market with the Baltic electricity market. The commissioning of the third interconnector between Finland and Sweden (the Aurora Line) in 2025 will help increase the security of Finland's supply and further integrate it into the Nordic electricity system. It will also make it possible to better use balancing power and reserves in Finland and Sweden, further contributing to the integration of renewable energy sources into the Nordic and Baltic systems. Given the expected generation capacity for both onshore and offshore renewables, a fourth interconnection is being planned with Sweden to increase cross-border flows and trade between the two countries and support the convergence of electricity prices.

Graph A7.3:**Finland's retail energy prices for industry (top) and households (bottom)**



(1) On electricity, the band consumption is DC for households and ID for industry
(2) On gas, the band consumption is D2 for households and I4 for industry
(3) No data available on retail gas price for industry before Q1-2021
Source: Eurostat

During the first half of 2022, Finland's retail gas prices for industry were almost double the EU average, while being way below the EU average for electricity. For households, electricity prices remained considerably below the EU average. In December 2022, Finland announced additional measures to help citizens cope with their increased electricity bills and decided on the aid to be offset against the bills during the winter months. In the aftermath of supply cuts and the phase-out of energy supplies from Russia, Finland introduced additional energy efficiency measures. The measures to phase out oil and gas use in buildings were complemented by a nationwide information campaign, 'Down a degree to ensure energy for all households'.

Finland is one of the EU-27 leaders in renewable energy. The main forms of renewable energy used are bioenergy, fuels from forest industry side streams and other wood-based fuels, hydropower, wind power and ground heat. Finland's deployment of renewable energy reached a total of 12.1 GW in 2022, a 26% increase from 2021. Most of this growth was in solar (+39%) and wind energy (+72%). ([66]) Renewable energy sources represented about 46% in total gross final energy consumption in 2021 and the aim set in the national energy and climate plan up to 2030 is to increase the use of renewable energy sources to over 50% during the 2020s. In 2021, 54% of electricity production came from renewable energy. The key target in promoting renewable energy is to reduce greenhouse gas emissions and move away from an energy system based on fossil fuels.

Bioenergy plays a key role in the production of renewable energy and is largely integrated into the forestry and forest industries. In 2021, wood fuels, representing 30% of total energy consumption, were the most used energy source. Most wood fuels are by-products of the forest industry, including black liquor derived from the pulp-making process and bark, sawdust and other industrial wood residues. Logging residues and other low-value biomass from harvesting operations

([66]) IRENA, Renewable capacity statistics 2023

are also used to generate energy. Bioenergy is also generated from biodegradable waste and side streams of agriculture and industrial production and from municipal waste. The advanced biofuels sector is in its infancy, with the number of commercial plants still quite low. The EU is the world leader here, with 19 out of 24 operational, commercial advanced biofuels plants, with Sweden and Finland having the highest number (12). For 2017-2019, Finland is third in this area, after the US and France, with 69 high-value patent applications.

Wind and geothermal energy are being used more and more as renewable sources. Wind power construction in Finland began later than in many other EU countries. However, in recent years it has gained momentum, with national construction and production statistics setting new records year after year. At the end of 2021, there were 962 wind turbine generators installed, with a combined capacity of 3 257 MW, generating less than 10% of Finland's electricity consumption in 2021. Geothermal energy has come on in leaps and bounds over the past 5 years. A heat pump boom started with air-coupled heat pumps, which are still popular and remain the most sold. But the trend is shifting more and more to ground source heat pumps both in small-scale/residential use and in large-scale projects. Geo-energy is expected to become an even greater share of renewable energy in the years to come.

Solar electricity plays a growing role, especially where on-site energy generation substitutes energy bought from the grid. Solar heating is used to supplement the main heating system. Despite its northern location, annual solar heat production in Finland is only about 20% less than that of northern Italy. Annual irradiation levels are the same as in Germany. The main technical challenges for Finland are related to the intermittency of available solar energy (day-night and summer-winter cycles), particularly in the north. Finland's share of solar power generation doubled in 2020, but is still a small part of its total power generation.

To tackle the problem of lengthy permit and appeal processes for renewable energy projects, the government proposed a law creating a temporary fast-track system for environmental and water permit procedures and certain appeal processes for projects that are compliant with the DNSH principle. The law entered into force 1st of January 2023 with the Parliament's approval. The fast-track system is proposed to apply to permit processes that are pending in the national environmental and water permit authority between 2023 and 2026, and to appeal processes pending in the administrative courts between 2023 and 2028.

Finland has a strong industry for wind, components for batteries and grids, and is a leader in biofuels. In total the EU has 1.24 Million jobs in RES sector in 2022 ([67]) which in relation to total working population in the EU ([68]) means an average of 0,67% of all jobs are in the RES sector while in 2021 Finland had a total of 24.000 ([69]) people working in the renewable energy sector, which represents 0,96% of all jobs ([70]). Most of these jobs are in Solid Biomass (12.600 or 52%) and Wind energy (6.900 or 29%) ([71]).

The bioenergy sector is the largest renewables employer on the continent. Solid

([67]) https://www.irena.org/Publications/2022/Sep/Renewable-Energy-and-Jobs-Annual-Review-2022

([68]) 189 Million in 2021: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Employment_-_annual_statistics#:~:text=In%202021%2C%20the%20share%20of,in%20the%20remaining%208%20countries.

([69]) https://www.irena.org/Data/View-data-by-topic/Benefits/Renewable-Energy-Employment-by-Country

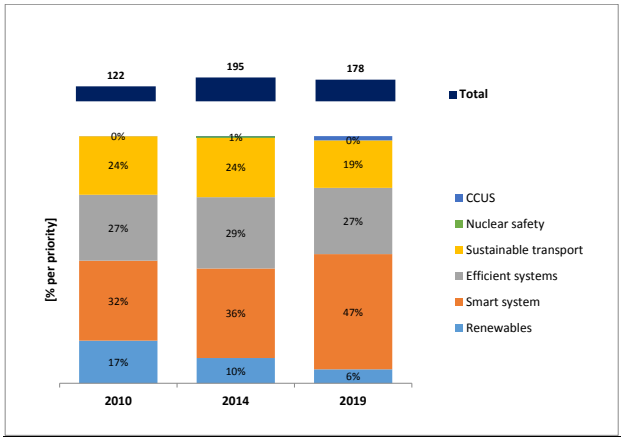
([70]) There are 5,5 Million people living in Finland (as of 2021), and 2,5 Million people were employed: https://eures.ec.europa.eu/living-and-working/labour-market-information/labour-market-information-finland_en

([71]) https://www.irena.org/Publications/2022/Sep/Renewable-Energy-and-Jobs-Annual-Review-2022

biomass (for heat and electricity) leads, with approximately 314 000 in the EU-27, of which ca. 4% are in Finland (i.e. 3 times higher ([72]) than EU average in this sector). It is also in the top 10 for renewable energy, with over 40% of renewable energy jobs in manufacturing. It is a leading transformer manufacturer and ranks relatively high in the number of peer-reviewed wind research and innovation (R&I) articles it has published per year (2010-2021): 13th for wind energy and 9th for grid integration. The mineral-intensive transition to clean energy will require a considerable supply of many critical minerals (Annex 5). In particular graphite, cobalt and lithium, on the list of EU critical raw materials, and anode production, are a weak point, but there have been some positive developments recently, mostly in Finland and Sweden. Globally, Finland (10%) is a relatively significant producer of refined cobalt, second only to China, and the cobalt refinery in Kokkola is the largest one outside of China.

Finland is among the main contributors in the EU, and globally, to hydropower-related high-value inventions (2017-2019). However, investment in R&I as an Energy Union priority ([73]) decreased from 0.115% in 2014 to 0.060% in 2020 (share of GDP); over a similar period (2014-2019), private R&I investment in Energy Union priorities also decreased, from 0.239% to 0.198%. **The number of patent families in Energy Union priorities increased from 22.7 per million inhabitants in 2014 to 32.2 per million inhabitants in 2019.** Venture capital investments in climate tech start-ups and scale-ups saw a steep increase between 2017 and 2019, jumping from only EUR 28.7 million in 2017 to EUR 132.4 million in 2019. Regarding market surveillance activities, based on information provided through the relevant reporting mechanisms, Finland is not carrying out checks on products covered by eco-design and energy labelling. This raises serious concerns with respect to the enforcement of market surveillance obligations and the compliance levels of the concerned products, level playing field among economic operators, missed energy and CO2 savings and consumer trust.

Graph A7.4:**Patent families in Energy Union R&I priorities**



Source: JRC SETIS (2022)

Finland is a leader in smart grid technology. This is due to its early adoption of related technologies such as household-specific, remotely readable, accurate electricity consumption metering and real-time power grid failure monitoring. This has led to improved energy use information for customers and real-time billing. Finland is now taking the next step in smart grid technologies to cater for the increased volume of small-scale generation, customer-level energy storage, electric vehicles and controllable loads. The aim is to put consumers at the heart of energy and efficiency measures.

([72]) Finland's working population equals 1,3% of all EU overall jobs

([73]) Renewables, smart systems, efficient systems, sustainable transport, carbon capture, utilisation and storage (CCUS) and nuclear safety, COM(2015) 80 final (Energy Union Package).

Table A7.1: **Key energy indicators**

		FINLAND				EU			
		2018	2019	2020	2021	2018	2019	2020	2021
ENERGY DEPENDENCE	**Import Dependency [%]**	45%	43%	43%	38%	58%	61%	57%	56%
	of Solid fossil fuels	101%	99%	92%	72%	44%	44%	36%	37%
	of Oil and petroleum products	98%	95%	102%	95%	95%	97%	97%	92%
	of Natural Gas	100%	101%	100%	100%	83%	90%	84%	83%
	Dependency from Russian Fossil Fuels [%]								
	of Hard Coal	66%	64%	55%	47%	40%	44%	49%	47%
	of Crude Oil	89%	92%	84%	83%	30%	27%	26%	25%
	of Natural Gas	98%	97%	67%	75%	40%	40%	38%	41%

		2015	*2016*	2017	2018	2019	2020	2021	2022
ELECTRICITY	**Gross Electricity Production (GWh)**	68,599	68,757	67,523	70,263	68,650	69,267	72,122	-
	Combustible Fuels	25,999	26,399	25,030	27,959	25,923	21,391	23,672	-
	Nuclear	23,245	23,203	22,477	22,793	23,870	23,291	23,598	-
	Hydro	16,769	15,799	14,772	13,301	12,421	15,883	15,792	-
	Wind	2,327	3,068	4,795	5,839	6,025	8,256	8,507	-
	Solar	11	22	48	90	147	219	298	-
	Geothermal	0	0	0	0	0	0	0	-
	Other Sources	248	266	401	281	264	227	255	-
	Net Imports of Electricity (GWh)	16,337	18,951	20,425	19,936	20,042	15,104	17,768	-
	As a % of electricity available for final consumption	21%	23%	25%	24%	24%	19%	21%	-
	Electricity Interconnection (%)	-	-	28.80%	28.21%	29.1%	29.0%	24.2%	24.0%

		2015	2016	2017	2018	2019	2020	2021	2022
DIVERSIFICATION OF GAS SUPPLIES	**Gas Consumption (in bcm)**	2.7	2.5	2.3	2.6	2.5	2.4	2.4	1.4
	Gas Imports - by type (in bcm)	2.7	2.5	2.3	2.7	2.8	2.8	2.8	-
	Gas imports - pipeline	2.7	2.5	2.3	2.6	2.6	2.6	2.6	-
	Gas imports - LNG	0.0	0.0	0.0	0.1	0.2	0.2	0.2	-
	Gas Imports - by main source supplier (in bcm) (1)								
	Russia	2.7	2.5	2.3	2.6	2.6	1.9	2.1	-
	Estonia	0.0	0.0	0.0	0.0	0.0	0.8	0.6	-
	Lithuania	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-
	Norway	0.0	0.0	0.0	0.1	0.1	0.0	0.0	-
	Netherlands	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-

		2019	2020	2021	2022
	LNG Terminals				
	Number of LNG Terminals (2)	0	0	0	1
	LNG Storage capacity (m3 LNG)	0	0	0	68,000
	Underground Storage				
	Number of storage facilities	0	0	0	0
	Operational Storage Capacity (bcm)	0	0	0	0

		2019	2020	2021	2022
CLEAN ENERGY	**VC investments in climate tech start-ups and scale-ups (EUR Mln) (3)**	28.7	34.0	132.4	n.a.
	as a % of total VC investments in Finland	3.3%	2.5%	6.7%	n.a.
	Research & Innovation spending in Energy Union R&i priorites				
	Public R&I (EUR mln)	165.33	150.56	n.a.	n.a.
	Public R&I (% GDP)	0.1%	0.1%	n.a.	n.a.
	Private R&I (EUR mln)	477.57	n.a.	n.a.	n.a.
	Private R&I (% GDP)	0.20%	n.a.	n.a.	n.a.

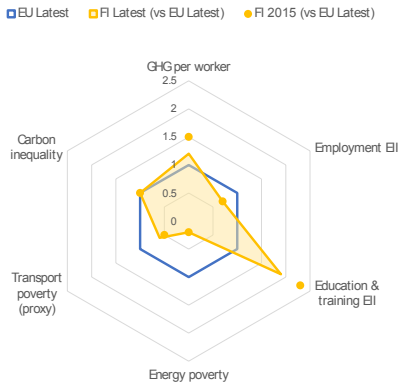
(1) The ranking of the main suppliers is based on the latest available figures (for 2021)
(2) FSRU included
(3) Venture Capital investments include Venture Capital deals (all stages) and Private Equity Growth/Expansion deals (for companies that have previously been part of the portfolio of a VC investment firm).

Source: Eurostat, Gas Infrastructure Europe (Storage and LNG Transparency Platform), JRC SETIS (2022), JRC elaboration based on PitchBook data (06/2022)

This Annex monitors Finland's progress in ensuring a fair transition towards climate neutrality and environmental sustainability, notably for workers and households in vulnerable situations. In Finland, the number of workers in energy-intensive industries undertaking education and training is significantly above the EU average. Investment in skills, in line with the Council Recommendation ([74]), supports the fair transition and the implementation of REPowerEU. Under Finland's recovery and resilience plan (RRP), the broad reform of continuous learning services will support the green transition, with a focus on training and skills development ([75]). The European Social Fund Plus (ESF+) will support investment in re- and upskilling, including in green skills.

The green economy is expanding, but workers in declining activities need active support. The greenhouse gas emissions intensity of the workforce declined from 20.7 to 16.1 tonnes per worker between 2015 and 2021, while remaining above the EU average of 13.7 tonnes (see Graph A8.1 and Table A8.1). Employment in energy-intensive industries represented a stable share of 2.2% of total employment in 2021 (in 2020: 2.2% vs. 3.0% in the EU). Employment in mining and quarrying has increased by 16.9% since 2015, but reducing the use of peat for energy by at least 50% by 2030 will likely lead to employment shifts in peat extraction and related sectors. Total jobs in the environmental goods and services sector grew by 3.7% during 2015-19 (EU: +8.3%), reaching 5.1% of total employment, significantly above the EU average (see Annex 9 for circular jobs specifically). According to recent estimates ([76]), the green transition will create more than 11 500 jobs in processing and 3 100 in primary production by 2030, while job losses are expected in services. The job vacancy rate in construction, which is key for the green transition, stood at 2.5% in 2022 (against the EU average of 4.0%) ([77]).

Graph A8.1:**Fair transition challenges in Finland**



Source: Eurostat, EMPL-JRC GD-AMEDI/AMEDI+ projects and World Inequality Database (see Table A8.1).

Significant investment is planned to support up- and reskilling in declining and transforming sectors. Skills are key for smooth labour market transitions and preserving jobs in transforming sectors. In energy-intensive industries, workers' participation in education and training broadly remained stable between 2015 and 2022, and at 20% was well above the EU average (10.4%). In Finland, 29% of citizens believe they do not have the necessary skills to contribute to the green transition (EU: 38%) ([78]). The continuous learning reform outlined in the RRP addresses the employment impact of the transition by strengthening green and digital skills. At least 20% of the investment in training is targeted at the green and digital transitions, with 5% specifically for the transition to a carbon-neutral society. The Territorial Just Transition Plans will facilitate the phasing out of peat production in Finland with the support of the Just Transition Fund (JTF), while considering the social, employment and skills impacts and proposing specific measures to address them.

([74]) Council Recommendation of 16 June 2022 on ensuring a fair transition towards climate neutrality (2022/C 243/04) covers employment, skills, tax-benefit and social protection systems, as well as essential services and housing.

([75]) See 2022 Country Report (Annex 6).

([76]) Medium-term Climate Change Policy Plan

([77]) Eurostat (JVS_A_RATE_R2)

([78]) Special Eurobarometer 527. Fairness perceptions of the green transition (May – June 2022).

Table A8.1: **Key indicators for a fair transition in Finland**

Indicator	Description	FI 2015	FI Latest	EU Latest
GHG per worker	Greenhouse gas emissions per worker - CO2 equivalent tonnes	20.7	16.2 (2021)	13.7 (2021)
Employment EII	Employment share in energy-intensive industries, including mining and quarrying (NACE B), chemicals (C20), minerals (C23), metals (C24), automotive (C29) - %	2.2	2.2 (2020)	3 (2020)
Education & training EII	Adult participation in education and training (last 4 weeks) in energy-intensive industries - %	23.4	20 (2022)	10.4 (2022)
Energy poverty	Share of the total population living in a household unable to keep its home adequately warm - %	1.7	1.3 (2021)	6.9 (2021)
Transport poverty (proxy)	Estimated share of the AROP population that spends over 6% of expenditure on fuels for personal transport - %	17.2	23.8 (2023)	37.1 (2023)
Carbon inequality	Average emissions per capita of top 10% of emitters vs bottom 50% of emitters	4.8	4.9 (2020)	5 (2020)

Source: Eurostat (env_ac_ainah_r2, nama_10_a64_e, ilc_mdes01), EU Labour Force Survey (break in time series in 2021), EMPL-JRC GD-AMEDI/AMEDI+ projects and World Inequality Database (WID).

In Finland, the JTF aims to halve the energy use of peat by 2030. A total of EUR 465 million will be invested through the JTF. In Finland, approximately 11% of the total ESF+ funding (EUR 604.7 million) contributes to green skills and jobs.

Energy poverty indicators are at a good level, having improved slightly in recent years. The share of the population unable to keep their homes adequately warm declined from 1.7% in 2015 to 1.3% in 2021 ([79]). In particular, 4.1% of the population at risk of poverty (AROP) were affected in 2021 (EU: 16.4% in 2021), as were 1.4% of lower middle-income households (in deciles 4-5) in 2021 (EU: 8.2% in 2021). Before the energy price hikes, an estimated 13.5% of the total population and 38.9% of the (expenditure-based) AROP population had residential expenditure budget shares on electricity, gas, and other fuels ([80]) above 10% of their household budget, which are below the estimated EU averages of 26.9 and 48.2%, respectively.

The increased energy prices in 2021-2023 are negatively affecting household budgets, in particular for low-income groups. As a result of price changes during the August 2021 to January 2023 period relative to the 18 months prior (see Annex 7), in the absence of policy support and behavioural responses, the share of individuals living in households which spend more than 10% of their budget on energy would have increased by 7.6 pps for the whole population and by 6.3 pps among the (expenditure-based) AROP population, which is less than the EU-level increases (16.4 and 19.1 pps, respectively) ([81]). Expenditure shares of low and lower-middle income groups for electricity would have increased the most, as shown in Graph A8.2. Among the (expenditure-based) AROP population, individuals living in households with budget shares for private transport fuels ([82]) above 6% would have increased (6.6 pps vs. 5.3 pps), still standing below the EU average in January 2023 (23.8% vs. 37.9%). According to a recent study ([83]), 48% of people living in an owner-occupied dwelling had already reduced their energy consumption due to rising energy costs. The RRP includes measures to boost the generation of renewable energy, decarbonise industry, reduce emissions from buildings and promote low-emission transport.

([79]) Energy poverty is a multi-dimensional concept. The indicator used focuses on an outcome of energy poverty. Further indicators are available at the Energy Poverty Advisory Hub.

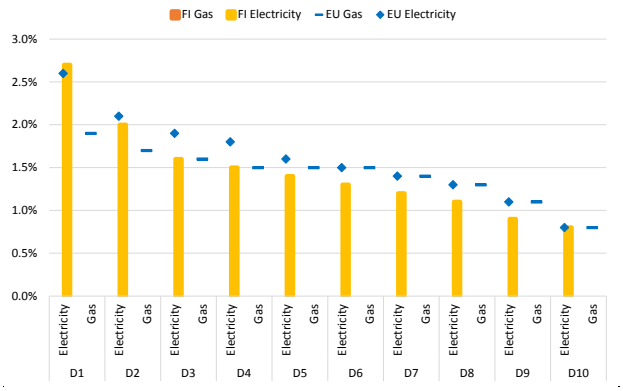
([80]) Products defined according to the European Classification of Individual Consumption according to Purpose (ECOICOP): CP045.

([81]) EMPL-JRC GD-AMEDI/AMEDI+ ; see details in the related technical brief.

([82]) ECOICOP: CP0722.

([83]) Nordea study – survey conducted in August 2022.

Graph A8.2:**Distributional impacts of energy prices due to rising energy expenditure (2021-2023)**



Mean change of energy expenditure as a percentage (%) of total expenditure per income decile (D) due to observed price changes (August 2021 – January 2023 relative to the 18 months prior), excl. policy support and behavioural responses.
Source: EMPL-JRC GD-AMEDI/AMEDI+ projects, based on Household Budget Survey 2015 and Eurostat inflation data for CP0451 and CP0452.

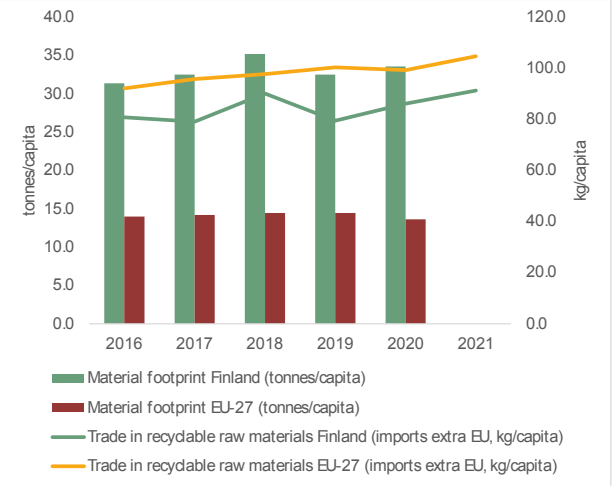
Access to public transport displays an urban-rural divide. Around half of the population perceive public transport to be relatively available (48% vs 55% in the EU), affordable (51% vs 54%), while 63% consider transport to be of good quality (vs 60% in the EU). Rural areas perform worse than urban areas, in particular regarding their perception on transport availability (24% vs 46% in the EU) ([84]). The average carbon footprint of the top 10% emitters among the population in Finland is about 4.9 times higher than that of the bottom 50% (see Graph A8.1), slightly less pronounced than the EU average (5.0 times).

([84]) EU (rural): 46%, 48% and 56% respectively. Special Eurobarometer 527.

The circular economy transition is key to delivering on the EU's climate and environmental goals and provides large socio-economic benefits ([85]). It spurs job growth, innovation and competitiveness and fosters resilience and resource security. The circularity transition of industry, the built environment and agri-food can generate significant environmental improvements (see Annex 6), as they rank among the most resource-intensive systems.

Finland is on track to meet the EU's circular economy goals, although improvement is still needed on the circular material use rate and material footprint. The 2020 EU circular economy action plan (CEAP) aims at doubling the circular material use rate between 2020 and 2030. In 2021, the circular material use rate in Finland was 2%, which compared to the EU 2021 average of 11.7% shows that there has been limited progress over the last few years. The CEAP also aims to significantly decrease the EU's material footprint. In 2020, Finland's material footprint (33.6 tonnes per capita) was much higher than the EU average (13.7 tonnes per capita) (see Graph A9.1).

Graph A9.1:**Trend in material use**



Source: Eurostat

Finland's recently adopted circular economy policies are yet to translate into positive results on the ground. In 2019, the Finnish Innovation Fund Sitra updated its roadmap on the circular economy, introducing 30 new actions, and in April 2021 it adopted the resolution on promoting a circular economy ([86]). In March 2022, Finland adopted a revised national waste management plan ([87]) for the mainland (Åland islands excluded) that runs until 2027.

Finland's waste management performance has stagnated for the past several years. Finland missed the EU's 2020 50% municipal waste recycling target. Finland with a 37.1% recycling rate in 2021 is at risk of missing the subsequent 2025 55% municipal waste recycling target. Finland has made considerable progress in curbing its landfill rate over recent years, but did so by increasing incineration capacity. Finland needs to improve separate waste collection rates and subsequent recycling rates, and reduce its reliance on incineration (see Graph A9.2).

([85]) A new Circular Economy Action Plan (europa.eu).

([86]) Government Resolution on The Strategic Programme For Circular Economy.

([87]) Kierrätyksestä kiertotalouteen. Valtakunnallinen jätesuunnitelma vuoteen 2027 (valtioneuvosto.fi)

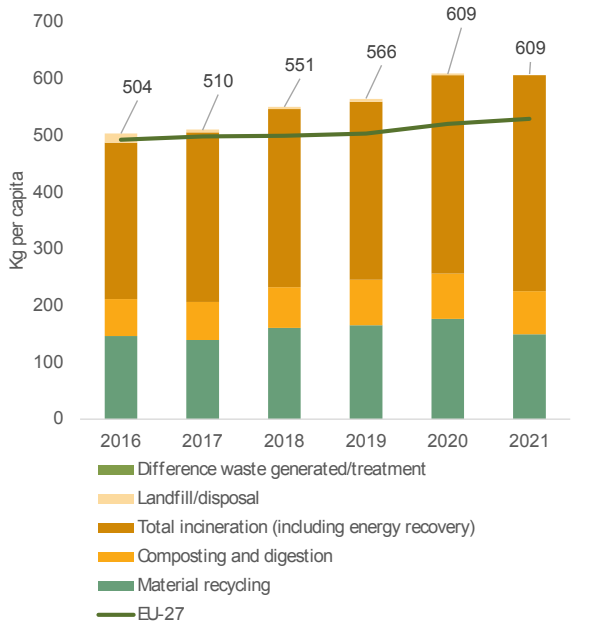
Table A9.1: **Overall and systemic indicators on circularity**

AREA	2016	2017	2018	2019	2020	2021	EU-27	Latest year EU-27
Overall state of the circular economy								
Material footprint (tonnes/capita)	31.4	32.6	35.3	32.6	33.6	-	13.7	2020
YoY growth in persons employed in the circular economy (%)[1]	-5.2	-4.2	-	-	-	-	2.9	2019
Water exploitation index plus (WEI+) (%)	1.2	0.9	1.4	1.4	-	-	3.6	2019
Industry								
Resource productivity (purchasing power standard (PPS) per kilogram)	1.0	1.0	1.0	1.1	1.0	1.0	2.3	2021
Circular material use rate (%)[2]	5.3	5.6	5.9	6.3	5.9	2.0	11.7	2021
Recycling rate (% of municipal waste)	42.1	40.5	42.3	43.5	42.1	37.1	49.6	2021
Built environment								
Recovery rate from construction and demolition waste (%)[3]	87.0	-	74.0	-	63.0	-	89.0	2020
Soil sealing index (base year = 2006)[4]	103.7	-	107.7	-	-	-	108.3	2018
Agri-food								
Food waste (kg per capita)[5]	-	-	-	-	116.0	-	131.0	2020
Composting and digestion (kg per capita)	65.0	67.0	72.0	80.0	80.0	76.0	100.0	2021

(1) Persons employed in the circular economy only tracks direct jobs in selected sub-sectors of NACE codes E, C, G and S; (2) the circular material use rate measures the share of material recovered and fed back into the economy in overall material use; (3) the recovery rate of construction and demolition waste includes waste which is prepared for reuse, recycled or subject to material recovery, including through backfilling operations; (4) soil sealing: 2016 column refers to 2015 data; (5) food waste includes primary production, processing and manufacturing, retail and distribution, restaurants and food services, and households.

Source: Eurostat, European Environment Agency

Graph A9.2:**Treatment of municipal waste**



Source: Eurostat

The industrial system in Finland is inefficient on resource productivity. The economy in Finland, particularly industry (e.g. mining and extraction), is not efficient at using materials to produce wealth. In 2021, Finland generated 1.0 PPS (purchasing power standard) per kg of material consumed, putting Finland's resource productivity well below the EU average of EUR 2.3 PPS/kg (see Annex 5). It is paramount for Finland to fully implement its sustainable growth programme, which has earmarked EUR 110 million to Business Finland in the search for circular economy solutions for industry, especially mining and extraction.

The built environment system represents a challenge in Finland. The 2020 recovery rate for construction and demolition waste was much lower (63%) than the EU average (89%). As regards soil sealing, the index measured in 2018 has increased since 2016 and approaches the EU average. There is scope for renovating existing buildings and increasing the share of secondary raw materials. Finland needs to step up action accordingly and ensure that relevant schemes (e.g. funding for circular construction R&D projects) are effectively implemented into land-use planning and the real estate industry.

The agri-food system in Finland is becoming more circular. In 2021, Finland's composting and anaerobic digestion has slightly decreased from the previous two years to 76 kg/capita and remains below the EU average (100

kg/capita). Increasing anaerobic digestion enhances Finland's energy security by generating biomethane and/or organic fertilisers. It is noteworthy that in 2022 the food industry renewed the commitment to material efficiency with the restaurant sector now included to decrease food waste generation.

There remains a financing gap in the circular economy, including waste management. Additional investments are required to address the implementation gap and identified needs. The financing gap was estimated at EUR 463 million per year between 2014 and 2020. Over this period, investment needs were estimated to be at least EUR 856 million per year while investment baselines were EUR 393 million per year (see Annex 6). For Finland, investment areas such as eco-design, repair, reuse and remanufacturing will be necessary to reach EU's circular economy objectives. Additional investments are also necessary to improve separate collection of waste and additional waste recycling infrastructure to divert recyclable waste from incineration. Finland still needs to invest an additional EUR 289 million (around EUR 41.3 million per year) between 2021 and 2027 to meet the recycling targets for municipal waste and packaging waste ([88]).

([88]) Study on investment needs in the waste sector and on the financing of municipal waste management in Member States - Publications Office of the EU (europa.eu)

Digital transformation is key to ensuring a resilient and competitive economy. In line with the Digital Decade Policy Programme, and in particular with the targets in that Programme for digital transformation by 2030, this Annex describes Finland's performance on digital skills, digital infrastructure/connectivity and the digitalisation of businesses and public services. Where relevant, it makes reference to progress on implementing the Recovery and Resilience Plan (RRP). Finland allocates EUR 0.5 billion of its total RRP budget to digital ([89]).

The Digital Decade Policy Programme sets out a pathway for Europe's successful digital transformation by 2030. The Programme provides a framework for assessing the EU's and Member States' digital transformation, notably via the Digital Economy and Society Index (DESI). It also provides a way for the EU and its Member States to work together, including via multi-country projects, to accelerate progress towards the Digital Decade digital targets and general objectives ([90]). More generally, several aspects of digital transformation are particularly relevant in the current context. In 2023, the European Year of Skills, building the appropriate skillset to make full use of the opportunities that digital transformation offers is a priority. A digitally skilled population increases the development and adoption of digital technologies and leads to productivity gains ([91]). Digital technologies, infrastructure and tools all play a role in the fundamental transformation needed to adapt the energy system to the current structural challenges ([92]).

Finland is among the best performing countries in digital skills on most of the indicators, including basic digital skills, ICT specialists and the proportion of female ICT specialists. Given the size and relevance of the ICT in the economy, the demand for ICT-skilled workers is high and companies report difficulties in hiring ([93]). Finland is implementing several measures, including activities to increase the intake of students in digital technologies. But there is still room for additional, complementary measures to increase the number of ICT specialists.

Finland is broadly in line with the EU average on the indicators for digital infrastructure/connectivity. But due to the features of its sociogeography (large but sparsely populated territory), it scores below the EU average on the very high capacity network (VHCN) and fibre to the premises (FTTP) coverage. On the other hand, in overall 5G coverage it scores well above the EU average (95% vs EU 81%). 5G coverage on the 3.4-3.8 GHz spectrum band, which is essential for enabling advanced applications requiring large spectrum bandwidth is 84%, is also much higher than the EU average of 41%.

Finland excels on the digitalisation of businesses, with all indicators significantly above the EU average for SMEs with at least a basic level of digital intensity, enterprises using big data solutions and, especially, in the use of cloud services and artificial intelligence.

Finland performs very well on the digitalisation of public services. The possibilities for online interaction between government authorities and the public - for

([89]) The share of financial allocations that contribute to digital objectives has been calculated using Annex VII of the RRF Regulation.

([90]) The Digital Decade targets as measured by DESI indicators and complementary data sources are integrated to the extent currently available and/or considered particularly relevant in the MS-specific context.

([91]) See for example OECD (2019): OECD Economic Outlook, Digitalisation and productivity: A story of complementarities, OECD Economic Outlook, Volume 2019 Issue 1 | OECD iLibrary (oecd-ilibrary.org).

([92]) The need and possible actions for a digitalisation of the energy system are laid out in the Communication 'Digitalisation the energy system – EU action plan' (COM(2022)552.

([93]) Source: Eurostat – European Union Survey on ICT Usage and eCommerce in Enterprises

citizens as well as for businesses - approach saturation and for businesses, the Digital Decade target is already reached. In the access to electronic health records, it scores 89 out of 100, much higher than the EU average which is at 71. The country is currently finalizing the implementation of a new digital identity system that will serve also as a certified identification tool in the meaning of eIDAS Regulation. By far the largest number of digital measures in the Finnish RRP are focused on public services including measures to support the digital transformation of healthcare and of public services, with a particular focus on data-driven innovation, the exchange of digital information and the use of public sector data.

Being at the cutting edge of ICT technology and policy, the government submitted to the Parliament a report on National Digital Compass based on EU Digital Decade Policy Programme in September 2022 and actively seeks to harness the potential of the Finnish digital economy.

Table A10.1: **Key Digital Decade targets monitored by DESI indicators**

	Finland			EU	Digital Decade target by 2030 (EU)
	DESI 2021	DESI 2022	DESI 2023	DESI 2023	
Digital skills					
At least basic digital skills	**NA**	**79%**	**79%**	**54%**	**80%**
% individuals		2021	2021	2021	2030
ICT specialists ([1])	**7.6%**	**7.4%**	**7.4%**	**4.5%**	**20 million**
% individuals in employment aged 15-74	2020	2021	2021	2021	2030
Digital infrastructure/connectivity					
Fixed Very High Capacity Network (VHCN) coverage	**67%**	**68%**	**71%**	**73%**	**100%**
% households	2020	2021	2022	2022	2030
Fibre to the Premises (FTTP) coverage ([2])	**38%**	**40%**	**50%**	**56%**	**-**
% households	2020	2021	2022	2022	2030
Overall 5G coverage	**12%**	**72%**	**95%**	**81%**	**100%**
% populated areas	2020	2021	2022	2022	2030
5G coverage on the 3.4-3.8 GHz spectrum band	**NA**	**NA**	**84%**	**41%**	**-**
% populated areas			2022	2022	2030
Digitalisation of businesses					
SMEs with at least a basic level of digital intensity	**NA**	**NA**	**90%**	**69%**	**90%**
% SMEs			2022	2022	2030
Big data ([3])	**22%**	**22%**	**22%**	**14%**	**75%**
% enterprises	2020	2020	2020	2020	2030
Cloud ([3])	**NA**	**66%**	**66%**	**34%**	**75%**
% enterprises		2021	2021	2021	2030
Artificial Intelligence ([3])	**NA**	**16%**	**16%**	**8%**	**75%**
% enterprises		2021	2021	2021	2030
Digitalisation of public services					
Digital public services for citizens	**NA**	**90**	**92**	**77**	**100**
Score (0 to 100)		2021	2022	2022	2030
Digital public services for businesses	**NA**	**93**	**100**	**84**	**100**
Score (0 to 100)		2021	2022	2022	2030
Access to e-health records	**NA**	**NA**	**89**	**71**	**100**
Score (0 to 100)			2023	2023	2030

(1) The 20 million target represents about 10% of total employment.
(2) The Fibre to the Premises coverage indicator is included separately as its evaluation will also be monitored separately and taken into consideration when interpreting VHCN coverage data in the Digital Decade.

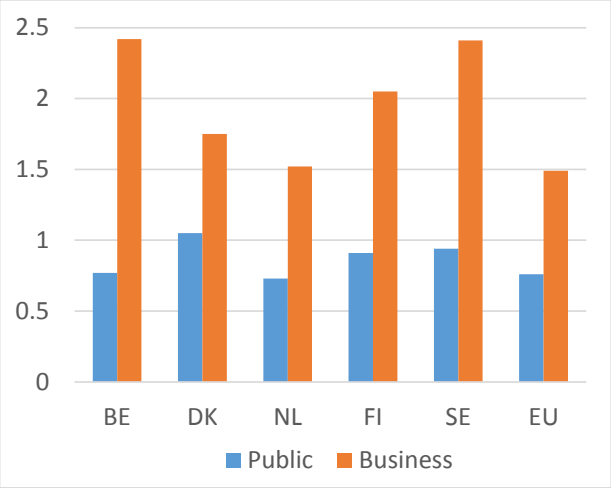
(3) At least 75 % of Union enterprises have taken up one or more of the following, in line with their business operations: (i) cloud computing services; (ii) big data; (iii) artificial intelligence.

Source: Digital Economy and Society Index

This Annex provides a general overview of the performance of Finland's research and innovation system, which is essential for delivering the twin green and digital transition.

Lack of significant improvements in the dynamics of total factor productivity is partially explained by lower spending on R&D as compared to the period before 2010. Finland set an aim to increase R&D spending to 4.0% of GDP ([94]) as compared to actual spending of 3.0% of GDP in 2021 and 3.7% in 2009. Achieving the 4.0% level requires a clear commitment from the government concerning public investment in R&D, better coordination of support between the agencies administrating grants for R&D, and a higher supply of R&D labour force ([95]).

Graph A11.1:**R&D intensity in % of GDP, 2021**



Source: Eurostat

Finland's R&D intensity ([96]) has been steadily increasing since 2018, but business R&D needs a boost to reach the national R&D target. R&D intensity reached 2.99% of GDP in 2021, increasing from 2.91% in 2020, but still far from its ambitious national target of 4.0% of GDP by 2030. In terms of business R&D, Finland is behind some innovation leaders (Belgium, Denmark and Sweden). Business R&D investment has grown in the past year from 1.84% of GDP in 2019 to 2.06% in 2021, recovering from the sharp decrease in the previous decade due to the decline of Nokia's role in the national R&D system.

Public support for business innovation is strengthening. Historically, Finland has not had particularly strong financial R&D incentives for businesses. However, in 2021 a 50% tax deduction was introduced for costs of R&D projects carried out in collaboration with universities and research institutes. The incentive has since been tripled so that between 2022 and 2027 companies will be able to receive a 150% tax deduction. This should help strengthen public support for business enterprise expenditure on R&D, which was still relatively weak in 2019 at 0.066% of GDP, three times less than the EU average of 0.196% of GDP.

The recovery and resilience plan (RRP) is expected to help boost public support for business R&D with investments in innovation ecosystems, research infrastructure and piloting. The objective of the R&D component is to contribute to strengthening R&D intensity. The amount of Recovery and Resilience Facility funds allocated to R&D and innovation is estimated at EUR 367 million (around 17.5% of the RRP). Locomotive companies selected by Business Finland, such as Valmet, Borealis Polymers, ABB, and Meyer Turku have each been allocated EUR 20 million to lead a specific ecosystem assembled by research organisations and SMEs developing green technologies.

Finland has one of the world's highest proportions of active innovators and its technological innovation is recovering.

([94]) According to OECD Working Paper 2021/08 'Targeting R&D intensity in Finnish innovation policy' the first target of 1.7% for 1980 was set in 1973 and climbed up to 4% target set in 2005. Finland's R&D intensity grew steadily from 1981 (1.15% of GDP) and reached a peak in 2009 (3.73% of GDP).

([95]) OECD (2022), OECD Economic Surveys: Finland 2022, OECD Publishing, Paris,

https://doi.org/10.1787/516252a7-en

([96]) Defined as gross domestic expenditure on R&D as a percentage of GDP); European benchmark target for R&D intensity is 3% of GDP.

According to latest EIB Investment Survey in 2022 ([97]), the share of active innovators in Finland was 52% of firms, nearly as high as in the US. In addition, in 2020, technological innovation, measured by patent applications, reversed its downward trend of the past two decades and Finland now ranks among the top performers in Europe. Notwithstanding this positive outlook, science-business linkages could be stronger. According to the OECD, 'there is a broadening gap between universities and industry – as the autonomy of universities made them focus on becoming internationally competitive in science and put less emphasis on and establish fewer incentives for industry cooperation'. To improve the situation, the country could move towards a more adaptive innovation policy and a more responsive system, with enhanced flexibility and rapid decision-making to address disruptions in the global context ([98]). The OECD recommended redesigning governance to generate a whole-of-government policy for innovation-enabling system transitions.

Table A11.1: **Key innovation indicators**

	2010	2015	2019	2020	2021	EU average (1)
Key indicators						
R&D intensity (gross domestic expenditure on R&D as % of GDP)	3.71	2.87	2.80	2.91	2.99	*2.26*
Public expenditure on R&D as % of GDP	1.10	0.94	0.94	0.94	0.91	*0.76*
Business enterprise expenditure on R&D (BERD), % of GDP	2.58	1.91	1.84	1.95	2.06	*1.49*
Quality of the R&I system						
Scientific publications in top 10% most cited publications worldwide as % of total publications of the country	11.3	11.3	12.2	:	:	*9.8*
PCT patent applications per billion GDP (in PPS)	9.9	7.8	6.9	:	:	*3.3*
Academia-business cooperation						
Public-private scientific co-publications as % of publications	12.6	12.3	12.1	11.8	11.8	*7.1*
Public expenditure on R&D financed by business, % of GDP	0.076	0.046	0.039	:	:	*0.054*
Human capital and skills availability						
New graduates in science & engineering per thousand population aged 25-34	23.8	17.8	17.6	18.4	:	*16*
Public support for business enterprise expenditure on R&D						
Total public sector support for BERD as % of GDP	0.074	0.081	0.066	:	:	*0.194*
Green innovation						
Share of environment-related patents in total patent applications filed under PCT (%)	14.7	14.6	16.4	:	:	*13.3*
Finance for innovation and economic renewal						
Venture capital (market statistics) as % of GDP	0.062	0.058	0.093	0.134	0.209	*0.074*
Employment in fast-growing enterprises in 50% most innovative sectors	3.4	5.0	7.6	:	:	*5.5*

eibis-2022-eu

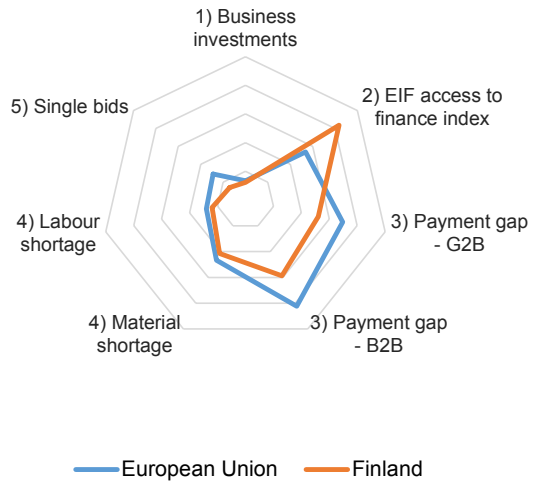
(1) EU average for the latest available year or the year with the highest number of country data.

([98]) OECD Reviews of Innovation Policy: Finland 2017.

Source: Eurostat, OECD, DG JRC, Science-Metrix (Scopus database and EPQ's Patent Statistical database), Invest Europe

Finland offers a good environment for doing business. The International Institute for Management Development (IMD) world competitiveness rankings ([99]) placed Finland 8th, up 3 places from the previous year. The improvement comes due to advances in both government and business efficiency. Despite a deterioration because of the general economic climate, according to the 2022 Survey on Access to Finance of Enterprises (SAFE) ([100]), Finnish SMEs faced relatively favourable financing conditions. Finland also has one of the best corruption perception scores in the world; and business digitalisation is a strength, with 88% of Finnish SMEs having at least a basic level of digital intensity (compared to the EU average of 60%). Finland has a relatively low level of restrictiveness in regulated professions.

Graph A12.1:**Business environment and competitiveness drivers**

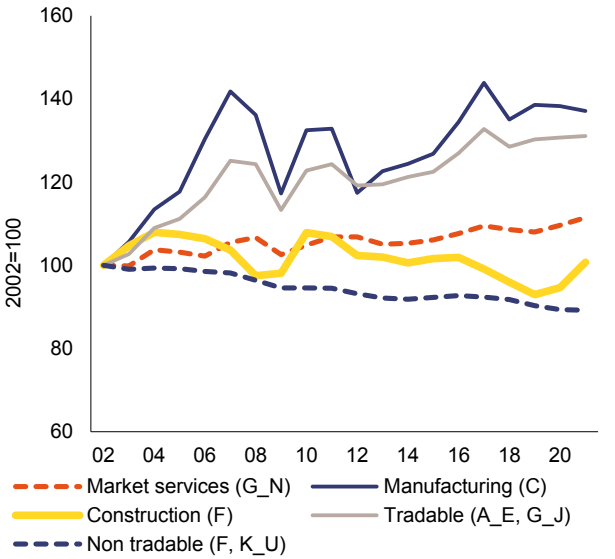


Source: 1) % of GDP, 2021 Eurostat;
2) composite indicator, 2021 European Investment Fund access to finance index;
3) average payment delay in number of days, 2022 Intrum;
4) % of firms in manufacturing facing constraints, 2022 European Commission business consumer survey;
5) proportion of contracts awarded with a single bidder, 2022 Single Market Scoreboard.

The Single Market Scoreboard indicates that Finland performs relatively well at transposing and applying EU law. The transposition deficit stood at 0.8% at the end of 2021 (EU average of 1.6%). There were 11 ongoing infringement procedures (versus the EU average of 27) ([101]).

Finland's productivity performance has stagnated. After impressive productivity growth until the late 2000's, recent real labour productivity growth has stalled. Since around 2010 real productivity has been consistently below both the EU average and those of its regional neighbours. After declining between 2019 and 2021, real labour productivity is forecast to have increased fractionally in 2022 (0.2%) but remains below the EU average. Explanations for this relatively poor recent performance include prominent differences between manufacturing and services, the tradeable and non-tradeable sectors (Graph A12.2) and an evident regional divide between the Greater Helsinki region and the three mainland Finnish regions.

Graph A12.2:**Productivity by sector**



Source: European Commission

Total factor productivity (TFP) has stalled for several years (Graph A12.3) and remains below that of Nordic peers. Low investment in areas that provide most support to productivity growth (machinery and equipment, including information and communication technology

([99]) World Competitiveness Rankings - IMD

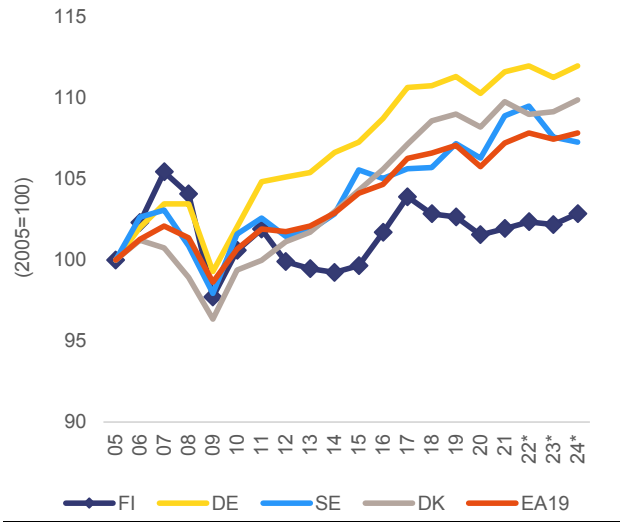
([100]) Data and surveys - SAFE (europa.eu)

([101])Single Market Scoreboard 2022

equipment and intellectual property products) is hindering the return to higher potential growth.

Finland is an innovation leader ([102]), scoring 135.5% of the EU average on the 2022 edition of the European Innovation Scoreboard ([103]). Performance is also increasing (by 19.5% percentage points) at a rate higher than that of the EU (9.9% percentage points). The government set an objective to increase research & development expenditure to 4% of GDP by 2030 from 2.9% of GDP in 2020 (see Annex 9). If efficient, this investment could also improve the productivity and competitiveness of the economy. At the same time, there are shortages of staff qualified to engage in R&D activities and an absence of a clear incentivisation model ([104]).

Graph A12.3:**Total factor productivity**



Source: European Commission

Finnish SMEs engage in international trade below the OECD average. Even though the value of exports by SMEs increased in 2021, exporting remains a challenge. A relatively limited share of Finnish SMEs sell online cross-border (8% versus the 9% average in the EU, according to the 2022 Digital Society and Economy Index), despite Finland being among the leaders in business digitalisation. Compared to peers, and to the EU, a low proportion of SMEs are concentrated in high knowledge-intensive industries (28% vs 47% in Sweden and 31.7% in Denmark in 2021) ([105]).

The Finnish economy has been affected by global supply chain disruptions and substantial increases in energy prices. In 2022, 42% of industrial firms reported constraints related to shortages in materials or equipment (vs. 32% for the EU) ([106]). Finland's economy relies slightly less on both non-EU and single market sources of value added compared to the EU average. In the current economic climate, a survey by the Confederation of Finnish Industries (EK) ([107]) indicates that up to 41% of SMEs in Finland are preparing to carry out layoffs and 35% of SMEs estimated that demand would decrease in 2023. As has been the case in all Member States, energy prices increased during 2022, having a significant impact on industry, particularly energy-intensive industries and SMEs. The wholesale electricity price in Finland tripled in the third quarter of 2022 compared with the price a year ago.

Finland ranks 2nd out of the 27 EU Member States in the European Commission's 2021 edition of the Digital Economy and Society Index (DESI) and is a leader in human capital, integration of digital technology and digital public services. Finland excels in the availability and use of e-government services and digital skills, with its proportion of ICT graduates amongst total graduates almost double the EU average (7.4% vs. 3.9%). However, this is still insufficient to meet demand needs, as 59% of companies trying to recruit ICT specialists report hard-to-fill vacancies (EU 55%). Indeed, labour shortages risk becoming a drag on the

([102]) See Annex 11 on Innovation for more detail

([103]) EIF Working Paper 2022/83, The 2021 EIF SME Access to Finance Index, October 2022 update

([104]) Wages and Competitiveness Depend on Productivity: How Can We Foster Productivity Growth? (valtioneuvosto.fi)

([105]) 2021/2022 Annual Report on European SMEs - June 2022 - LE Europe (le-europe.eu)

([106]) Business and consumer surveys (europa.eu)

([107]) Current affairs - Elinkeinoelämän keskusliitto (ek.fi)

development of the ICT sector. The most intense shortages are found in several knowledge areas such as computers, electronics, and mathematical knowledge.

Finland excels in the integration of digital technology, with all indicators significantly above the EU averages for SMEs, with at least a basic level of digital intensity for companies using big data solutions, and especially in the use of cloud services and artificial intelligence.

Finland is one of the Member States with the highest share of renewables in its energy mix. The share of renewable energy in Finland's energy mix was 43.8% in 2020, an overachievement of its 2020 target of 38%. Data from the Finnish government indicates that the renewables share is even higher for electricity, with 53% of all electricity produced in Finland coming from renewable sources in 2021 ([108]). 45% of renewable electricity was produced with hydro power, 23% with wind power and all the rest with wood-based fuels. 34% of total electricity was produced with nuclear power and 14% with fossil fuels and peat.

Delays in issuing of permits for significant investment projects could compromise further progress increasing the share of renewables. This can lead to a situation where, once a project finally acquires a construction permit, so much time has passed that the intended technology has already become outdated. Each municipality creates their own rules for dealing with small-scale renewables plants, with consequent variation between municipalities. However, Finland has allocated EUR 6 million from its Recovery and Resilience Plan to hire temporarily human resources for environmental permits and procedures and project processing in 2021-2023, and to support new energy technologies, including offshore wind, large-scale solar power and geothermal energy. The Finnish recovery and resilience plan is also investing in accelerating environmental permitting to promote the development of the production and storage of clean hydrogen on a commercial scale.

In order to accelerate permit and appeal processes for renewable energy projects, the government has introduced a law creating a temporary fast-track system for environmental and water permit procedures and certain appeal processes for projects. The legislation entered into force on 1 January 2023. The fast-track system is proposed to apply to permit processes that are pending in the state environmental and water permit authority between 2023 and 2026, and to appeal processes pending in the administrative courts between 2023 and 2028.

([108]) Share of fossil-free electricity production rose to 86 per cent in 2021 - Statistics Finland

Table A12.1: **Industry and the Single Market**

	POLICY AREA	INDICATOR NAME	2018	2019	2020	2021	2022	EU27 average (*)
HEADLINE INDICATORS	Economic Structure	Net private investment, level of private capital stock, net of depreciation, % GDP [1]	4.7	4.1	3.4	3.9	5.1	**3.7**
		Net public investment, level of public capital stock, net of depreciation, % GDP [1]	0.8	0.9	1.2	0.6	0.5	**0.4**
		Real labour productivity per person in industry (% yoy)[2]	-5.3	2.2	-0.1	1.8	0.3	**1.4**
	Cost competitive-ness	Nominal unit labour cost in industry (% yoy)[2]	6.6	-1	-0.4	5.1	2.5	**2.9**
RESILIENCE	Shortages	Material shortage (industry), firms facing constraints, % [3]	19	10	5	30	42	**47**
		Labour shortage using survey data (industry), firms facing constraints, % [3]	19	17	9	16	24	**28**
		Vacancy rate (business economy)[4]	2.5	2.5	2	2.9	3.1	**3.1**
	Strategic dependencies	Concentration in selected raw materials, Import concentration index based on a basket of critical raw materials [5]	0.23	0.21	0.2	0.19	0.2	**0.18**
		Installed renewables electricity capacity, % of total electricity produced [6]	34.2	35.2	37.6	40.6	n.a.	**50.9**
SINGLE MARKET	Single Market integration	EU trade integration, % [7]	21.6	22.2	20.0	22.3	25.8	**45.8**
	Restrictions	EEA Services Trade Restrictiveness Index [8]	0.04	0.04	0.04	0.04	0.04	**0.05**
	Public procurement	Single bids, % of total contractors [9]	14	15	14	14	14	**29**
BUSINESS ENVIRONMENT - SMEs	Investment obstacles	Impact of regulation on long-term investment, % of firms reporting business regulation as major obstacle [10]	11.9	11.5	7.5	9.9	10.2	**29.6**
	Business demography	Bankruptcies, Index (2015=100)[11]	n.a.	n.a.	n.a.	n.a.	n.a.	**86.8**
		Business registrations, Index (2015=100) [11]	n.a.	n.a.	n.a.	n.a.	n.a.	**121.2**
	Late payments	Payment gap - corporates B2B, difference in days between offered and actual payment [12]	5	3	17	12	10	**13**
		Payment gap - public sector, difference in days between offered and actual payment [12]	5	3	16	8	12	**15**
		Share of SMEs experiencing late payments in past 6 months, % [13]	n.a.	48.2	45.2	43.5	42.1	**43**
	Access to finance	EIF Access to finance index - Loan, Composite: SME external financing over last 6 months, index values between 0 and 1 [14]	0.33	0.34	0.44	0.4	n.a.	**0.46**
		EIF Access to finance index - Equity, Composite: VC/GDP, IPO/GDP, SMEs using equity, index values between 0 and 1 [14]	0.54	0.31	0.32	0.37	n.a.	**0.23**

(*) Last available year

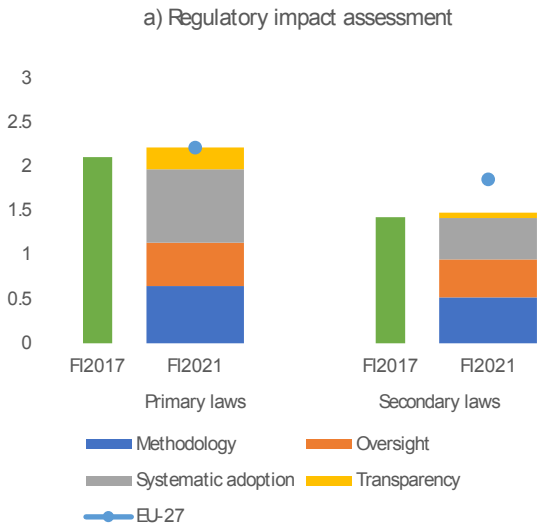
Source: (1) AMECO, (2) Eurostat, (3) ECFIN BCS, (4) Eurostat, (5) COMEXT and Commission calculations, (6) Eurostat, (7) Eurostat, (8) OECD, (9) Single Market Scoreboard, (10) EIB survey, (11) Eurostat: (12) Intrum, (13) SAFE Survey, (14) EIF SME Access to Finance Index.

This Annex outlines the performance of Finland's public administration, which is essential for providing services and carrying out reforms. The Finnish public administration consistently scores as among the most effective in the EU ([109]). An external review concluded that decision-making and operational capacity were not severely affected by the COVID-19 crisis ([110]). The implementation of the public governance renewal strategy ([111]) has focused on building capacities in local government. Measures under the recovery and resilience plan will focus on the digital transformation of employment, migration, health and social public services. An operating model will be drawn up for the public administration and public companies to share data more systematically.

Finland demonstrates a high maturity in e-government. The share of citizens interacting with the public administration via the internet is one of the highest in the EU and continues to increase. The government aims to make services more accessible through other channels, e.g. telephone and service points. E-government, open data and portal maturity is well above the EU average (Table A13.1).

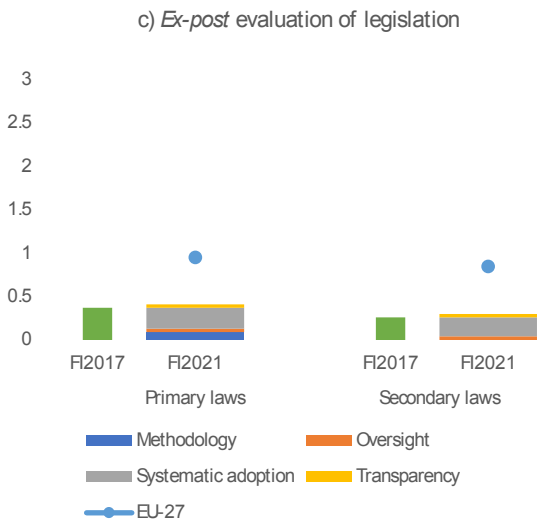
Policymaking in Finland benefits from strong strategic planning, coordination and innovation. Regulatory good practices, however, are not applied systematically, due to which the country scores below the EU average on impact assessment (Graph A13.1) and *ex post* evaluation (Graph A13.2). Reforms in this regard are underway. Stakeholder consultations are well established via several online platforms, which also provide feedback on provided contributions ([112]).

Graph A13.1:**Finland. Regulatory impact assessment**



Source: Indicators of Regulatory Policy and Governance Surveys 2017 and 2021, http://oe.cd/ireg

Graph A13.2:**Finland. Ex post evaluation of legislation**



Source: Indicators of Regulatory Policy and Governance Surveys 2017 and 2021, http://oe.cd/ireg

([109]) Worldwide Governance Indicators, 2021.

([110]) Jari Stenvall et al. (2021), 'Management of the Covid-19 pandemic in Finland. Evaluation of the management of the Covid-19 pandemic from autumn 2020 to autumn 2021.' Publications of the Government's analysis, assessment and research activities 2022:34 (https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/163995/VNTEAS_2022_34.pdf).

([111]) Strategy for Public Governance Renewal, Ministry of Finance, 2020 (https://julkaisut.valtioneuvosto.fi/handle/10024/162573).

([112]) OECD, Better Regulation Practices across the European Union, 2022

Table A13.1: **Public administration indicators**

FI	Indicator ([1])	2017	2018	2019	2020	2021	2022	EU-27([2])
E-government and open government data								
1	Share of individuals who used the internet within the last year to interact with public authorities (%)	88.3	87.2	91.4	90.8	92.2	n/a	64.8
2	E-government benchmark overall score ([3])	n/a	n/a	n/a	84.7	84.5	86.0	72.9
3	Open data and portal maturity index	n/a	0.6	0.8	0.9	0.9	0.8	0.8
Educational attainment level, adult learning, gender parity and ageing								
4	Share of public administration employees with tertiary education (levels 5-8, %)	71.6	72.4	72.3	75.0	71.1 (b)	68.8	52.0
5	Participation rate of public administration employees in adult learning (%)	43.4	43.8	41.7	40.2	44.8 (b)	33.6	16.9
6	Gender parity in senior civil service positions ([4])	0.2	1.4	2.4	11.0	12.6	4.6	11.0
7	Ratio of 25-49 to 50-64 year olds in NACE sector O	1.4	1.4	1.4	1.5	1.6 (b)	1.7	1.5
Public financial management								
8	Medium term budgetary framework index	0.8	0.8	0.8	0.8	0.8	n/a	0.7
9	Strength of fiscal rules index	1.1	1.1	1.2	1.3	1.3	n/a	1.5
Evidence-based policy making								
10	Regulatory governance	1.43	n/a	n/a	n/a	1.50	n/a	1.7

([1]) High values denote a good performance, except for indicator # 6. ([2]) 2022 value. If not available, the 2021 value is shown. ([3]) 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. ([4]) Defined as the absolute value of the difference between the percentage of men and women in senior civil service positions.
Flags: (b) break in time series; (d) definition differs; (u) low reliability.
Source: ICT use survey, Eurostat (# 1); E-government benchmark report (# 2); Open data maturity report (# 3); Labour Force Survey, Eurostat (# 4, 5, 7), European Institute for Gender Equality (# 6); Fiscal Governance Database (# 8, 9); OECD Indicators of Regulatory Policy and Governance (# 10).

The justice system performs efficiently. The justice system performs at an average level when it concerns the estimated time to resolve litigious civil and commercial cases (305 days in the first instance in 2021). The estimated time slightly increased in administrative cases to 296 days in the first instance in 2021 (compared to 274 in 2020). The clearance rate for civil and commercial cases at first instance increased from 93,6 % in 2020 to 100,3 % in 2021. The quality of the justice system is overall good and the level of digitalisation is advanced. Procedural rules enabling digital tools are largely in place and digital tools are broadly used in courts, including an electronic case management system, technology for distance communication as well as for secure remote work by judges and staff. Certain challenges still exist as regards initiating and following proceedings in civil/commercial cases online. As regards judicial independence, no systemic deficiencies have been reported. ([113])

([113]) For a more detailed analysis of the performance of the justice system in Finland, see the 2023 EU Justice Scoreboard (forthcoming) and the country chapter for Finland in the 2023 Rule of Law Report (forthcoming).

ANNEX 14: EMPLOYMENT, SKILLS AND SOCIAL POLICY CHALLENGES IN LIGHT OF THE EUROPEAN PILLAR OF SOCIAL RIGHTS

The European Pillar of Social Rights is the compass for upward convergence towards better working and living conditions in the EU. This Annex provides an overview of Finland's progress in implementing the Pillar's 20 principles and EU headline and national targets for 2030 on employment, skills and poverty reduction.

Table A14.1: **Social Scoreboard for Finland**

Policy area	Headline indicator	
Equal opportunities and access to the labour market	Early leavers from education and training (% of population aged 18-24, 2022)	8.4
	Share of individuals who have basic or above basic overall digital skills (% of population aged 16-74, 2021)	79.18
	Youth NEET rate (% of population aged 15-29, 2022)	9.3
	Gender employment gap (percentage points, 2022)	1.2
	Income quintile ratio (S80/S20, 2021)	3.58
Dynamic labour markets and fair working conditions	Employment rate (% of population aged 20-64, 2022)	78.4
	Unemployment rate (% of active population aged 15-74, 2022)	6.8
	Long term unemployment (% of active population aged 15-74, 2022)	1.5
	GDHI per capita growth (2008=100, 2021)	110.81
Social protection and inclusion	At risk of poverty or social exclusion rate (% of total population, 2021)	14.2
	At risk of poverty or social exclusion rate for children (% of population aged 0-17, 2021)	13.2
	Impact of social transfers (other than pensions) on poverty reduction (% reduction of AROP, 2021)	57.65
	Disability employment gap (percentage points, 2021)	22.2
	Housing cost overburden (% of total population, 2021)	4.3
	Children aged less than 3 years in formal childcare (% of population under 3-years-old, 2021)	42.1
	Self-reported unmet need for medical care (% of population 16+, 2021)	4.4

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

Update of 27 April 2023. 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 2023. 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

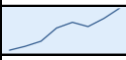
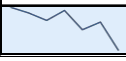
The Finnish labour market has continued to perform strongly despite the risks stemming from Russia's war of aggression. The employment rate recovered quickly from the COVID-19 crisis, reaching a record high of 78.6% in Q4-2022 amid weakening economic conditions. This was still 3.7 percentage points (pps) above the EU average of 74.7%. The unemployment rate fell below pre-pandemic levels to 6.2% in the first half of 2022. It then climbed back to 6.8% in Q4-2022, above the EU average of 6.1%, due to the deteriorating economic environment. Finland had one of the lowest gender employment gaps in the EU in 2022 (1.2 pps vs. 10.6 pps EU average); however, the gender pay gap remains above the EU average (16.5% vs 12.7% in 2021). The reform of the family leave legislation, which entered into force in August 2022, is expected to improve the career development of women with children and reduce the pay gap.

Finland is suffering from labour shortages aggravated by skills mismatches across sectors. While unemployment has remained slightly elevated in recent years, the number of open vacancies has increased rapidly. In Q4-2022, the job vacancy rate stood at 2.9%, with shortages most evident in administrative support, professional, scientific and technical activities, ICT, health and social services activities. In the same quarter, 35% of employers in the services sector and 27% of employers in construction reported that labour shortages were a factor limiting production. Almost 25% of the 200 occupations assessed are categorised as suffering from labour shortages, while over half of the entries in the top 15 list of shortage occupations are in the health and social services sector. The availability of labour is further reduced by an ageing population, low levels of labour mobility and labour migration. Finland is addressing these challenges in its recovery and resilience plan (RRP) through large-scale investment in upskilling and reskilling in the context of the green and digital transitions, as well as by attracting skilled non-native born workers

through the talent boost programme. In parallel, the major planned reform of the social security system aims to improve the incentives to take up work by looking into the activation features of the system. However, there has been few concrete measures proposed so far.

The labour market would benefit from activating under-represented groups and attracting skilled foreign workers. The difference between the employment rate of foreign-born and native workers stood at 12 pps in 2022. This gap was much more pronounced for foreign-born women (20 pps in 2022) than men (5.4 pps in 2022), pointing to continuing challenges in their labour market integration. The disability employment gap increased between 2020 and 2021 (from 19.9 pps to 22.1 pps), remaining above that of Nordic peers, although slightly below the EU average. Under its RRP, Finland is taking steps to promote the employment of non-EU nationals and vulnerable groups, including persons with disabilities. The reform on streamlining the work- and education-based immigration process (to be completed by the end of 2024) is expected to improve opportunities for international degree students to find employment and to increase the immigration of skilled workers. The extensions of the work ability programme (*Työkykyohjelma*) and Individual Placement and Support Project (IPS) aim to increase the participation of people with partial work ability in the labour market (to be completed by the end of 2024). At the same time, public employment services are undergoing a major reform to improve the efficiency of service delivery (to be completed by the end of 2023). The European Social Fund Plus (ESF+) will help unemployed and inactive people and those who face difficulties in integrating into the labour market, for example, by improving the efficiency of unemployment services and cooperation with businesses. These measures are expected to support progress towards the national employment rate target of 80% by 2030.

Table A14.2: **Situation of Finland on 2030 employment, skills and poverty reduction targets**

Indicators	Latest data	Trend (2015-2022)	National target by 2030	EU target by 2030
Employment (%)	78.4 (2022)		80	78
Adult learning[1] (%)	51.4 (2016)		60	60
Poverty reduction[2] (thousands)	-65 (2021)		-100	-15 000

(1) Adult Education Survey, adults in learning in the past 12 months
(2) Number of persons at risk of poverty or social exclusion (AROPE), reference year 2019
Source: Eurostat, DG EMPL

Finland performs well in digital skills and adult learning. Based on 2022 data, adult participation in learning over the past 4 weeks was high at 25.2% (vs 11.9% in the EU). In 2021, 79% of the population aged 16-74 had basic or above basic digital skills, one of the highest rates in the EU. In parallel, tertiary educational attainment among those aged 25-34 years stood at 40.7% in 2022 and is below the EU average (42.0%). An improvement has been observed only in the age group of 30-34 years, which increased from 44.9% in 2021 to 46.8% in 2022 and is above the EU average (see Annex 15). Finland is tackling the high skills' supply challenge in its RRP by increasing the number of study places by at least 600 in higher education institutions. Furthermore, the ongoing continuous learning reform is expected to open up more opportunities for retraining and continuing professional development throughout working life. This is expected to contribute to achieving the target of at least 60% of all adults participating in training every year by 2030. The ESF+ will support re- and upskilling and adult learning in Finland with approximately EUR 182 million in 2021-2027.

Access to healthcare services remains a critical challenge. While Finland performs well on most social indicators, self-reported unmet medical needs remain high. After the recent improvement (5.4% in 2020 to 4.4% in 2021), the indicator bounced back to 6.5% in 2022.

Waiting-times for primary and specialised care are long, in particular due to the COVID-19 pandemic, the related care backlog, and shortages of care and medical staff. Finland is implementing a comprehensive health and social services reform under its RRP, which is expected to improve the availability and quality of basic public healthcare services (the related RRP measures of the reform are to be completed by June 2023). In parallel, the parliament has approved a proposal on tightening the care guarantee to improve access to non-urgent primary care by reducing the waiting time from the current 3 months to 7 days. Finland has set a national target of 100 000 fewer people at risk of poverty or social exclusion by 2030, out of which at least one third should be children. The target is supported by ESF+ investments in child poverty reduction (approx. EUR 12 million), the reform of child protection services (approx. EUR 29 million) and active inclusion (approx. EUR 156 million).

This Annex outlines the main challenges for Finland's education and training system in light of the EU-level targets and other contextual indicators under the European Education Area strategic framework, based on the 2022 Education and Training Monitor.

The shortage of teachers in early childhood education and care (ECEC) represents a challenge for the expected increase in ECEC participation. Following the trend of the last few years, ECEC participation of children above 3 years old is increasing (90.9% in 2019), but still considerably below the EU average (93.0%) and the EU-level target (96%). Recently adopted reforms in ECEC aim to promote ECEC participation. They include the restoration of children's right to ECEC, pilot schemes of free-of-charge ECEC for five-year-olds, an extended pilot scheme of two-year pre-primary education, and a new national curriculum. In 2020, from the 2 700 students who applied for ECEC teacher education, just 38% were admitted. Finland announced the creation of 400 new study places for ECEC teachers.

Measures have been taken to strengthen the quality and inclusiveness of ECEC and compulsory education. The 2020-2022 Right to Learn Programme ([114]) has three goals: 1) to create equal conditions for learning paths (EUR 120 m); 2) to provide better support for children's learning, develop special needs support and effectively use nationwide measures to promote inclusion (EUR 50 m); and 3) to strengthen the quality of teaching (EUR 10 m). The programme provides for an equality fund aimed at reducing socio-economic, regional and gender gaps in learning.

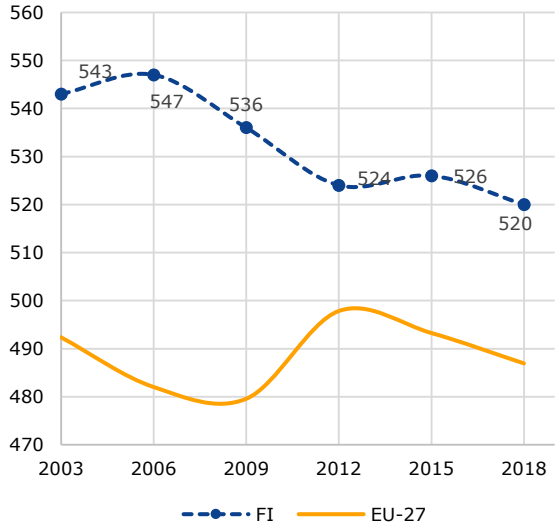
Average student performance levels in Finland are good, but gaps have been widening, notably in reading. In 2018, the OECD Programme for International Student Assessment (PISA) reported Finland among the top performers. Nevertheless, there has been a negative trend in average basic skills performance since 2006, the sharpest decrease among PISA-participating countries. Current educational challenges in education include the growing impact of students' home background on educational achievement and increasing performance gaps between students and between schools. Differences in reading proficiency among students were bigger in 2018 than ever in the history of Finland's participation in the PISA assessments. Despite the growing differences between individual students, out of the participating countries there was least variation between schools in Finland, and the variation had not increased from the previous PISA survey. Regional variation also largely remained at the previous level. Students of low socio-economic status are 5.1 times (EU 5.6 times) more likely to underachieve in reading, maths and science (combined) in school education than students of high socio-economic status. The Finnish Education Evaluation Centre (FINEEC) ([115]) reported that '(…) basic education seems not to be able to close the gaps caused by students' home background'. Another study ([116]) also reports that student attainment had declined and differences between students increased.

([114]) https://minedu.fi/en/qualityprogramme

([115]) https://karvi.fi/2021/12/09/matematiikan-osaamisen-taso-on-laskenut-ja-eriytynyt/

([116]) https://karvi.fi/wp-content/uploads/2021/04/KARVI_0821.pdf

Graph A15.1:**Trend in reading performance in PISA mean score, 2003-2018**



Source: OECD (2019), PISA 2018 Database

The teaching profession is becoming less attractive. The number of students applying to become school teachers nearly halved between 2013 and 2019. In 2020, a quarter of all employed teachers (around 139 000) were aged 50 or over. High workload and staff turnover have become issues of concern. A new Teacher Training Forum was established in 2019 with the objective of improving the attractiveness of teacher education programmes, developing the professional competence of teacher trainers and strengthening the research base.

Finland is widening its higher education offer, notably for the study fields most demanded. The national recovery and resilience plan contributes to widening their higher education offer and increasing study places, especially in areas with labour shortages. The expansion of study places cannot keep up with the increased demand, delaying entry to higher education for many students. There is a long-standing backlog of applicants. In spring 2021, only 53 400 of almost 157 000 applicants were accepted. For 2021/22, around 6 000 new study places were made available, which brought to 10 200 the amount of new places created in 2020-2022.

Reskilling and upskilling are key to matching the demand for future skills in an increasingly digital and green economy. The 2019 Finnish Higher Education Act aims, among other goals, to improve continuous learning opportunities in universities and polytechnics. Higher education institutions are discussing their strategic profiles and the areas in which they could increase their educational offer, and they receive support from the PROFI funding programme ([117]). In addition, the new performance-based funding model, in place since 2021, encourages higher education institutions to develop their adult education offer through continuous learning opportunities ([118]).

([117]) The Academy of Finland grants competitive funding, called PROFI, to Finnish universities to support and speed up the strategic profiling of Finnish universities. Evaluations of the instrument have shown that PROFI funding has helped to strengthen selected components, reduce fragmentation within disciplines and promote multidisciplinary and interdisciplinary cooperation

https://www.aka.fi/en/research-funding/programmes-and-other-funding-schemes/university-profiling/

([118]) The share of funding based on continuous learning indicators is 9% of the total for universities of applied sciences and from 5% for the other general universities.

Table A15.1: **EU-level targets and other contextual indicators under the European Education Area strategic framework**

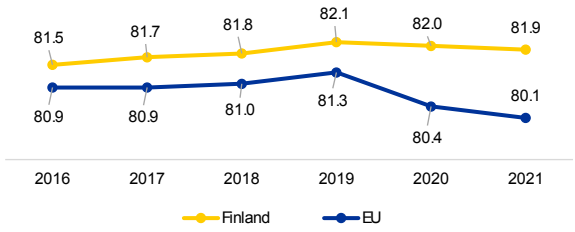
				2015		2022	
Indicator			Target	Finland	EU27	Finland	EU27
[1]Participation in early childhood education (age 3+)			96%	79.8%	91.9%	90.9% 2020	93.0% 2020
[2]Low achieving 15-year-olds in:		Reading	< 15%	11.1%	20.0%	13.5% 2018	22.5% 2018
		Mathematics	< 15%	13.6%	22.3%	15.0% 2018	22.9% 2018
		Science	< 15%	11.5%	21.1%	12.9% 2018	22.3% 2018
Early leavers from education and training (age 18-24)	[3]Total		< 9 %	9.2%	11.0%	8.4%	9.6%
	[3] By gender	Men		10.6%	12.5%	10.3%	11.1%
		Women		7.9%	9.4%	6.4%	8.0%
	[4] By degree of urbanisation	Cities		7.2%	9.6%	6.5%	8.6%
		Rural areas		11.2%	12.2%	11.7%	10.0%
	[5] By country of birth	Native		8.7%	10.0%	7.6%	8.3%
		EU-born		: u	20.7%	: u	20.3%
		Non EU-born		16.8% u	23.4%	16.5%	22.1%
[6]Equity indicator (percentage points)				:	:	9.9 2018	19.3 2018
[7]Exposure of VET graduates to work based learning	Total		≥ 60% (2025)	:	:	77.4%	60.1%
Tertiary educational attainment (age 25-34)	[8]Total		45%	40.2%	36.5%	40.7%	42.0%
	[8] By gender	Men		32.1%	31.2%	34.9%	36.5%
		Women		48.7%	41.8%	46.9%	47.6%
	[9] By degree of urbanisation	Cities		47.7%	46.2%	48.5%	52.2%
		Rural areas		29.0%	26.9%	26.9%	30.2%
	[10] By country of birth	Native		41.5%	37.7%	42.4%	43.0%
		EU-born		23.7%	32.7%	26.1%	39.5%
		Non EU-born		31.1%	27.0%	31.3%	35.7%
[11]Share of school teachers (ISCED 1-3) who are 50 years or over				36.0%	38.3%	38.7% 2020	39.2% 2020

Source: (1,3,4,5,7,8,9,10,11) = Eurostat; 2 = OECD (PISA); 6 = European Commission (Joint Research Centre). Notes: Data is not yet available for the remaining EU-level targets under the European Education Area strategic framework, covering underachievement in digital skills and participation of adults in learning. The equity indicator shows the gap in the share of underachievement in reading, mathematics and science (combined) among 15-year-olds between the lowest and highest quarters of socio-economic status.

A healthy population and an effective, accessible and resilient health system are prerequisites for a sustainable economy and society. This Annex provides a snapshot of population health and the health system in Finland.

Life expectancy in Finland is higher than in the EU as a whole. Its upward trend was disrupted in 2020 due to COVID-19, but despite the additional deaths caused by COVID-19 in 2021 (almost doubled compared to 2020 ([119])), overall life expectancy remained stable. In 2020, the leading causes of death were diseases of the circulatory systems ("cardiovascular diseases") followed by cancer and Alzheimer disease. Treatable mortality in Finland is low, pointing to an overall effective health system.

Graph A16.1:**Life expectancy at birth, years**

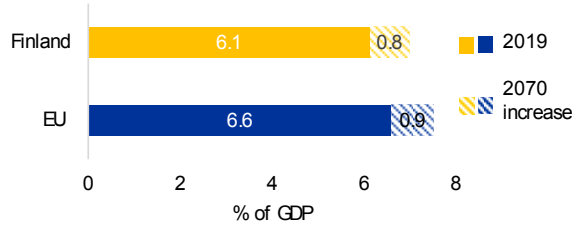


Source: Eurostat

Health expenditure in Finland is slightly lower than the EU average and almost 80% of it was publicly funded in 2020. Spending on inpatient care, pharmaceuticals and medical devices is below the EU average, while spending on outpatient care is considerably above the EU average. In 2020, total healthcare spending increased to 9.6% of GDP, up from 9.2% in 2019. This is in line with the upward trend in all Member States in 2020. In Finland, this increase is mainly attributable to higher spending per capita and only to a lesser extent to the GDP contraction observed in 2020. That said, the share of health spending in total public spending remained stable at 13.4%. Public expenditure on health is projected to increase by 0.8 percentage points (pps) of GDP by 2070 (compared to 0.9 pps for the EU overall).

In 2020, spending on prevention in Finland amounted to 5.6% of total spending on healthcare, compared to 3.4% for the EU overall. This is comparatively high, with four other Member States also reporting a level above 4%. Between 2020 and 2019, spending on prevention in Finland increased by 46%, compared to a 26% increase for the EU overall. Across the EU, this increase was primarily driven by spending on disease detection, surveillance, control and response programmes as part of the public health response to COVID-19. Between 2019 and 2020, a remarkable proportional increase in reported spending was noted in Finland for early disease detection programmes; the second highest proportional increase of all Member States.

Graph A16.2:**Projected increase in public expenditure on healthcare over 2019-2070**



AWG reference scenario
Source: European Commission / EPC (2021)

Finland faces shortages and an uneven distribution of health workers. The employment in healthcare dropped between the first quarter of 2020 and a fourth quarter of 2022 by 6% (while it increased in the EU on average by 7%). The average number of doctors is lower than the EU average (3.5 vs 3.9 per 1 000 population). The ratio for nurses is more positive (13.6 vs 8.3 per 1 000) (data from 2018), but the shortage of nurses has particularly rapidly increased in recent years According to a recent national Occupational Barometer, there were on average 8 051 open

([119])Based on data provided directly by Member States to ECDC under the European Surveillance System (data current as of 13 April 2023)

Table A16.1: **Key health indicators**

	2017	2018	2019	2020	2021	EU average (latest year)
Treatable mortality per 100 000 population (mortality avoidable through optimal quality healthcare)	75.7	71.1	69.1	71.3	NA	91.7 (2020)
Cancer mortality per 100 000 population	216.9	212.8	214.5	211.4	NA	242.2 (2020)
Current expenditure on health, % GDP	9.1	9.0	9.2	9.6	NA	10.9 (2020)
Public share of health expenditure, % of current health expenditure	76.4	77.0	77.9	79.1	NA	81.2 (2020)
Spending on prevention, % of current health expenditure	4.0	4.1	4.0	5.6	NA	3.4 (2020)
Acute care beds per 100 000 population	280	284	261	242	NA	387.4 (2019)
Doctors per 1 000 population *	3.5	3.5	NA	NA	NA	3.9 (2020)
Nurses per 1 000 population *	13.3	13.6	NA	NA	NA	8.3 (2020)
Consumption of antibacterials for systemic use in the community, daily defined dose per 1 000 inhabitants per day (total consumption in CY and CZ) **	13.6	13.2	12.6	10.0	9.4	14.5 (2021)

Note: The EU average is weighted for all indicators, except for (*) and (**), for which the EU simple average is used. The simple average for (*) uses data for 2020 or most recent year if former not available. Doctors' density data refer to practising doctors in all countries except EL, PT (licensed to practice) and SK (professionally active). Nurses' density data refer to practising nurses in all countries except FR, PT, SK (professionally active) and EL (nurses working in hospitals only).
Source: Eurostat; except: ** ECDC

vacancies in the first half of 2022 for nurses and 15 495 for practical nurses. The implementation of the care guarantee puts extra pressure on the shortages of health workers. According to SOSTE, 51 % of healthcare personnel and 48% of social services personnel will retire by 2035. The labour market in the health sector is strongly segregated according to gender, with more than 80% of workers being female (above the share noted for the EU overall). The role of nurses has expanded in recent years to include: (i) patient consultations for acute and chronic health conditions; (ii) prescribing and care coordination in primary care; (iii) outpatient consultations; and (iv) advanced roles in operating theatres. The remuneration level of general practitioners is less than double the average national wage, which is quite low compared to other EU countries. The situation is even worse for nurses. Importantly, in October 2022, a long-term agreement on substantial raises of nurses' wages was reached. The uneven geographic distribution of healthcare resources increases disparities in access to care in Finland. Owing to the concentration of hospitals and specialised care units in urban areas, the density of doctors is greater in the capital region of Helsinki and in other major cities than in remote and sparsely populated regions, where there are relatively fewer doctors. In general, Finland has been working to address its workforce shortages for many years. Measures taken include: (i) creating opportunities for continuous education; (ii) expanding enrolment for provider training in medical schools; (iii) strengthening commitment to recruit foreign workers; (iv) introducing novel skill-mix solutions to increase employment in nursing; (v) making efforts to streamline sector processes; and (vi) improving the use of technology to boost workforce productivity and overcome geographic barriers. The current government also has an extensive health and social care workforce programme.

Through its recovery and resilience plan (RRP), Finland plans to invest EUR 371.8 million (20.4% of the RRP's total budget) to clear the backlog in social and health services due to COVID-19 and to foster equal access, strengthen primary healthcare, overhaul service delivery models and increase digitalisation of the health system. Work is under way to implement the health and social services reform.

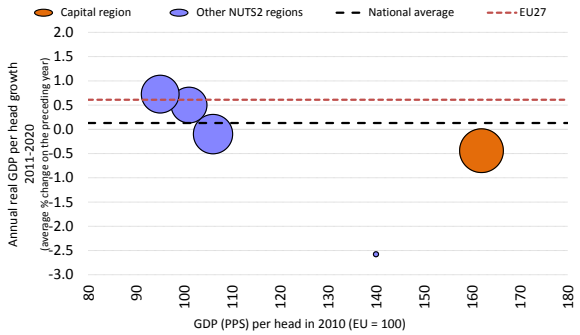
The proportion of people in Finland reporting unmet needs for medical care is higher than the EU average. In 2022, 6,5% of the Finnish population reported unmet medical care needs, which is higher than in 2021 (4.4%). By far the main reason reported is waiting times. The proportion of people reporting unmet needs for medical care in the lowest income quintile is almost twice that in the highest income group. Occupational healthcare creates a parallel system: it provides quicker and free-of-charge access to services for the employed population, while municipal

healthcare users encounter co-payments and waiting times. In 2020, out-of-pocket spending accounted for 16.4% of current health expenditure, which is above the EU average (14.4%). After many years of development, a major administrative reform improving access to healthcare and addressing territorial imbalances was approved by the Parliament in June 2021. In 2021, 21 well-being services counties were set up. These counties and the City of Helsinki took over the responsibility for organising health and social services from 2023. This change in service provision arrangements seeks to reduce inequalities, improve the quality and availability of services, and contain expenditure growth. In parallel, the government adopted (in January 2023) a law on tightening the care guarantee on non-urgent primary care by reducing the waiting time from the current 3 months to 7 days. The reform would enter into force gradually on 1 September 2023 (14-day limit) and 1 November 2024 (7-day limit). However, the successful implementation of reforms also depends on the availability of healthcare workers and thus on addressing above-mentioned challenges for the long-term availability of sufficient health workers.

This Annex showcases the economic and social regional dynamics in Finland, providing an update on economic, social and territorial cohesion in and among the Finnish regions compared with the EU as a whole and the main regional economic recovery challenges.

Finland´s average GDP per capita growth was lower than the EU average in 2011-2020. Internal disparities between the capital region and the rest of the country remain but have decreased. Graph A17.1 gives an idea of how regional disparities and convergence trends have changed over time.

Graph A17.1:**GDP per capita (2010) and GDP growth (2011-2020) in Finland**

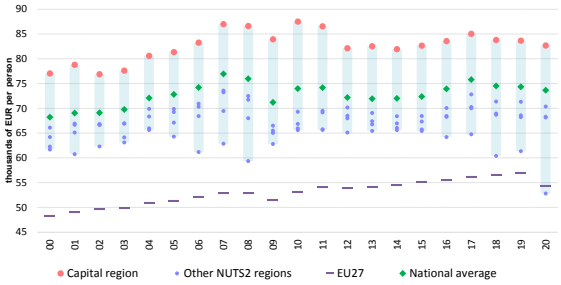


(1) Bubble size corresponds to population size in 2020
Source: Eurostat, DG REGIO elaboration

All regions (except Pohjois -ja Itä-Suomi) have declined by comparison with the EU-27 average. This was particularly evident in Helsinki-Uusimaa and Åland, where real GDP per capita decreased by an annual average of 0.44% and 2.58% respectively in 2011-2020 (while the EU average grew by an annual average of 0.61%). The reduction in regional variations in GDP per capita experienced by the country resulted from the richest regions falling back towards the level of the poorest ones – rather than the poorest ones catching the richest ones up. In 2021, Helsinki-Uusimaa's GDP per capita was 143% of the EU-27 average (i.e. still 34-48% percentage points (pps) higher than in the other regions). Pohjois -ja Itä-Suomi had the lowest value at 95% of the EU-27 average.

The gap in GDP per capita between the capital region and the rest of the country was linked to disparities in labour productivity. In 2020, national labour productivity measured by gross value added per worker (in Purchasing Power Standard (PPS)) was 106% of the EU-27 average – one percentage point more than in 2019 but much lower than in the mid-2000s (before the 2008-2009 recession and the Nokia crisis).

Graph A17.2:**Labour productivity in Finland**



Source: EUROSTAT

Regional data reveal clear disparities. In 2020, labour productivity ranged from 118% of the EU-27 average in Helsinki-Uusimaa to around 100% in Länsi-Suomi, Etelä-Suomi and Pohjois -ja Itä-Suomi, and just 76% in Åland (which had the lowest figure but is a special case, given its insular nature and small size). The productivity gap between the capital region and the rest of the country (see Graph A17.2) increased during the 2008-2010 recession but then fell back again to pre-crisis levels, mainly due to the capital region's productivity decreasing (especially after 2011) and the climax of the Nokia crisis.

Several factors (e.g. human capital and specialisation in high technology sectors) explain the gap between the regions. At the national level, the share of population aged 30-34 with a tertiary degree was 3.3 pps higher than in the EU-27 as a whole in 2021 (44.9% as against 41.6%). However, it was on average more than 8.5 pps higher in the capital region than in the other regions (50.1% as against 41.6%). The regional gap has been closing since 2019, but this is due more to a decrease in the capital region of Helsinki-Uusimaa than

Table A17.1: **Selected indicators at regional level – Finland**

NUTS 2 Region	GDP per head (PPS)	Productivity (GVA (PPS) per person employed)	Real productivity growth	GDP growth	GDP per head growth	Population growth	Employment rate	Population with high educational attainment	CO_2 emissions from fossil fuels per head	Innovation performance
	EU27=100, 2021	EU27=100, 2020	Avg % change on preceding year, 2011-2020	Avg % change on preceding year, 2011-2020	Avg % change on preceding year, 2011-2020	Total % change, 2011-2020	% of pop. aged 20-64, 2021	% of population aged 30-34, 2021	tCO_2 equivalent, 2021	RIS regional performance group 2021
European Union	100	100	0,22	0,74	0,61	1,7	73,1	41,6		
Suomi / Finland	112	106	-0,04	0,44	0,13	2,9	76,8	44,9		
Länsi-Suomi	100	99	0,15	0,06	-0,10	1,4	76,5	42,5	9,6	Innovation leader -
Helsinki-Uusimaa	143	118	-0,57	0,63	-0,44	10,5	79,2	50,1	9,4	Innovation leader +
Etelä-Suomi	99	101	0,51	0,44	0,50	-0,8	76,3	41,0	14,6	Strong innovator +
Pohjois- ja Itä-Suomi	95	98	0,39	0,56	0,73	-1,8	73,8	41,3	13,0	Strong innovator+
Åland	109	76	-2,20	-1,85	-2,58	7,3	89,1		1,7	Strong innovator

Source: Eurostat, EDGAR Database

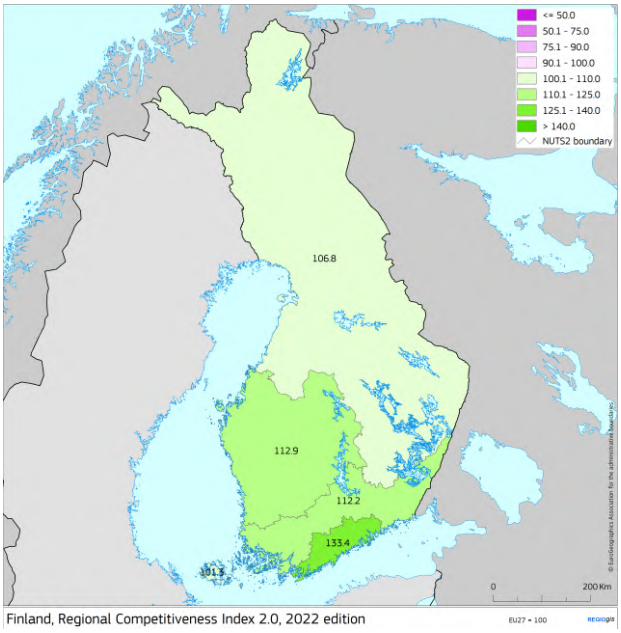
to an increase in the rest of the country. The share of employment in high technology sectors and R&D expenditure by the private sector are both above the EU-27 average at the national level, but there are significant differences between the regions (with Helsinki-Uusimaa leading well above the national average). All those factors point consistently to the regions' limited capacity to follow national growth trends in dynamic and advanced sectors.

Finland's regions all perform relatively well in innovation. The capital region is classified as an innovation leader+ (regional innovation scoreboard 2021)**.** The regional competitiveness index 2022 ranks all Finnish regions above the EU average. Helsinki-Uusimaa stands out from the rest. Pohjois- ja Itä-Suomi and Åland, which have weaker infrastructure and less business sophistication, remain much closer to the EU average.

The greater Helsinki region benefited from a higher employment rate and lower at risk of poverty rates than the non-capital regions in 2021. Finland´s employment rate of 76.8% was higher than the EU average (73.1%). The employment rates in the more developed regions were the highest (89.1% in Åland and 70.2% in the capital region). Finland's at risk of poverty rate (AROPE, 14.2%) was better in 2021 than the EU average (21.7%), but there were some regional differences: the Pohjois- and Itä-Suomi region (16.4%) was 4.4 pps higher than the Helsinki-Uusimaa region (12.0%) and 2.8 pps higher than the Etelä-Suomi region (13.6%).

The capital region's demographic dynamics are very different from those in the rest of the country. Average annual population growth at the national level in 2011-2020 (2.9 persons per thousand residents) was well above the EU-27 average (1.7). Population growth was nevertheless concentrated in Helsinki-Uusimaa (+10.5 persons per thousand residents on average) while Länsi-Suomi grew at a rate of just 1.4, and Etelä-Suomi and Pohjois- ja Itä-Suomi experienced depopulation (-0.8 and -1.8 respectively). The small, insular region of Åland experienced significant growth. Net migration followed a similar territorial pattern. In the short term, depopulation can affect the capacity of regions to to exploit growth opportunities and cope with broader socio-economic challenges in the medium to long term.

Map A17.1: **Regional competitiveness index 2022**



Finland, Regional Competitiveness Index 2.0, 2022 edition

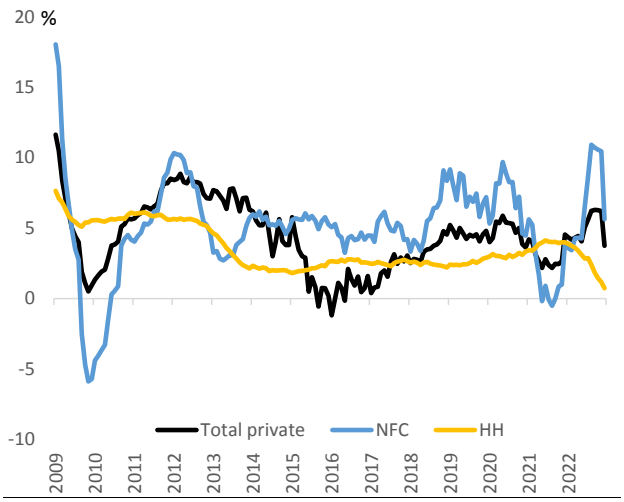
The country has shown strong resilience to the COVID-19 pandemic. Finland experienced a slight increase in GDP per capita (in PPS) of 0.2% in 2020. Finland rebounded strongly in 2021, with GDP per capita growing more than 6%. Despite the positive national performance, some regions encountered recessions in 2020. This was the case in Helsinki-Uusimaa (-1.1%) and Åland (-11.1%). Finland´s GDP per capita against the EU average decreased from 113% in 2020 to 112% in 2021 due to slightly stronger rebound of the EU economy elsewhere. However, 112% is still 1 pps higher than in 2019, which indicates that Finland performed relatively well by EU standards during the pandemic.

Finland's banking system remains highly concentrated. The ratio of total banking-sector assets to GDP is close to 300%, while the top five lenders hold over 80% of total banking-sector assets. Domestic banks have operations in Finland and abroad, with the bulk of their international presence being limited to the Nordic and Baltic region, and no direct exposure to Russia, Ukraine or Belarus. Domestic lenders are adequately capitalised and provide a solid foundation for financing the Finnish economy.

Strong resilience is underpinned by robust financial-soundness metrics. The pandemic and the recent geopolitical turmoil have had no negative impact on the financial-soundness indicators of Finnish lenders. This shows how local banks are generally cautiously managed and were from the onset little exposed to the conflict areas in eastern Europe. Asset quality benefits from the strong payment culture in Finland, resulting in a non-performing-loan ratio of 1%, which is currently among the lowest in Europe. Solvency (measured through the capital adequacy ratio) of 20.7% is well above regulatory thresholds, as are liquidity metrics. Rising interest rates have lifted profitability over the past year, as retail mortgages in Finland are mostly variable interest, and are repriced rapidly when interest rates rise. Despite the mostly positive performance of the local banking sector, there are some structural vulnerabilities – mainly the above-average reliance on wholesale funding and the high indebtedness of local households.

The funding model remains a weakness. Finnish lenders are financially robust. Banks meet all regulatory requirements by a large margin. One of the specificities of Nordic banking systems, and in particular of the Finnish one, is its relatively high reliance on wholesale funding. Indeed, deposits provide roughly half of banks' balance-sheet funding, whereas the other half is funded mostly through market funding (also referred to as wholesale funding ([120]). By nature, and depending on its duration, market funding (be it in the form of bonds, covered bonds, or other securities) is more volatile than deposits and exposes banks to disruptions in international financial markets. However, by spring 2022, the required returns on this type of funding had not materially increased over the past year and financial markets continued to operate without disruption. The local funding model also persisted through the pandemic and previously the global financial crisis. It has therefore proved its durability even during major crises. Nevertheless, past experience cannot be taken as a guarantee that this paradigm will not fail in the future. Therefore, to limit their exposure to market disturbance, banks have an interest in further limiting at least their reliance on the short-term part of their wholesale funding (currently below 10% of total liabilities).

Graph A18.1:**Credit growth**



Source: ECB.

Credit growth has been uneven as uncertainty settles in. The Finnish economy recovered smoothly from the COVID-19 pandemic Growth prospects were promising

([120]) The mix between deposits and wholesale funding tends to vary between banks according to various criteria. However, deposits from the non-financial private sector are considered the most stable and single largest component of funding for euro area banks.

Table A18.1: **Financial soundness indicators**

	2017	2018	2019	2020	2021	2022	EU	Median
Total assets of the banking sector (% of GDP)	199.7	269.2	271.9	293.5	284.9	286.4	276.8	207.9
Share (total assets) of the five largest banks (%)	73.5	81.6	80.4	80.1	80.0	-	-	68.7
Share (total assets) of domestic credit institutions (%)[1]	46.0	89.2	88.0	86.5	87.2	86.4	-	60.2
NFC credit growth (year-on-year % change)	4.2	8.4	7.2	4.5	3.9	5.6	-	9.1
HH credit growth (year-on-year % change)	2.7	2.2	2.9	3.3	4.0	0.7	-	5.4
Financial soundness indicators:[1]								
- non-performing loans (% of total loans)	1.2	1.5	1.4	1.5	1.2	1.0	1.8	1.8
- capital adequacy ratio (%)	23.4	20.9	21.3	21.2	21.4	20.3	18.6	19.8
- return on equity (%)[2]	8.8	8.1	4.9	5.8	9.2	8.9	6.1	6.6
Cost-to-income ratio (%)[1]	55.7	55.4	60.7	55.6	50.6	51.8	60.6	51.8
Loan-to-deposit ratio (%)[1]	94.8	133.2	136.7	127.7	121.4	115.5	88.6	78.0
Central bank liquidity as % of liabilities	2.5	1.8	0.9	3.9	6.0	4.6	-	2.9
Private sector debt (% of GDP)	147.7	143.9	146.1	152.7	150.1	-	-	120.7
Long-term interest rate spread versus Bund (basis points)	23.1	26.6	31.9	29.0	27.8	54.7	-	93.3
Market funding ratio (%)	64.4	63.8	62.7	62.3	61.7	-	50.8	40.0
Green bonds issued to all bonds (%)	1.0	1.0	1.9	3.1	3.9	5.2	3.9	2.3

1-3 | 4-10 | 11-17 | 18-24 | 25-27 — Colours indicate performance ranking among 27 EU Member States.

(1) Last data: Q3 2022.
(2) Data is annualized.
Source: ECB, Eurostat, S&P Global Capital IQ Pr
Source:

until spring 2022. With the outbreak of Russia's war of aggression on Ukraine, the increase in inflation, and the prospect of increasingly higher interest rates, post-pandemic optimism gradually vanished. Still, the first half of 2022 was marked by strong private consumption, especially in accommodation and food-service activities. Corporate investments and demand for short-term lending continued to grow rapidly even in Q2-2022 and subsequently. However, while credit to companies remained in an uptrend in the 12 months to Q2-2022, lending to households was declining, reflecting low levels of consumer confidence. The drop in household credit was particularly pronounced in new mortgage lending, which fell in Q3-2022 by a third compared with Q3-2021. Sluggish demand for mortgages was also behind weaker house-price dynamics, with house-price growth slowing from 4.5% (year-on-year) at the end of 2021 to just 1% year-on-year in mid-2022.

The Finnish property market is noticeably slowing down. Recent years have seen mixed trends in the Finnish real-estate market. Although the pandemic led to falling prices for some commercial property, retail real-estate remained reasonably active, including during the pandemic period beginning in 2020. 2021 was an exceptional year for the Finnish property market, with sustained transaction volumes and rising prices. This buoyancy and vitality continued into the early months of 2022. However, the pace of price growth slowed down over the course of the year. The first half of 2022 was still marked by robust data on all metrics. In the second half of the year however, the market mood was clearly weighed down by the rising interest rates, lower consumer confidence, and increasingly depressed investor sentiment. As financing costs rose, investors – both households and companies - adjusted to the new economic environment and became more selective. This resulted in a fall in the number of transactions in Q3-2022 by about a third compared to Q3-2021 and subdued price increases (or even price declines in real terms), especially in the major cities.

A temporary drop in mortgage lending will not solve the issue of household indebtedness. Finnish households are heavily indebted ([121]), with about three quarters of their

([121]) This risk was again emphasised by the European Systemic Risk Board in their report on vulnerabilities in the residential real estate sectors of the EEA countries (January 2022).

debt being mortgage debt. The past decade, marked by very low interest rates, gave an additional incentive to households to borrow and purchase a new dwelling. Although the risks of household debt are mitigated by the overall resilience of household balance sheets, these risks should not be underestimated in a rising-interest-rate environment. The Finnish authorities have already taken steps to address these vulnerabilities, through legislation and macroprudential measures. Nevertheless, binding legislation setting stricter debt-service-to-income or overall debt-to-income caps would undoubtedly help to curb the trend of increasing household indebtedness.

This Annex provides an indicator-based overview of Finland's tax system. It includes information on the tax structure (the types of tax that Finland derives most of its revenue from), the tax burden on workers, and the progressivity and redistributive effect of the tax system. It also provides information on tax collection and compliance.

Finland's tax revenues as a share of GDP are relatively high, with the highest contribution coming from the taxation of labour and consumption. Table A19.1 indicates that Finland's tax revenues as a percentage of GDP were above the EU aggregate in 2021. The share of labour taxes as a percentage of GDP has increased to 21.1% by 0.5 percentage points (pps) compared to 2020 and is similar to the share for the EU as a whole. Revenues of consumption taxes are significantly above the EU aggregate, but revenues derived from the taxation of capital were slightly below the EU aggregate and revenues from property taxes are significantly below the EU aggregate. Revenues from recurrent property taxes, which are among the taxes least detrimental to growth, are even lower. In Finland, about half of property tax revenues are derived from recurrent property taxation, a slightly lower share than in the EU overall (see Graph A19.1). In the light of the medium term and long-term fiscal sustainability challenges, there is scope for Finland to make greater use of currently underused tax types, such as recurrent property taxes. In addition, tax expenditures are relatively high in Finland (12.6% of GDP in 2020 according to the Global Tax Expenditures Database). Evaluating these and possibly discontinuing some of them might also improve the fiscal position.

Finland's Recovery and Resilience Plan (RRP) includes several tax reforms to support the green transition. In particular, a reform of energy taxation supports the electrification of industrial processes; and a reform of transport taxation incentivises the use of electric vehicles, public transport and bicycles for employees.

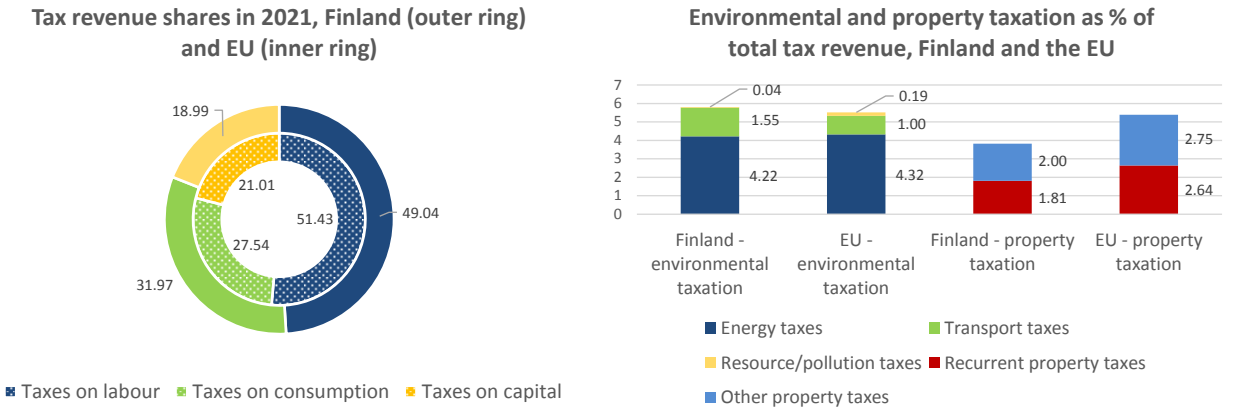
Finland's labour tax burden is more progressive than the EU average. Graph

Table A19.1: **Tax indicators**

		Finland					EU-27				
		2010	2019	2020	2021	2022	2010	2019	2020	2021	2022
Tax structure	Total taxes (including compulsory actual social contributions) (% of GDP)	40.6	42.3	41.8	43.0		37.9	39.9	40.0	40.6	
	Labour taxes (as % of GDP)	21.1	21.0	20.6	21.1		20.0	20.7	21.3	20.9	
	Consumption taxes (as % of GDP)	12.9	14.0	13.9	13.8		10.8	11.1	10.7	11.2	
	Capital taxes (as % of GDP)	6.5	7.2	7.3	8.2		7.1	8.1	8.0	8.5	
	Total property taxes (as % of GDP)	1.1	1.6	1.6	1.6		1.9	2.2	2.2	2.2	
	Recurrent taxes on immovable property (as % of GDP)	0.6	0.8	0.8	0.8		1.1	1.2	1.2	1.1	
	Environmental taxes as % of GDP	2.7	2.8	2.7	2.5		2.4	2.4	2.2	2.2	
Progressivity & fairness	Tax wedge at 50% of average wage (Single person) (*)	33.5	31.8	31.0	32.5	32.5	33.9	32.3	31.9	32.1	31.7
	Tax wedge at 100% of average wage (Single person) (*)	42.3	42.2	41.8	43.1	43.1	41.0	40.1	39.9	39.7	39.7
	Corporate income tax - effective average tax rates (1) (*)		20.0	19.8	19.8			19.5	19.4	19.1	
	Difference in Gini coefficient before and after taxes and cash social transfers (pensions excluded from social transfers) (2) (*)	11.7	11.5	11.5	12.2		8.6	7.7	8.1	7.8	
Tax administration & compliance	Outstanding tax arrears: total year-end tax debt (including debt considered not collectable) / total revenue (in %) (*)		5.0	6.2				31.6	40.7		
	VAT Gap (% of VAT total tax liability, VTTL)		3.6	1.3				11.0	9.1		

(1) Forward-looking effective tax rate (OECD).
(2) A higher value indicates a stronger redistributive impact of taxation.
(*) EU-27 simple average
For more data on tax revenues as well as the methodology applied, see European Commission, Directorate-General for Taxation and Customs Union, *Taxation trends in the European Union: data for the EU Member States, Iceland, Norway and United Kingdom: 2021 edition*, Publications Office of the European Union, 2021, https://data.europa.eu/doi/10.2778/843047 and the *Data on Taxation* webpage, https://ec.europa.eu/taxation_customs/taxation-1/economic-analysis-taxation/data-taxation_en.
For more details on the VAT gap, see European Commission, Directorate-General for Taxation and Customs Union, *VAT gap in the EU: report 2022*, Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2778/109823.
Source: European Commission, OECD

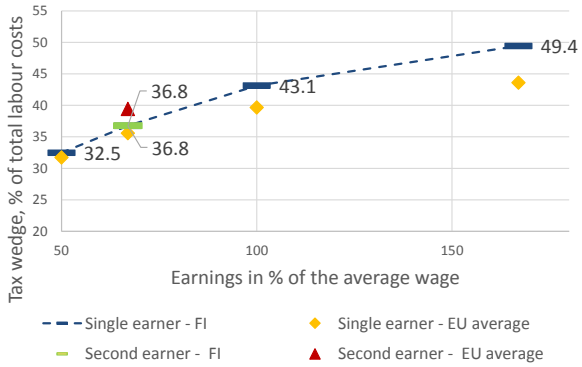
Graph A19.1:**Tax revenues for different tax types as % of total taxation**



Source: European Commission

A19.2 shows that the labour tax wedge for Finland in 2022 was close to the EU average for single people at 50% of the income level of the average wage and above the EU average for higher wage levels. This implies that labour taxation in Finland is more progressive than in the EU as a whole. Second earners at a wage level of 67% of the average wage, whose spouses earn the average wage, were subject to a tax wedge below the EU average. The tax and benefit system contributes significantly to the low level of income inequality in Finland. It reduced the Gini-coefficient (measure for income inequality) in 2021 by 12.2 pps, which is well above the EU average of 7.8 pps (see Table A19.1). However, challenges remain as regards the complexity of the social benefit system, which is largely responsible for inherent disincentives to work.

Graph A19.2:**Tax wedge for single and second earners as a % of total labour costs, 2022**



Second earner tax wedge assumes first earner at 100% of the average wage and no children.
Source: European Commission

Finland performs relatively well in terms of tax compliance and tax administration. Finland's digitalisation of tax administration is well underway with more than 95% of all tax fillings for PIT, CIT and VAT made electronically in 2020. The VAT gap (the gap between revenues actually collected and the theoretical tax liability) is below 4%, compared with the EU-wide gap of 9.1%. The Finnish RRP includes measures to further strengthen the digitalisation of administrative processes. Finland has also applied for support under the technical support instrument with a flagship initiative for enhancing the quality and use of tax information exchanged between Member States in the context of the Directive on Administrative Cooperation.

Table A20.1: **Key economic and financial indicators**

	2004-07	2008-12	2013-19	2020	2021	2022	forecast 2023	forecast 2024
Real GDP (y-o-y)	4.0	-0.7	1.1	-2.4	3.0	2.1	0.2	1.4
Potential growth (y-o-y)	2.5	0.5	0.8	0.9	1.0	1.6	1.1	1.2
Private consumption (y-o-y)	3.6	1.0	1.0	-3.8	3.6	2.1	0.1	1.2
Public consumption (y-o-y)	1.5	0.7	1.0	1.2	3.9	2.9	1.3	0.2
Gross fixed capital formation (y-o-y)	4.8	-1.3	1.3	-1.0	0.9	5.0	-0.1	0.4
Exports of goods and services (y-o-y)	8.6	-1.6	2.8	-7.8	6.0	1.7	1.6	3.6
Imports of goods and services (y-o-y)	8.3	0.5	2.7	-6.2	6.0	7.5	-1.3	2.2
Contribution to GDP growth:								
Domestic demand (y-o-y)	3.2	0.4	1.1	-1.9	3.0	3.0	0.3	0.8
Inventories (y-o-y)	0.3	-0.2	0.0	0.2	0.0	1.9	-1.5	0.0
Net exports (y-o-y)	0.6	-0.8	0.0	-0.7	0.0	-2.3	1.3	0.6
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	0.5	-0.1	0.2	0.1	0.2	0.7	0.2	0.2
Capital accumulation (y-o-y)	0.7	0.5	0.4	0.5	0.5	0.6	0.6	0.5
Total factor productivity (y-o-y)	1.3	0.1	0.1	0.3	0.3	0.3	0.4	0.4
Output gap	1.3	-1.1	-1.2	-2.9	-0.9	-0.5	-1.4	-1.1
Unemployment rate	8.1	7.9	8.3	7.7	7.7	6.8	7.1	6.8
GDP deflator (y-o-y)	1.3	2.1	1.5	1.6	2.2	4.2	4.4	2.4
Harmonised index of consumer prices (HICP, y-o-y)	0.9	2.7	1.0	0.4	2.1	7.2	4.8	2.1
HICP excluding energy and unprocessed food (y-o-y)	0.6	2.4	1.0	0.8	1.4	4.4	4.9	2.4
Nominal compensation per employee (y-o-y)	3.3	2.9	0.9	0.4	3.6	3.2	4.5	3.8
Labour productivity (real, hours worked, y-o-y)	2.7	-0.5	0.7	0.1	0.6	1.4	0.5	1.0
Unit labour costs (ULC, whole economy, y-o-y)	0.9	3.9	0.4	0.9	3.3	3.6	4.1	2.7
Real unit labour costs (y-o-y)	-0.4	1.7	-1.0	-0.7	1.1	-0.6	-0.2	0.3
Real effective exchange rate (ULC, y-o-y)	-0.5	1.6	-0.7	-3.2	2.7	0.2	-1.1	-0.8
Real effective exchange rate (HICP, y-o-y)	-0.4	-0.2	0.4	0.8	-0.6	-2.4	.	.
Net savings rate of households (net saving as percentage of net disposable income)	0.3	1.5	-0.3	4.7	2.5	-1.7	.	.
Private credit flow, consolidated (% of GDP)	10.1	7.5	4.6	6.1	6.1	.	.	.
Private sector debt, consolidated (% of GDP)	114.9	141.9	147.7	152.7	150.6	.	.	.
of which household debt, consolidated (% of GDP)	45.8	57.5	63.8	69.0	68.0	.	.	.
of which non-financial corporate debt, consolidated (% of GDP)	69.1	84.5	83.8	83.6	82.6	.	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (1)	0.6	0.9	1.2	1.3	1.1	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	4.1	3.6	3.4	6.2	4.5	1.2	4.2	4.7
Corporations, gross operating surplus (% of GDP)	27.7	24.4	23.7	25.2	24.8	25.3	25.8	26.2
Households, net lending (+) or net borrowing (-) (% of GDP)	-3.2	-2.2	-2.9	0.0	-1.2	-4.2	-3.5	-3.4
Deflated house price index (y-o-y)	6.0	0.2	-0.4	1.4	2.8	-4.1	.	.
Residential investment (% of GDP)	6.4	6.2	6.6	7.0	7.0	7.4	.	.
Current account balance (% of GDP), balance of payments	4.2	0.5	-1.3	0.6	0.5	-3.9	-1.9	-1.2
Trade balance (% of GDP), balance of payments	4.8	0.9	-0.7	0.1	0.1	-2.7	.	.
Terms of trade of goods and services (y-o-y)	-2.2	-1.1	0.6	1.6	0.0	-0.6	1.2	0.1
Capital account balance (% of GDP)	0.1	0.1	0.1	0.1	0.1	0.1	.	.
Net international investment position (% of GDP)	-24.2	7.5	1.4	-4.0	1.0	-2.7	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) (2)	19.5	4.1	4.5	.	.	.	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) (2)	178.4	225.6	228.0	.	.	.	.	.
Export performance vs. advanced countries (% change over 5 years)	2.8	-11.4	-14.4	11.8	9.7	.	.	.
Export market share, goods and services (y-o-y)	-1.1	-7.5	-0.2	0.6	-3.1	-2.1	-1.0	-0.2
Net FDI flows (% of GDP)	-1.4	1.8	-1.1	2.7	-1.5	2.1	.	.
General government balance (% of GDP)	3.5	-0.8	-1.7	-5.6	-2.8	-0.9	-2.6	-2.6
Structural budget balance (% of GDP)	.	.	-1.0	-3.9	-2.3	-0.6	-1.8	-1.9
General government gross debt (% of GDP)	38.6	44.6	62.0	74.7	72.6	73.0	73.9	76.2

(1) Domestic banking groups and stand-alone banks, EU and non-EU foreign-controlled subsidiaries and EU and non-EU foreign-controlled branches.

(2) Net international investment position (NIIP) excluding direct investment and portfolio equity shares.

Source: Eurostat and ECB as of 2 May 2023, where available; European Commission for forecast figures (Spring forecast 2023).

This Annex assesses fiscal sustainability risks for Finland over the short, medium and long term. It follows the same multi-dimensional approach as the European Commission's 2022 Debt Sustainability Monitor, updated based on the Commission 2023 spring forecast.

1 - Short-term risks to fiscal sustainability are low overall. The Commission's early-detection indicator (S0) does not signal major short-term fiscal risks (Table A21.2) ([122]). Gross financing needs are expected to remain moderate, at 16.6% of GDP in the short term (i.e. over 2023-2024), and declining compared with the recent peak in 2020 (Table 1 in this annex). Financial markets' perceptions of sovereign risk are positive, as confirmed by the ratings of the main agencies.

2 - Medium-term risks to fiscal sustainability are medium overall.

The DSA for Finland shows that, under the baseline, the government debt ratio is projected to broadly stabilise over the medium term, staying at around 75% of GDP from 2025 to 2033 (Table 1) ([123]) ([124]). The assumed structural primary balance (a deficit of 0.7% of GDP) contributes to these developments. This position appears plausible compared with past fiscal performance, indicating that the country has ample room for corrective action if needed. At the same time, the baseline projection benefits until 2033 from a still favourable (although declining) snowball effect, notably thanks to the impact of Next Generation EU, with real GDP growth at around 1.2% over 2025-2033. Government gross financing needs are expected to remain moderate over the projection period, reaching around 15% of GDP in 2033, below the level forecast for 2024.

The baseline projections are stress-tested against four alternative scenarios to assess the impact of changes in key assumptions (Graph 1). For Finland, reverting to a historical fiscal position under the 'historical structural primary balance (SPB)' scenario would lead to a reduction in government debt. If the SPB gradually converged its historical 15-year average (a surplus of 0.4% of GDP), the projected debt-to-GDP ratio would decline rather than stabilise, getting about 6 pps. lower than in the baseline by 2033. A permanent worsening of the macro-financial conditions, as reflected under the 'adverse interest-growth rate differential' scenario (with a differential 1 pp. higher than the baseline) would result in a higher debt ratio, by around 6 pps. of GDP by 2033, as compared with the baseline. The 'lower structural primary balance' scenario (with the SPB level permanently 0.3 pp. lower than in the baseline) would also lead to a higher debt ratio (+2 pps. of GDP by 2033) compared with the baseline. A temporary worsening of financial conditions, as reflected in the 'financial stress' scenario (with a temporary increase of interest rates by 1 pp.), would only marginally increase the debt ratio by 2033 compared with the baseline.

Additionally, stochastic debt projections indicate medium risk (Graph 2). ([125]) These

([122]) The S0 is a composite indicator of short-term risk of fiscal stress. It is based on a wide range of macro-financial and fiscal variables that have proven to perform well in the past in detecting situations of upcoming fiscal stress.

([123]) The assumptions underlying the Commission's 'no-fiscal-policy-change' baseline notably comprise: (i) a structural primary deficit, before ageing costs, of 0.7% of GDP as of 2024; (ii) inflation converging linearly towards the 10-year forward inflation-linked swap rate 10 years ahead (which refers to the 10-year inflation expectations 10 years from now); (iii) the nominal short- and long-term interest rates on new and rolled over debt converging linearly from current values to market-based forward nominal rates by T+10 (as for all Member States); (iv) real GDP growth rates from the Commission 2023 spring forecast until 2024, followed by EPC/OGWG 'T+10 methodology' projections between T+3 and T+10, i.e. for 2025-2033 (on average 1.2%); (v) ageing costs in line with the 2021 Ageing Report (European Commission, Institutional Paper 148, May 2021). For information on the methodology, see the 2022 Debt Sustainability Monitor (European Commission, Institutional Paper 199, April 2023).

([124]) Table 1 shows the baseline debt projection 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.

([125]) These projections show the impact on debt of 2000 different shocks affecting the government's primary

projections point to a 59% probability of the debt ratio in 2027 being greater than in 2022, entailing medium risk given the initial moderate debt level. Moreover, the stochastic projections point to some uncertainty (as measured by the difference between the 10th and 90th debt distribution percentiles) surrounding the baseline debt projection.

3 - Long-term risks to fiscal sustainability are medium overall ([126]).

The S2 sustainability gap indicator (at 2.9 pps. of GDP) points to medium risk, suggesting that Finland would need to improve its structural primary balance to ensure debt stabilisation over the long term. This result is mainly underpinned by the projected increase in ageing-related costs (contribution of 2.0 pps. of GDP) and, to a lesser extent, by the unfavourable initial budgetary position (contribution of 1.0 pp. of GDP) (Table 2). Developments in ageing costs are primarily driven by the projected increase in long-term care and health care expenditure (joint contribution of 2.2 pps. of GDP), while the increase in pension expenditure is more limited (contributing 0.5 pp. of GDP). A number of investments and reforms in the RRP contribute to supporting the efficiency of the Finnish long-term care system, so it will be important to carefully monitor their implementation.

Given low long-term debt vulnerabilities, as highlighted by the S1 indicator, overall long-term risks are assessed as medium. Indeed, the S1 sustainability gap indicator signals that a limited consolidation effort of 1.3 pps. of GDP would be needed to reduce debt to 60% of GDP by 2070 (Table 2). This result is mainly driven by the projected increase in ageing costs and Finland's initial debt level (contributing 0.7 pp. and 0.4 pp. of GDP, respectively).

Finally, several additional risk factors need to be considered in the assessment. On the one hand, risk-increasing factors are related to recent increase in interest rates and contingent liabilities' risks linked to the banking sector. Around half of the public debt is held by non-residents and, despite a lengthening of debt maturity in recent years, the share of short-term debt remains at around 10% of total debt. In addition, some contingent liability risks stem from the private sector, including via the possible materialisation of sizeable state guarantees granted to shipbuilding companies. On the other hand, risk-mitigating factors include the lengthening of debt maturity in recent years, relatively stable financing sources (with a diversified and large investor base) and the currency denomination of debt. In addition, the structural reforms under the NGEU/RRF, if fully implemented, could have a further positive impact on GDP growth in the coming years, and therefore help to mitigate debt sustainability risks.

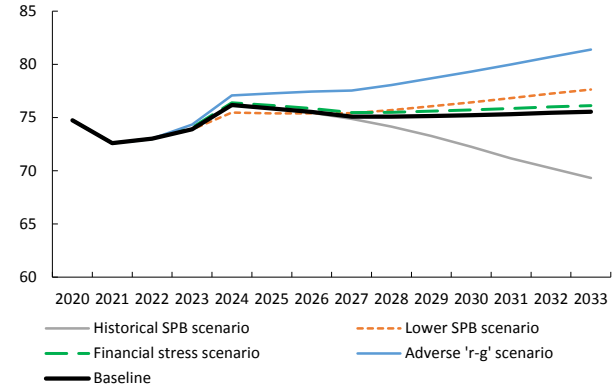
balance, economic growth, interest rates and exchange rates. The cone covers 80% of all simulated debt paths, therefore excluding tail events

([126]) The S2 fiscal sustainability indicator measures the permanent SPB adjustment in 2024 that would be required to stabilise public debt over the long term. It is complemented by the S1 indicator, which measures the fiscal gap in 2024 to bring the debt-to-GDP ratio to 60% in the long term. For both the S1 and S2 indicators, the risk assessment depends on the amount of fiscal consolidation needed: 'high risk' if the required effort exceeds 6 pps. of GDP, 'medium risk' if it lies between 2 pps. and 6 pps. of GDP, and 'low risk' if the effort is negative or below 2 pps. of GDP. The overall long-term risk classification brings together the risk categories derived from S1 and S2. S1 may notch up the risk category derived from S2 when it signals a higher risk than S2. See the 2022 Debt Sustainability Monitor for further details.

Table A21.1: **Debt sustainability analysis - Finland**

Table 1. Baseline debt projections	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio (% of GDP)	**74.7**	**72.6**	**73.0**	**73.9**	**76.2**	**75.9**	**75.5**	**75.1**	**75.1**	**75.2**	**75.2**	**75.3**	**75.5**	**75.6**
Changes in the ratio	9.9	-2.1	0.4	0.9	2.3	-0.3	-0.3	-0.4	0.0	0.1	0.1	0.1	0.1	0.1
of which														
Primary deficit	4.9	2.2	0.3	1.7	1.3	1.2	1.1	1.0	1.0	1.1	1.2	1.2	1.2	1.2
Snowball effect	1.2	-3.2	-3.8	-2.4	-1.5	-1.5	-1.4	-1.4	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1
Stock-flow adjustments	3.8	-1.2	3.9	1.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross financing needs (% of GDP)	19.2	11.7	16.3	16.1	17.1	15.0	14.8	14.7	14.7	14.8	14.9	14.9	15.0	15.0

Graph 1. Deterministic debt projections



Graph 2. Stochastic debt projections 2023-2027

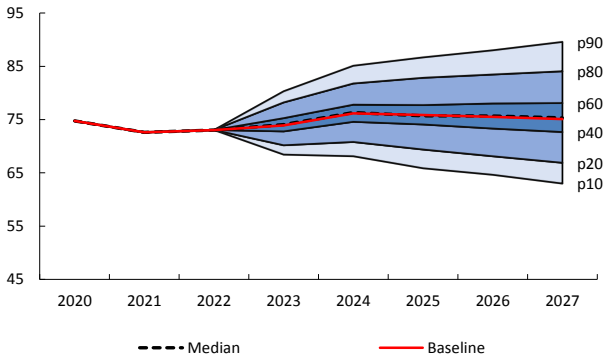


Table 2. Breakdown of the S1 and S2 sustainability gap indicators

		S1	S2
Overall index (pps. of GDP)		**1.3**	**2.9**
of which			
Initial budgetary position		0.2	1.0
Debt requirement		0.4	
Ageing costs		0.7	2.0
of which	*Pensions*	-0.1	0.5
	Health care	0.4	0.6
	Long-term care	1.1	1.6
	Others	-0.7	-0.8

Source: Commission services.

Table A21.2: **Heat map of fiscal sustainability risks - Finland**

Short term	**Medium term - Debt sustainability analysis (DSA)**								**Long term**		
			Deterministic scenarios								
Overall (S0)	**Overall**		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	**Stochastic projections**	**S2**	**S1**	**Overall** (S1 + S2)
LOW	**MEDIUM**	Overall	**LOW**	**LOW**	**MEDIUM**	**MEDIUM**	**LOW**	**MEDIUM**	**MEDIUM**	**LOW**	**MEDIUM**
		Debt level (2033), % GDP	75.6	69.3	77.6	81.4	76.1				
		Debt peak year	2024	2024	2033	2033	2024				
		Fiscal consolidation space	95%	83%	97%	95%	95%				
		Probability of debt ratio exceeding in 2027 its 2022 level						59%			
		Difference between 90th and 10th percentiles (pps. GDP)						26.6			

(1) *Debt level* in 2033. 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 consolidtation 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 debt ratio exceeding in 2027 its 2022 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: Commission services.