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COVER NOTE

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COMMISSION STAFF WORKING DOCUMENT

2023 Country Report - Sweden

Accompanying the document

Recommendation for a COUNCIL RECOMMENDATION

on the 2023 National Reform Programme of Sweden and delivering a Council opinion on the 2023 Convergence Programme of Sweden

{COM(2023) 627 final}

European Commission

Sweden

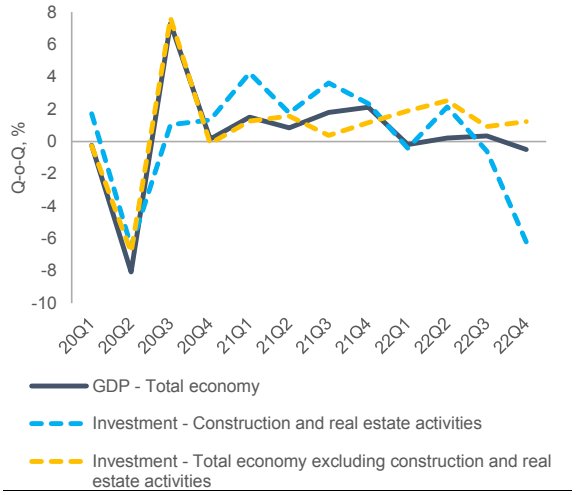
2023 Country Report

ECONOMIC AND EMPLOYMENT SNAPSHOT

The Swedish economy: trying to find a new balance

Sweden's economy overall has solid fundamentals but is facing strong headwinds. In 2022, the economy grew by 2.6% after real GDP growth of 5.4% in 2021. However, high inflation and the subsequent monetary tightening has exposed some structural vulnerabilities in the Swedish economy linked to high private debt and the housing market. Household spending fell as homeowners high in debt had to pay higher interest on their debt. The fallout in housing demand, rising construction costs and increased capital costs greatly reduced construction activity, suppressing growth (see Graph 1.1).

Graph 1.1: **Real investment development in construction and real estate activities and real GDP growth**



Source: Statistics Sweden and European Commission

Capital investment other than that related to real estate has kept up relatively well, while foreign demand also contributed positively to Swedish exports.

The vulnerabilities are assessed in the In-Depth Review for Sweden ([1]). The country is facing vulnerabilities related to its real estate market and high private debt. Sweden has persistently recorded house price growth above income growth (see Annex 22).

Following Russia's war of aggression against Ukraine, energy prices and inflation jumped to high levels. Annual inflation increased to 8.1% in 2022. Electricity prices also rose sharply, even at the end of 2022 when they started to fall across the EU, pushing consumer price

([1]) European Commission (2023), In-Depth Review for Sweden, Commission staff working document (COM(2023) 644 final).

inflation (Harmonised Index of Consumer Prices (HICP)) to 10.8% year-on-year in December. Electricity and other energy prices are projected to have peaked in 2022, and then to fall to lower levels in 2023. This along with the inflation expectations still anchored at the Riksbank's target of 2% for CPIF ([2]) inflation should support to bring inflation back to the target in 2024.

Fiscal support has been limited so far. The government has restrained its use of fiscal policy, citing risks that could lead to inflation remaining high It only compensates households retrospectively for higher energy prices (see text box below). As the size of the compensation depends on consumption the effect is likely regressive and not well targeted. If required, fiscal policy could go further, as the government deficit is expected to stay close to balance and government debt to decline to a level close to 30% of GDP in 2023.

Economic growth is only expected to recover towards the end of 2023. The Swedish economy is projected to go into recession in the first half of 2023 on the back of declining real disposable income, higher mortgage interest payments, and lower investments, beyond real estate and construction, due to uncertainty. With the housing market expected to stabilise later in the year and a gradual recovery of lost purchasing power ([3]), the economy is expected to slowly return to growth helped by foreign demand. Still, real GDP is forecasted to fall by 0.5% in 2023, before picking up to 1.1% in 2024.

([2]) In the Consumer Price Index with Fixed interest payment (CPIF) inflation, the headline CPI inflation is corrected for the impact of price changes in interest payments.

([3]) On 31 March 2023, the social partners representing employers and workers in industry reached a two-year agreement on a wage increase of 4.1% in 2023 and 3.3% in 2024. The industry agreement increase level – 'the mark' – is expected to be followed across a large part of the labour market.

Box 1:

Box on energy policy response in Sweden

Sweden 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 0.8% of GDP in 2023 ([4]). Not all measures preserve the price signal, and most are not targeted. Parts of the costs are offset by revenues from the Swedish transmission system operator, *Svenska Kraftnät*.

Sweden has introduced a compensation scheme to help cover electricity cost worth SEK 17 billion (approximately EUR 1.55 billion), benefiting households in the southern and central Sweden reimbursing, *ex post,* parts of the electricity costs incurred between October 2021 and September 2022. A similar scheme worth SEK 10 billion (approximately EUR 0.9 billion) applying to costs incurred by all households during November and December 2022 will be rolled out later in the year. In addition, Sweden has announced a SEK 29 billion (approximately EUR 2.6 billion) scheme of liquidity support to businesses and organisations facing significantly increased costs of electricity, which will be in place before the summer 2023. This comes on top of an existing, more targeted SEK 2.4 billion (approximately EUR 217 million) support scheme that is open only to businesses that are especially electricity intensive, compensating *ex post* for increased costs incurred between October and December 2022.

Sweden has also lowered the energy tax on diesel and petrol during 2023-2025, at an annual cost of some SEK 6,8 billion (approximately EUR 607 million).

As part of its application of Council Regulation (EU) 2022/1854 ([5]), Sweden will be applying a national measure ([6]). The measure will apply as of 1 March 2023 until 30 June 2023 to electricity producers' revenues above SEK 1957/MWh (EUR 180/MWh ([7])), at a rate of 90%. Sweden estimates a net fiscal effect of SEK 0.360 billion (approximately EUR 0.033 billion). In addition, to implement the solidarity contribution, Sweden has introduced a national measure ([8]) for the fiscal year 2023, setting a rate of 33% ([9]).

On security of energy supply, Sweden has introduced energy saving measures and updated its electricity load shedding ([10]) rules to ensure risk preparedness. Manual load shedding is planned and organised by prioritising electricity consumers.

([6]) https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-202375-om-skatt-pa-overintakter-fran-el_sfs-2023-75

([7]) Sweden applies the EUR/SEK exchange rate of 3 October 2022 for the purpose of this measure.

([8]) https://rkrattsbaser.gov.se/sfst?bet=2022:1843

([9]) Member States can keep national measures that are equivalent to the solidarity contribution regulated in Council Regulation (EU) 2022/1854 provided they are compatible with the objectives of the regulation and generate higher or comparable proceeds. This measure must also to cover the extraordinary and unexpected profits of businesses active in the extraction of crude petroleum, natural gas, coal, and refinery sectors.

([10]) 'load-shedding' is a corrective measure to maintain the electricity system's balance when available capacity resources are not adequate to meet total demand.

Sweden is leading in innovation, supporting productivity, which needs to be maintained to ensure competitiveness in the long term. Labour productivity is comparatively high, standing at 120% of the EU aggregate in 2021. The country has a high level of R&D spending in the business sector, which at 6.4% of GDP was twice the EU average. In addition, Swedish firms were leading in developing new products, processes, and services in 2021 ([11]), benefiting from a conducive business environment for firms and

([11]) EIB Investment Survey 2022

entrepreneurs (see Annex 12). To keep this position and to ensure a successful twin transition of the economy, a constant supply of skilled labour is required, which in some sectors is falling short (Annex 11).

The Swedish labour market continues to be strong but could be more inclusive. Government support helped to keep most people in their jobs and the employment lost during the pandemic was recovered in 2022. In Q3-2022, employment was even above the 2030 national target. Despite the economic headwinds, unemployment is expected to only slightly increase from 7.2% in 2022 to 7.8% in 2024. However, finding employment is much easier for highly skilled people, while people who are low-skilled and /or people with a migrant background have difficulties getting a job.

Onwards to more prosperity and better chances for all

Sweden is on track to achieving the Sustainable Development Goals (SDGs), but it could do more to reduce inequalities in education. Sweden performs well on indicators for the SDGs on productivity and on most indicators related to environmental sustainability and to fairness (see Annex 1). However, the circular material use rate (SDG 12) slightly decreased, moving away from the EU average. Even if there has been a slight improvement on SDG 10 (Reduced inequalities), the employment gap between people born in Sweden (with both of their parents also born in Sweden) and people born in a foreign country remains high compared to the EU average. The share of 'early leavers from education and training' (SDG 4) increased from 7.4% in 2016 to 8.4% in 2021.

Progress towards improved social fairness could build on existing strengths. The Social Scoreboard that supports the European Pillar of Social Rights indicates a well-performing labour market and good social outcomes overall in Sweden (see Annex 14). Educational outcomes are good overall, but inequalities persist. These inequalities negatively affect pupils from disadvantaged backgrounds and contribute to labour participation staying different between people from disadvantaged background and other groups.

The rental market functions poorly and is hardly an alternative to hard-to-afford home ownership. The very low vacancy rate in the rental market and the long waiting queues are symptoms of a poorly functioning housing market. As house prices have increased faster than income supported to some extent by low recurrent property taxes and mortgage interest rate deductibility, low-income households face difficulties finding a home as buying is not an alternative. Opportunities in the housing market therefore seem to be skewed towards those already owning a property or who have financial support or inherited wealth.

Equality of opportunities in the housing market and in education are linked. Access to affordable housing in all parts of Sweden would also improve social mobility because the selection of schools is largely correlated with the place of residence, especially for pupils attending public schools ([12]). In the current situation, this often results in the clustering of pupils with a similar background. Moreover, in disadvantaged areas children from better

([12]) National Agency for Education – NAE (2023), Välja förskoleklass och grundskola eller grundsärskola, https://www.skolverket.se/regler-och-ansvar/ansvar-i-skolfragor/valja-forskoleklass-och-grundskola-eller-grundsarskola#h-Mottagandetillenfristaendeskola.

educated families are more likely to attend independent schools and get better chances for further education ([13]). Socio-economic and migrant backgrounds together with the shortage of teachers affect educational outcomes and chances in the labour market (see 'Further priorities ahead' and Annex 15).

Future generations would benefit from strengthened energy and climate policies. The green competitiveness of the Swedish economy has benefitted strongly from earlier investments in renewable energy like hydropower. As regards future competitive sustainable production, the current renewable resources are not sufficient and those that drive Sweden's advantages in low-carbon production are not available throughout the country because of limited grid capacity. Sweden will need to increase renewable energy sources while increasing its energy efficiency. The electrification of Swedish production and transport, which is the backbone of the green transition, requires sizeable investments in the electricity grid.

([13]) Edmark, K., & Persson L., (2022), Resultat och betygsättning i gymnasiefriskolor.

THE RECOVERY AND RESILIENCE PLAN IS UNDERWAY

Sweden's recovery and resilience plan (RRP) aims to address the key challenges related to the green and digital transition, the housing market, the labour market, education, healthcare and anti-money laundering. It consists of 15 reforms and 12 investments that are supported by EUR 3.3 billion in grants, representing 0.5% of GDP (see Annex 3 for more details).

While Sweden's recovery and resilience plan was only adopted in 2022, its implementation is now underway. The operational agreement was officially signed in May 2023. Implementation is on track despite a slow start and, at this stage, risks of non-absorption appear limited given the relatively small financial allocation. The preparations of a plan revision, including the addition of a REPowerEU chapter and limited changes due to the slight decrease of non-repayable support, are ongoing. Sweden is expected to submit its first payment request combining two instalments in the second half of 2023. This combined request would cover 22 milestones and targets that track progress across all components of the recovery and resilience plan, potentially leading to a disbursement of up to EUR 1.1 billion.

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.

Sweden has started implementing key elements of its plan. These include reforms such as regulating the professional title of nursing assistants (i.e., regulating the way in which nursing assistants are certified) as well as key investments in local and regional climate investments solutions. Some measures like the pension reform or regional adult vocational education are partially completed or are expected to be completed in 2023-2025. The first payment is expected to cover investment schemes that help achieve the green and digital transitions, such as increased energy efficiency in multi-dwelling buildings or more widespread broadband access for homes in rural areas. Moreover, the first payment is to finance measures aiming to improve social cohesion and healthcare provision, such as vocational programmes combined with Swedish as a second language or training courses to take care of older people. The disbursement would also finance reforms that have a positive impact across the whole country, such as a reform that helps accelerate processes involved in acquiring building permits.

Promoting the green transition

The Swedish plan is strongly focused on the green transition, with specific reforms and investments primarily targeting carbon-intensive sectors. The plan includes a package of tax reforms aiming to influence the behaviour of businesses and individuals, so they become more supportive of the green transition. A law requiring fuel suppliers to blend in biofuels in gasoline, diesel and jet fuel entered into force in 2021, which is

expected to help Sweden achieve its climate objective to become carbon neutral by 2045. Sweden's decarbonisation efforts are supported by the entry into force of laws abolishing the reduction of energy tax on fuel and adjusted taxable benefit rates for company cars. The plan focuses mainly on expanding renewable energy capacity, on the decarbonising industry (Industry Leap) and transport and on energy efficiency improvement. The Climate Leap investment scheme, which finances local and regional activities to reduce emissions of carbon dioxide and other greenhouse gases affecting the climate, is ongoing and should accelerate the green transformation of the economy.

Accelerating the digital transformation

Measures in the RRP will help accelerate the digital transition, with lasting impact on the Swedish economy. More than 66 000 buildings are reported to have already received support for broadband expansion and more buildings should be connected every year up until 2025. High-speed and reliable broadband connectivity, especially in less populated areas, supports territorial cohesion. The plan will accelerate the deployment of e-government solutions by allocating substantial funds for developing a joint digital infrastructure for public administration, improving interoperability and data exchange.

Improving the functioning of the housing market

The RRP partially addresses existing macroeconomic vulnerabilities in the housing market and private debt. Although the plan does include reforms that affect the demand side, such as the 2020 change of law that lowered taxes on deferred capital gains, these reforms are expected to have limited impact on the housing market and on private debt levels. The plan focuses more on the supply side. Rental and student housing have been benefitting from investment subsidies to construct new dwellings. Legal changes entered into force in 2021 to shorten the time it takes to plan zoning in areas where construction is allowed. More opportunities are given to stakeholders like property owners, developers or builders to create and partly develop detailed zoning plans. Specific amendments to the Planning and Building Act in 2022 have led to better prerequisites in housing construction, which should accelerate the building permitting procedures. Additional reforms are planned, an important one being the simplified and more efficient regulatory framework for building permits in 2023.

Strengthening education and skills

The RRP includes measures to partially tackle education and skills gaps. Different legislative amendments took effect in 2022 to modernise employment protection and to provide improved possibilities for workers to develop new skills. A law entered into force in 2021 to establish economic incentives for municipalities to offer training courses that combine vocational training in healthcare and social care with Swedish language training. More than 68 000 new study places are expected to have been created in regional adult vocational education in 2020-2022. The scheme is continuing in 2023. Activities to scale up the number of study places at universities and other higher education institutions are on-going.

Increasing the resilience of the healthcare sector

The RRP includes measures to increase the accessibility, capacity and resilience of the healthcare and long-term care system. Thanks to the 'Elderly Care Initiative', 10 775 employees in municipal care for older people are expected to have improved their skills. The RRF intends to compensate municipalities for enabling staff members to improve their skills and to do training during working hours. The investment started in 2020 and will continue throughout 2023. The strengthening of healthcare resilience is part of a broad plan to upgrade the Swedish healthcare system by providing training to care providers for older people, more study places in vocational education, and training focused on healthcare and social care, as well as introducing a protected title for assistant nurses to make this profession more attractive to job seekers. These measures are expected to address structural weaknesses highlighted during the COVID-19 pandemic, such as shortages of healthcare workers and geographical imbalances in the distribution of healthcare.

Combating money laundering

The RRP is expected to reduce the risk of money laundering in the financial system. The plan includes a measure that entered into force in 2020 to create a database of holders of accounts and safe deposit boxes of financial undertakings, which can be checked directly by the responsible authorities. The information that financial undertakings are obliged to report in the system will improve its effectiveness for combatting money laundering and terrorist financing.

Box 2:

Key deliverables under the RRP in 2023-2024

- Financing of projects that will reduce greenhouse gas emissions by 230 000 tonnes CO_2
- At least 16 900 new study places created in vocational training and adult education
- Entry into force of a law establishing a simplified and more effective regulatory framework for building permits
- At least 17 500 buildings newly connected to broadband
- Development of a new digital public administration service and upgrade of the current one
- 8 000 participants to start education under 'The Elderly care Initiative'
- A simplified and efficient regulatory framework for building permits

FURTHER PRIORITIES AHEAD

Beyond those already tackled by the RRP, Sweden faces further challenges not sufficiently covered by the plan. These are linked to the way the housing market functions and high private debt, the green transition of the economy as well as labour market integration and education and skills gaps. Addressing these challenges will also help Sweden make further progress in achieving the SDGs where there is currently room for further improvement, namely on SDG 4 (Quality education), SDG 7 (Affordable and clean energy), and SDG 8 (Decent work and economic growth).

Moving to a more stable housing market

Sweden continues to face macroeconomic vulnerabilities related to real estate and high levels of private debt ([14]). The debt of non-financial corporations and households remains at near historical highs relative to GDP; household debt is particularly high relative to disposable income. House prices rose strongly following the COVID-19 pandemic from already high levels but have started to correct as interest began to increase (see Annex 22).

Limited policy action was taken to address the real estate and private debt vulnerabilities. Over the years, the tax system has continued to favour home ownership through low recurrent property taxation and promoted debt-financed housing acquisition through the generous tax deductibility of mortgage interest payments. ([15]) The rental market saw limited reform and average rents are still well below market rents, resulting in long waiting lists and a very low vacancy rate compared to other EU Member States. These policy factors behind the macroeconomic vulnerabilities still need to be addressed. Through expanding the analyses of the commercial real estate companies' financial situation, policymakers are increasingly aware of the risks. Beyond an increase in the counter-cyclical capital buffer ([16]) to the neutral level in June 2023 and a 2020 increase in capital requirements applying to real estate by the financial supervisor, no significant policy action has yet been designed.

Recent economic developments strengthen the case for reforms in the housing market. Developments in the Swedish economy are currently driven to a large extent by events in the housing market with rising mortgage rates eroding disposable income and a drop in real estate and construction investment driving GDP down (see the section 'The economic and employment snapshot'). House prices fell by 12.7% in the first quarter of 2023 in real terms after reaching their peak in early

([14]) European Commission (2023), In-Depth Review for Sweden, Commission staff working document (COM(2023) 644 final).

([15]) See, for instance, European Commission, *In-Depth Review for Sweden, 2022*, Commission Staff Working Document SDW(2022) 639 final

([16]) A variable capital requirement that aims to make credit growth less cyclical and the banking system more resilient

2022. Changes in the institutional and tax framework are still needed. Sweden also needs to address the bottlenecks preventing the rental market from functioning properly, by means of stimulating construction and liberalising rents for the existing stock. The phasing in of such measures would need to be calibrated to the economic situation but it would provide the basis for a more stable housing market. It would also be useful to create a database with data on assets and liabilities at the level of individual households to better understand the spreading of risks to net wealth and the impact of policies on the population.

Removing constraints in energy grid capacity and administrative bottlenecks to accelerate the green transition

Sweden continues to be a frontrunner in terms of renewable energy production and consumption. Although the new government has moved away from a 100% 'renewable' to a 100% 'fossil-free' energy target by 2040, Sweden continues to be among the Member States with the highest proportion of energy consumption produced from renewable energy sources. In 2021, renewable energy accounted for 48% of Sweden's energy mix. Furthermore, installed renewable energy capacity grew steadily, with the capacity of photovoltaics increasing from 1.1 GW to 1.5 GW and the capacity of wind generation increasing from 10 GW to 12 GW (see Annex 6). However, Sweden risks not meeting its 2030 climate target of reducing greenhouse gas emissions by 40% in sectors that do not fall under the EU Emissions Trading Scheme on the basis of current policies alone. Sweden is also risks not meeting its 2030 target for the land use, land use change and forestry sector (see Annex 6).

Further investments in grid and network capacity are needed to further decarbonise Sweden's energy system. Insufficient power and grid capacity, particularly in the south of the country, coupled with a lack of transmission capacity between the north and the south continued to have negative impacts on both energy prices for industry and households, and economic activity in 2022. At the same time, Sweden's electricity consumption is expected to increase to at least 300 TWh by 2045, which is more than double the current consumption level. As the electrification of industry and transport continues to accelerate, the need to expand the capacity of the electricity grid increases (see Annex 7).

Streamlining administrative procedures could further increase the share of energy produced from renewables and the deployment of net-zero technologies. A recent 'RES Simplify' study identified Sweden as one of the Member States with lengthy administrative procedures for deploying renewable energy sources, especially onshore wind, to the extent that projects might no longer be economically viable by the time the administrative process is completed ([17]). The coalition agreement of the ruling government agreed to investigate how to simplify and shorten the environmental permit assessment under the Environmental Code, to make it more flexible, effective and predictable. However, without concrete policy action, bottlenecks, particularly at the local level, in the

([17]) European Commission, Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify), Commission Interim Report (2021).

authorisation of both onshore and offshore renewable energy projects are likely to persist (see Annexes 7 and 12). Opportunities remain for speeding up administrative procedures by limiting the number of authorities involved in permitting procedures and running processes at different administrative levels in parallel rather than in sequence.

Under the current plans to move away from a 100% renewable to a 100% fossil-free energy mix, Sweden will likely not achieve its target of using energy 50% more efficiently in 2030 as compared to 2005. Although Sweden's primary energy consumption decreased from 47.3 Mtoe to 41.3 Mtoe between 2018 and 2020, it increased again to 43.8 Mtoe in 2021. If the overall trajectory between 2005 and 2021 continues, Sweden will miss the 2030 target, regardless of energy savings in final energy consumption (see Annex 6).

Investments in manufacturing capacities for 'clean tech' are crucial for boosting industrial competitiveness, as laid out in the Green Deal industrial plan. According to the European Innovation Scoreboard 2022, overall, Sweden continues to be the best performer in the EU. Still, it has a mixed performance on climate change-related indicators with a below-average share of material resources coming from recycled waste materials, but an above-average score on environmental innovation. However, a steeply increasing trend has been observed in venture capital investments in climate tech start-ups and scale-ups, with EUR 2.9 billion in 2021 compared to EUR 0.78 billion in 2020 (39% of total venture capital investments in 2021, compared to 23.7% in 2020). Such investments are crucial for bridging the gap between R&I and market uptake, thereby helping to boost Sweden's and the EU's competitiveness.

In Sweden, in the context of the green transition, labour shortages in key sectors have increased in recent years, which 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 Sweden for 16 occupations that required specific skills or knowledge for the green transition, including environmental and occupational healthcare and hygiene professionals, plumbers and pipe fitters, as well as building frame and related trades workers ([18]). The job vacancy rate increased across key sectors, such as construction (from 1.4% in 2015 to 1.6% in 2021) and manufacturing (from 1.1% in 2015 to 2.0% in 2021), with only manufacturing standing above the EU average of 1.9% in 2021 ([19]). In 2022, labour shortages were reported as a factor constraining production in industry (for 17.6% of firms) and construction (for 41.3% of firms) ([20]). 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).

([18]) Data on shortages is 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.

([19]) Eurostat (JVS_A_RATE_R2).

([20]) European Business and Consumer Survey.

Achieving labour market integration, while tackling education and skills gaps to raise competitiveness

Socio-economic and migrant backgrounds as well as the shortage of teachers have a visible impact on educational outcomes. Sweden is performing above the EU average in terms of quality education (see Annex 1), yet certain challenges remain. The share of early leavers from education and from training has been increasing since 2019 and there are clear differences between native and non-EU born students in Sweden (6.3% compared to 16.3% in 2021). The share also differs significantly between cities and rural areas (see Annex 17). In addition, there is a clear shortage of qualified teachers and interest in the teaching profession is declining post-pandemic (see Annex 15). The lack of equal opportunities in the schooling system continues to negatively affect pupils with a migrant background.

The educational attainment levels are increasing in Sweden, but challenges remain for certain groups. Post-secondary educational attainment levels in Sweden increased between 2015 and 2021 (from 46.5% to 49.3%), but there are clear differences by country of birth and degree of urbanisation. While the attainment levels have been increasing for people born in Sweden and born in the EU but working in Sweden, the education levels for people born outside the EU have decreased in recent years (see Annex 15). This has further increased the gap between EU born and non-EU born people and reduced the chances of non-EU born workers finding jobs. There is also a significant gap between educational attainment levels in cities and rural areas (62.2% compared to 30.7% in 2021).

Reducing the skills gap will promote social inclusion of vulnerable groups and contribute to the overall competitiveness of the economy. Sweden's labour market offers more opportunities for those with the right skills. Helping more people develop skills relevant to the labour market could increase their chances of finding a job and reduce their risk of falling into poverty and experiencing social exclusion (see Annex 14). Shortages in skilled labour have been identified in the services sector, specifically in professional, scientific and technical activities, together with administrative and support service activities (4.8% compared to the overall national average of 3.3%). They also pose a major challenge for the development of the country's northernmost regions. Sweden is strong on upskilling and reskilling in declining and transforming sectors with a significant increase recently in participation in learning activities (see Annex 8). Strengthening this ongoing trend and ensuring that more people will be able to find jobs in the green economy, will also help Sweden reach its 2030 national skills target of at least 60% of adults participating in training every year.

KEY FINDINGS

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

- Boosting investment in the decarbonisation of emission-intensive industries to increase their competitiveness and incentivising regional and local initiatives to help reduce greenhouse gas emissions.

- Enhancing the accessibility of broadband connectivity and establishing a shared digital infrastructure for public administration.

- Removing existing constraints to improve the accessibility, capacity and resilience of the health and long-term care system.

- Improving the effectiveness of financial supervision on money laundering.

Sweden should proceed with the steady implementation of its 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, Sweden would benefit from:

- Reducing macro-economic vulnerabilities from the housing market and household debt, driven by tax incentives and exacerbated by bottlenecks in construction and rental regulations;

- Boosting the educational outcomes and employment prospects of vulnerable groups, particularly migrants and those in need of additional upskilling and reskilling, through focused policy measures to help these groups find or stay in work;

- Addressing the long-standing educational disparities for disadvantaged groups, as well as the shortage of qualified teachers.

- Further decarbonising the economy by removing capacity constraints in the electricity grid through further investments to accommodate the increasing deployment of renewable energy, by streamlining and accelerating permitting procedures for renewables, improving energy efficiency, and further improving green skills levels.

ANNEXES

LIST OF ANNEXES

LIST OF TABLES

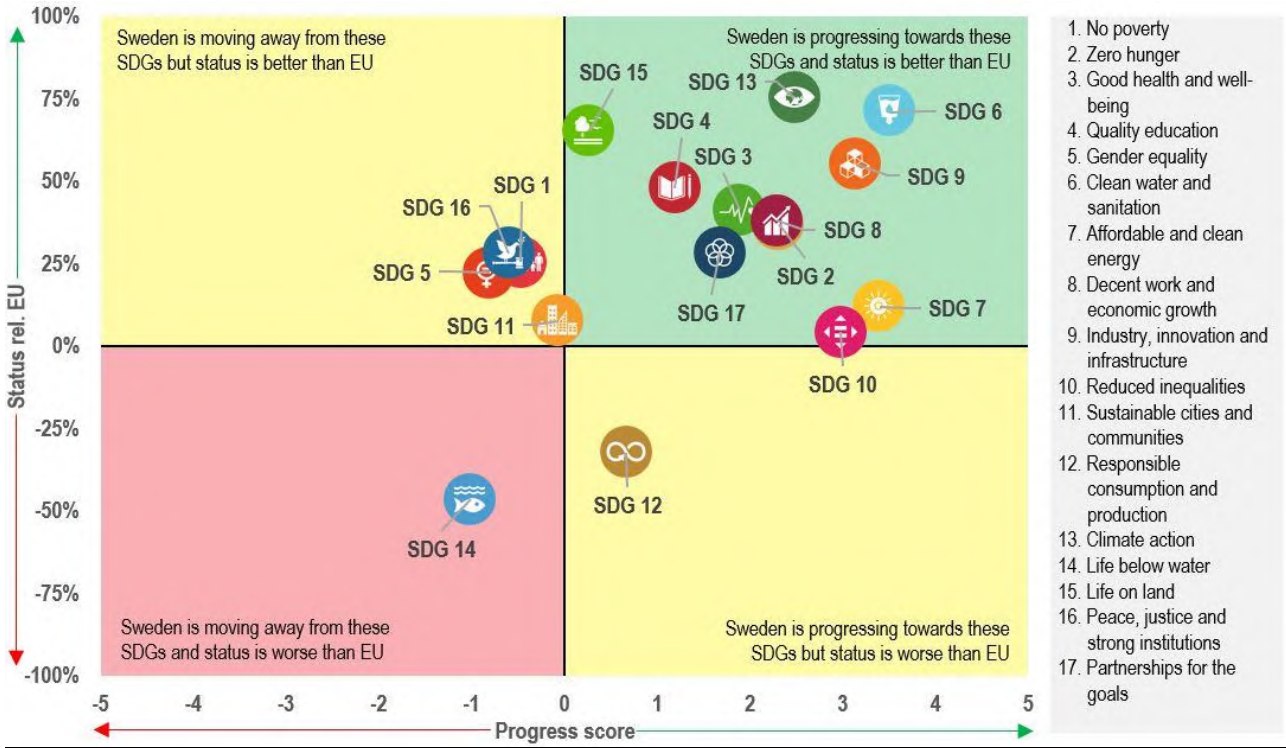
LIST OF GRAPHS

LIST OF MAPS

This Annex assesses Sweden'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.

Sweden performs well on most of the SDG indicators related to *environmental sustainability* (SDGs 2, 6, 7, 9, 11, 12, 13, 15), but needs to catch up with the EU average on others (SDGs 12, 14). Sweden performs very well on SDG 13 (Climate action) with net greenhouse gas emissions falling from 1.8 tonnes per capita in 2016 to 0.9 tonnes in 2021, well below the EU average (7.4 tonnes in 2021). The share of renewable energy in gross final energy consumption (SDG 7) also increased from 52.6% in 2016 to 62.6% in 2021, which is visibly above the EU average (21.8% in 2021). As concerns SGD 9 (Industry, Innovation and Infrastructure), Sweden scores above the EU average on all indicators. The gross domestic expenditure on R&D has further increased from 3.25% of GDP in 2016 to 3.35% of GDP in 2021. Furthermore, the share of R&D

Graph A1.1:**Progress towards the SDGs in Sweden 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 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.

personnel has increased from 1.79% of the active population in 2016 to 2.17% in 2021. The circular material use rate (SDG 12) slightly decreased, from 6.8% in 2016 to 6.6% in 2021, moving away from the EU average (11.7% in 2021). In terms of SDG 14 (Life below water), Sweden is not only performing below the EU average on certain indicators but is also moving away from the SDGs. Measures in the Swedish recovery and resilience plan (RRP) support the acceleration of the green transition of carbon-intensive sectors, such as transport and economy.

Sweden performs well on most SDG indicators related to *fairness* (SDGs 1, 3, 4, 8, 10), but is moving away from the SDGs on others (SDG 5). Sweden performs very well on the indicators for SDG 3 (Good health and well-being) and has one of the highest employment rates in the EU (SDG 8; 80.7% in 2021; EU average: 73.1%). There has been a slight improvement on SDG 10 (Reduced inequalities). However, the gap between EU and non-EU citizens in terms of employment rates (29.5% in 2021) remains wide compared to the EU average (14.9% in 2021). The share of early leavers from education and training (SDG 4) has increased from 7.4% in 2016 to 8.4% in 2021, but remains below the EU average (9.7% in 2021). Regarding SDG 5 (Gender equality), there has been a negative trend on some indicators. However, overall Sweden still performs better than the EU average. The Swedish RRP includes measures to increase the number of study places and provide more training opportunities for those in vocational and adult education.

Sweden performs well on SDG indicators on *productivity* (SDGs 4, 8, 9). Sweden's share of gross domestic expenditure on R&D (SDG 9) remains high, increasing between 2016 and 2021 (from 3.25% to 3.35% of GDP), and well above the EU average (2.27% of GDP in 2021). The share of households with a high-speed internet connection in Sweden is also visibly above the EU average (SDG 9; 82.5% in 2021; EU average 70.2%). In terms of SDG 4 (Quality education), Sweden performs well on adult participation in learning (34.7% compared to the EU average of 10.8% in 2021) and has a high share of adults in with at least basic digital skills (66.5% in 2021). To strengthen digital skills and increase human capital, the RRP supports measures to increase the number of study places in higher vocational education and ensure resources for universities and higher education institutions. The RRP also provides funding for investment in broadband expansion.

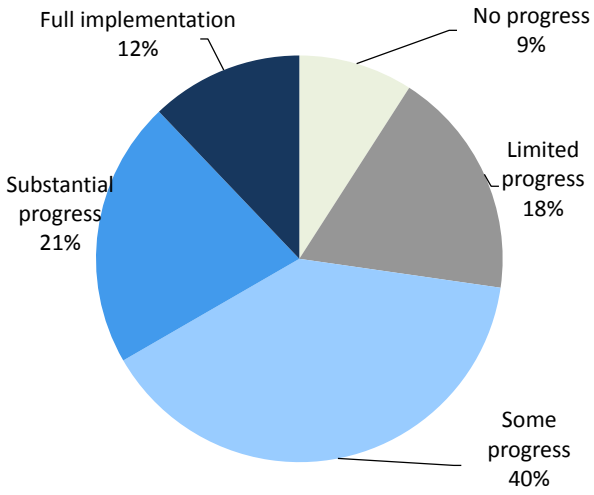
Sweden performs well on SDG indicators related to *macroeconomic stability (SDGs 8, 17)*, but is moving away from the SDGs on others (SDG 16). Sweden performs well on SDG 8 and increased its share of GDP allocated for investment from 24.2% in 2016 to 25.6% in 2021 (EU average: 22.4% in 2021). However, the material footprint (24.2 tonnes per capita in 2021) is still well below the EU average (13.7 tonnes per capita in 2021). In terms of SDG 16 (Peace, justice, and strong institutions), Sweden performs above the EU average for most indicators but there is an overall negative trend. However, the share of the population who perceive the independence of the justice system as very and fairly good has slightly increased from 72% in 2017 to 74% in 2022 (EU average: 53% in 2022). The RRP is aimed at helping preserve the sustainability of the Swedish economic model, and therefore contributes to macroeconomic stability through reforms tackling the demographic challenges.

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

ANNEX 2: PROGRESS IN THE IMPLEMENTATION OF COUNTRY-SPECIFIC RECOMMENDATIONS

The Commission has assessed the 2019-2022 country-specific recommendations (CSRs) ([21]) addressed to Sweden as part of the European Semester. These recommendations concern a wide range of policy areas that are related to 10 of the 17 Sustainable Development Goals (see Annexes 1 and 3). The assessment considers the policy action taken by Sweden to date ([22]) and the commitments in its recovery and resilience plan (RRP) ([23]). At this stage of RRP implementation, overall, 73% of the CSRs focusing on structural issues from 2019-2022 have recorded at least 'some progress', while 18% 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:**Sweden's progress on the 2019-2022 CSRs (2023 European Semester)**



Source: European Commission

([21]) 2022 CSRs: EUR-Lex - 32022H0901(27) - EN - EUR-Lex (europa.eu)

2021 CSRs: EUR-Lex - 32021H0729(28) - EN - EUR-Lex (europa.eu)
2020 CSRs: EUR-Lex - 32020H0826(27) - EN - EUR-Lex (europa.eu)
2019 CSRs: EUR-Lex - 32019H0905(27) - EN - EUR-Lex (europa.eu)

([22]) 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).

([23]) 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**

Sweden	Assessment in May 2023*	RRP coverage of CSRs until 2026	Relevant SDGs
2019 CSR 1	**Limited progress**		
Address risks related to high household debt by gradually reducing the tax deductibility of mortgage interest payments or increasing recurrent property taxes.	No progress		SDG 8
Stimulate investment in residential construction where shortages are most pressing, in particular by removing structural obstacles to construction.	Limited progress	Relevant RRP measures planned as of 2020, 2021, 2022 and 2023	SDG 8
Improve the efficiency of the housing market, including by introducing more flexibility in rental prices and revising the design of the capital gains tax.	Some Progress	Relevant RRP measures planned as of 2020, 2021, 2022 and 2023	SDG 8
2019 CSR 2	**Some progress**		
Focus investment related economic policy on education and skills	Some progress	Relevant RRP measures planned as of 2021, 2022, 2023 and 2024	SDG 4, 10, 11
, maintaining investment in sustainable transport to upgrade the different transport modes, in particular railways	Substantial progress	Relevant RRP measures planned as of 2021, 2022, 2023 and 2024	SDG 10, 11
, and research and innovation, taking into account regional disparities.	Some progress	Relevant RRP measures planned as of 2021, 2022, 2023 and 2024	SDG 9, 10, 11
2019 CSR 3	**Substantial Progress**		
Ensure effective supervision and the enforcement of the anti-money laundering framework.	Substantial Progress	Relevant RRP measures planned as of 2020, 2021, 2022 and 2023	SDG 8, 16
2020 CSR 1	**Substantial progress**		
In line with the general escape clause, take all necessary measures to effectively address the pandemic, sustain the economy and support the ensuing recovery. When economic conditions allow, pursue fiscal policies aimed at achieving prudent medium-term fiscal positions and ensuring debt sustainability, while enhancing investment.	Not relevant anymore	Not applicable	SDG 8, 16
Ensure the resilience of the health system, including through adequate supplies of critical medical products, infrastructure and workforce.	Substantial progress	Relevant RRP measures planned as of 2021, 2022, 2023 and 2024	SDG 3
2020 CSR 2	**Some progress**		
Foster innovation	Some Progress	Relevant RRP measures planned as of 2025	SDG 9
and support education and skills development.	Some progress	Relevant RRP measures planned as of 2021, 2022, 2023 and 2024	SDG 4
Front-load mature public investment projects and	Limited progress	Relevant RRP measures planned as of 2021, 2022, 2023, 2024 and 2025	SDG 8, 16
promote private investment to foster the economic recovery.	Some progress		SDG 8, 9
Focus investment on the green and digital transition, in particular on clean and efficient production and use of energy,	Limited Progress	Relevant RRP measures planned as of 2021, 2022, 2023, 2024 and 2025	SDG 7, 9, 13
high-tech and innovative sectors,	Some progress		SDG 9
5G networks	Full implementation		SDG 9
and sustainable transport.	Substantial Progress	Relevant RRP measures planned as of 2021, 2022, 2023, 2024 and 2025	SDG 11
2020 CSR 3	**Substantial progress**		
Improve the effectiveness of anti-money laundering supervision and effectively enforce the anti-money laundering framework.	Substantial progress	Relevant RRP measures planned as of 2020 and 2023	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.	Some 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.	Full implementation	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.	Full Implementation	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.	Substantial 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.	Full Implementations	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.	Some Progress	Not applicable	SDG 8, 16
For the period beyond 2023, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions.	Full Implementation	Not applicable	SDG 8, 16
Reduce risks related to high household debt and housing market imbalances by reducing the tax deductibility of mortgage interest payments or by increasing recurrent property taxes.	No Progress		SDG 8, 10, 12
Stimulate investment in residential construction to ease the most urgent shortages, in particular by removing structural obstacles to construction and by ensuring the supply of buildable land.	Limited Progress	Relevant RRP measures planned as of 2020, 2021, 2022 and 2023	SDG 8, 9
Improve the efficiency of the housing market, including by introducing reforms to the rental market.	Limited Progress		SDG 8
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 4 May 2022.	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.		
Swiftly finalise the negotiations with the Commission of the 2021-2027 cohesion policy programming documents with a view to starting their implementation.	Progress on the cohesion policy programming documents is monitored under the EU cohesion policy.		
2022 CSR 3	**Limited Progress**		
Reduce the impact that pupils' socio-economic and migrant backgrounds have on their educational outcomes by providing equal access opportunities to schools and by addressing the shortages of qualified teachers.	Limited Progress	Relevant RRP measures planned as of 2021, 2022, 2023 and 2024	SDG 4, 8, 10
Develop skills of disadvantaged groups, including people from migrant backgrounds, by adapting resources and methods to their needs to help their integration into the labour market.	Some Progress	Relevant RRP measures planned as of 2021, 2022, 2023 and 2024	SDG 4, 8, 10
2022 CSR 4	**Limited Progress**		
Reduce overall reliance on fossil fuels	Some Progress		SDG 7, 9, 13
by accelerating the deployment of renewables and boosting complementary investment in network infrastructure, strengthening internal grids within the country to ensure sufficient network capacity,	Some Progress	Relevant RRP measures planned as of 2021, 2022, 2023, 2024 and 2025	SDG 7, 9, 13
improving energy efficiency,	Some Progress	Relevant RRP measures planned as of 2021, 2022, 2023 and 2025	SDG 7
and further streamlining permitting procedures in relation to renewable energy projects.	No Progress		SDG 7, 9, 13

Note:

* See footnote ([23]).

** 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 4). Sweden submitted its current recovery and resilience plan (RRP) on 28 May 2021. The Commission's positive assessment on 28 March 2022 and Council's approval on 4 May 2022 paved the way for disbursing EUR 3.3 billion in grants under the RRF over the 2021-2026 period.

Table A3.1: **Key elements of the Sweden's RRP**

	Current RRP
Scope	Initial plan
CID adoption date	4 May 2022
Total allocation	EUR 3.3 billion in grants (0.6% of 2021 GDP)
Investments and reforms	12 investments and 15 reforms
Total number of milestones and targets	56

Source: European Commission

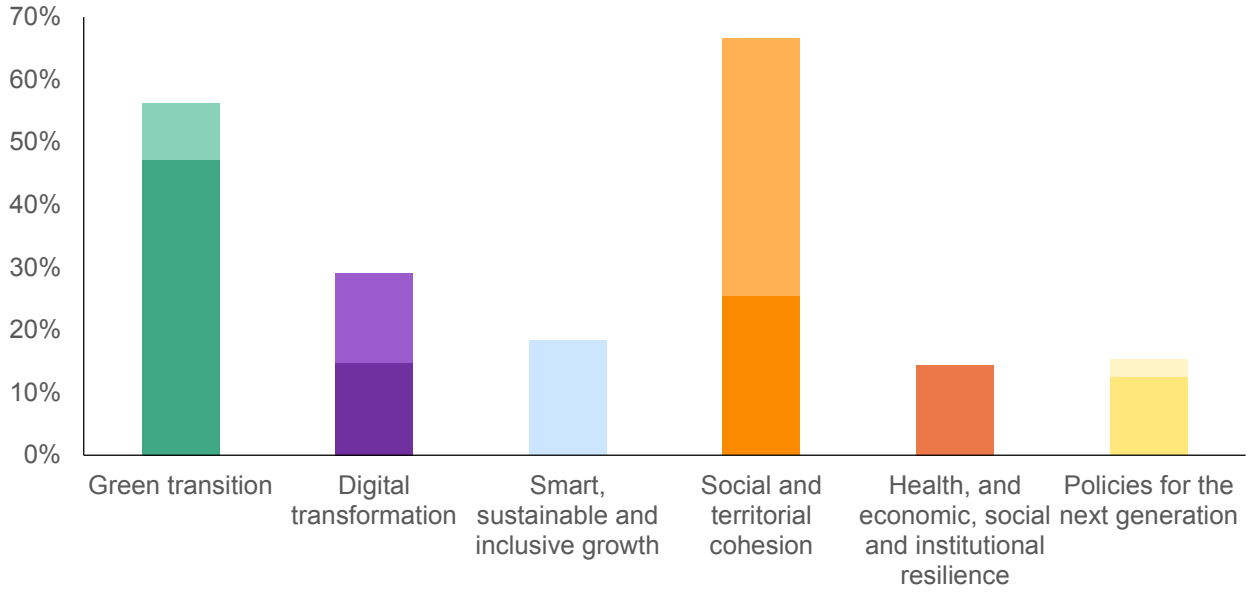
Since the entry into force of the RRF Regulation and the assessment of the national recovery and resilience plans, geopolitical and economic developments have caused major disruptions across the EU. In order to effectively address these disruptions, the (adjusted) RRF Regulation allows Member States 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 Sweden was moreover updated on 30 June 2022 to an amount of EUR 3.18 billion in grants. Sweden has not submitted its request for RRP amendment by the time of publication of this report.

No funds have so far been disbursed to Sweden under the RRF. The Sweden has not submitted request to Commission to disburse equivalent to 13% of the financial allocation. Sweden has not submitted yet the first payment request.

Sweden's progress in implementing its plan is published in the Recovery and Resilience Scoreboard ([24]). 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 Sweden and subsequently assessed as satisfactorily fulfilled by the Commission.

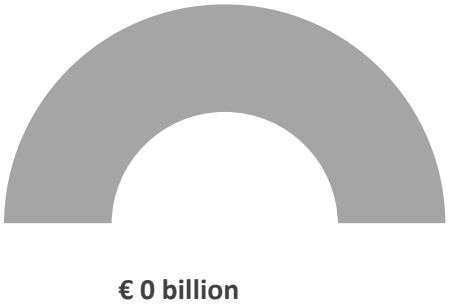
([24]) https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html

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



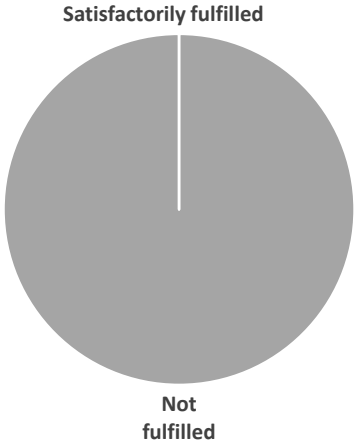
Note: Each measure contributes towards two policy areas of the six pillars, therefore the total contribution to all pillars displayed on this chart amounts to 200% of the estimated cost of the RRP. The bottom part represents the amount of the primary pillar, the top part the amount of the secondary pillar.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

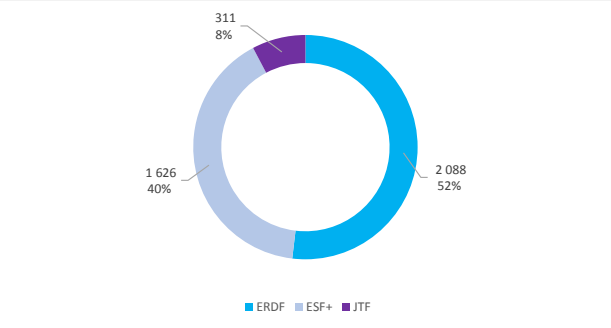
Graph A3.3:**Fulfilment status of milestones and targets**



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 Sweden: budget by fund**

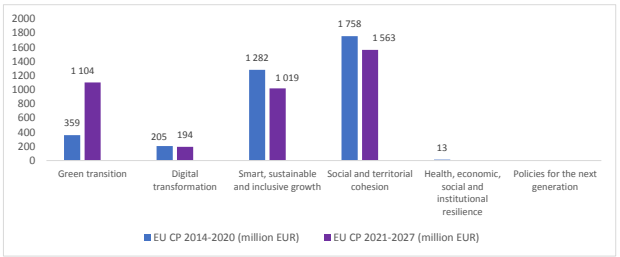


(1) million EUR in current prices, % of total; (total amount including EU and national co-financing)
Source: European Commission, Cohesion Open Data

In 2021-2027, in Sweden, cohesion policy funds ([25]) **will invest EUR 1.1 billion in the green transition and EUR 194 million in the digital transformation as part of the country's total allocation of EUR 4 billion.** In particular, the European Regional Development Fund (ERDF) will lead to a more competitive and smarter Sweden, improving digitalisation, research and innovation for citizens, 23 500 businesses, organisations and public authorities. It will increase R&D investment by SMEs, foster the development of new products, processes and business models, and establish new test beds and innovation environments close to the market. 450 companies will receive support to become more energy efficient and reduce their CO_2 emissions by 2,49 tonnes CO_2 eq./year. Particular attention should be paid to monitoring the decrease in emissions, which is a priority in 2021-2027. The Just Transition Fund will contribute to the transformation of the steel, mineral and metals industries and target Emissions Trading System (ETS) installations with high emissions so that substantial CO_2 reductions are possible. These efforts will contribute to a decrease of 2 790 000 tonnes CO_2 eq./year at regional, national and, by extension, global level. Under the European Social Fund Plus (ESF+), Sweden allocates more than EUR 350 million to social inclusion, of which EUR 10.6 million is dedicated to fighting child poverty. Investments will, for example, support schools in areas facing socio-economic challenges, with measures on homework support, leisure activities, and language support. These measures are expected to help weaken the link between students' socio-economic backgrounds and learning outcomes.

Of the investments mentioned above, EUR 169 million will be invested in line with REPowerEU objectives. This is on top of the EUR 172 million dedicated to REPowerEU under the 2014-2020 budget**.** EUR 51 million (2021-2027) and EUR 169 million (2014-2020) is for improving energy efficiency; EUR 54 million (2021-2027) and EUR 3 million (2014-2020) is for renewable energy and low-carbon R&I; and EUR 64 million (2021-2027) is for smart energy systems.

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



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

In 2014-2020, cohesion policy funds made EUR 2.1 billion available to Sweden ([26]), with

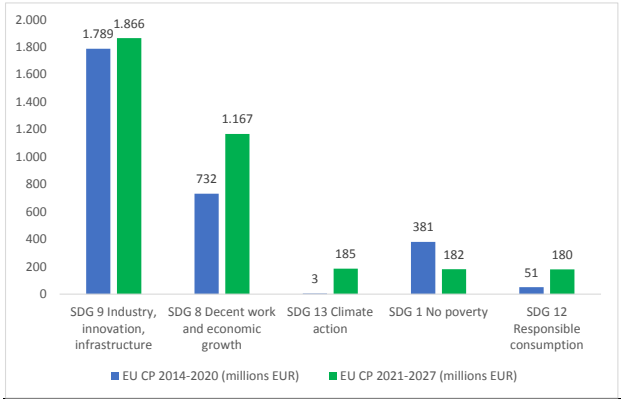
([25]) European Regional Development Fund (ERDF), European Social Fund+ (ESF+), Just Transition Fund (JTF), excluding Interreg programme. The total amount includes national and EU contributions. Data source: Cohesion Open Data.

([26]) Cohesion policy funds include the ERDF, ESF and YEI (Youth Employment Initiative). ETC programmes are excluded here. According to the 'N+3 rule', the funds committed for 2014-2020 must be spent by 2023. REACT-

an absorption of 68% ([27]). Including national financing, the total investment amounts to EUR 3.8 billion, representing around 0.1% of GDP for 2014-2020.

Sweden continues to benefit from cohesion policy flexibility to support economic recovery, step up convergence and provide vital support to regions following the COVID-19 pandemic. The Recovery Assistance for Cohesion and the Territories of Europe instrument (REACT-EU) ([28]) under NextGenerationEU provides EUR 366 million on top of the 2014-2020 cohesion policy allocation for Sweden. REACT-EU supported the sustainable transition of the Swedish businesses that were worst hit by the COVID-19 crisis, including in the tourism and hospitality sectors. Actions include digital transformation, transition to a green and low-carbon economy increased resource efficiency, as well as labour market training, guidance and skills development. In addition, EUR 137 million was provisionally allocated to Sweden through the Brexit Adjustment Reserve (BAR) ([29]). With SAFE (Supporting Affordable Energy), the 2014-2020 cohesion policy funds may also be mobilised by Sweden to support vulnerable households, jobs and companies particularly affected by high energy prices.

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



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

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

Other EU funds provide significant support to Sweden. The common agricultural policy (CAP) made EUR 8.4 billion available in 2014-2022 and will keep supporting Sweden with EUR 4.5 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 120 million available to Sweden in 2014-2020 and the European Maritime, Fisheries and Aquaculture Fund allocates EUR 116 million in 2021-2027.

Sweden 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 136.3 million to nine specific projects on strategic transport networks. Similarly, Horizon Europe has so far

EU is included in all figures. The total amount includes EU and national co-financing. Data source: Cohesion Open Data.

([27]) 2014-2020 Cohesion policy EU payments by MS is updated daily on Cohesion Open Data.

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

([29]) Sweden will transfer EUR 66 million from the BAR to REPowerEU. This transfer is not factored in the amounts provided.

allocated more than EUR 365 million to Swedish R&I on top of the EUR 2.3 billion earmarked under the previous programme (Horizon 2020). The Public Sector Loan Facility set up under the Just Transition Mechanism makes EUR 12 million of grant support from the Commission available for projects located in Sweden for 2021-2027, 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 Sweden in designing and implementing growth-enhancing reforms, including those set out in its recovery and resilience plan (RRP). Sweden has received significant support since 2018. Examples ([30]) include support for developing a strategy and actions to improve coordination, foresight and preparedness for crises like COVID-19, and for building capacities for sustainable green development in the northern sparsely populated areas.

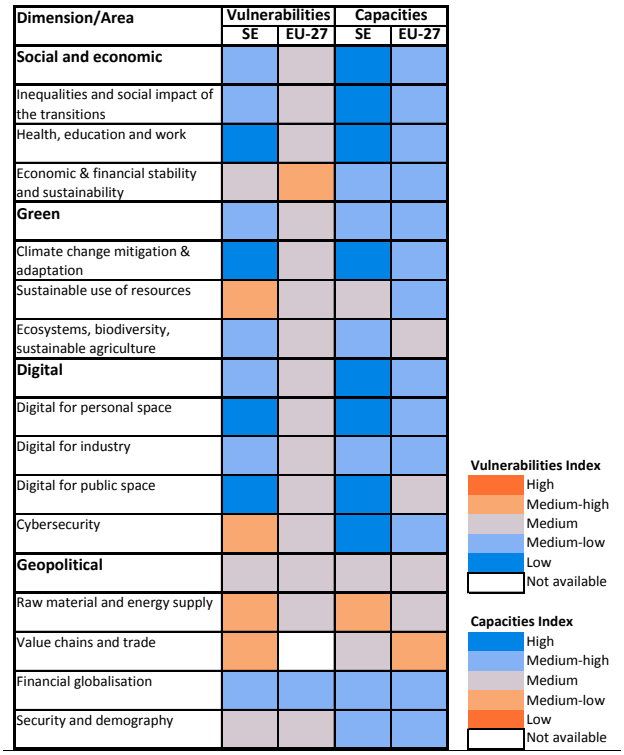
([30]) Country factsheets on reform support are available here.

This Annex illustrates Sweden's relative resilience capacities and vulnerabilities using the Commission's resilience dashboards (RDB) ([31]). 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 ([32]) and capacities ([33]) that can become increasingly relevant, both to navigate ongoing transitions and to cope with potential future shocks. To this end, the RDB help to identify areas that need further efforts 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 Sweden and the EU-27 ([34]).

According to the set of resilience indicators under the RDB, Sweden generally displays a lower level of vulnerabilities compared to the EU average. Sweden displays medium vulnerabilities in the geopolitical dimension and medium-low vulnerabilities in the social and economic, the green and digital dimensions of the RDB. It has higher vulnerabilities than the EU average in the areas 'sustainable use of resources', 'cybersecurity' and 'raw material and energy supply'. Sweden has relatively low vulnerabilities in all areas of the social and economic dimension, as well as in the areas 'climate change mitigation and adaptation', 'ecosystems, biodiversity, sustainable agriculture' and the digitalisation of the personal or public space.

Compared to the EU average, Sweden shows a higher level of capacities across all RDB indicators. It has medium resilience capacities in the geopolitical dimension, medium-high capacities in the green dimension and high capacities in the social and economic and the digital dimensions. Sweden shows stronger capacities than the EU average most notably in the areas of 'inequalities and the social impact of the transitions', 'climate change mitigation and adaptation' and the digitalisation of the personal and public space. There is room for improving capacities compared to the EU in relation to 'raw material and energy supply'.

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

(31) 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).

(32) 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.

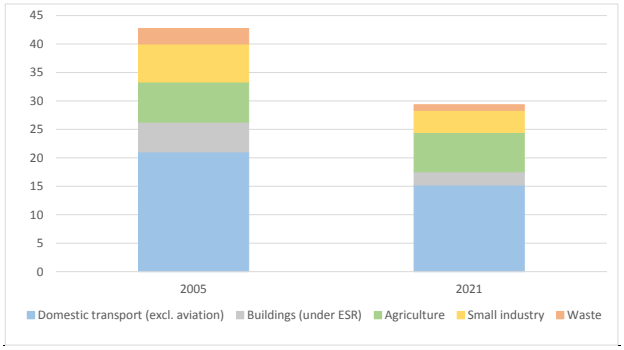
(33) Capacities refer to enablers or abilities to cope with crises and structural changes and to manage the transitions.

(34) 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.

Sweden's green transition requires continued action in several areas, including the deployment of renewable energy and energy efficiency measures, and strengthening its carbon sinks in the land use sector. Implementation of the European Green Deal is underway in Sweden; this Annex provides a snapshot of the key areas involved ([35]).

Sweden has not yet defined all the climate policy measures it needs to reach its 2030 climate target for the effort sharing sectors ([36]). Data for 2021 on Sweden's greenhouse gas emissions in these sectors are expected to show the country generated less than its annual emission allocations ([37]). Current policies in Sweden are projected to reduce these emissions by 39% relative to 2005 levels in 2030, 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 Sweden's new target to reduce emissions by 50% ([38]). In its recovery and resilience plan, Sweden has allocated 44.4% of its Recovery and Resilience Facility grants to key reforms and investments to attain climate objectives ([39]). Sweden's climate policy framework from 2017 envisages net zero greenhouse gas emissions by 2045, and negative emissions thereafter. By 2030, greenhouse gas emissions from domestic transport (excluding flights) should fall by at least 70% compared to 2010, and emissions from Sweden's effort sharing sectors should fall by at least 63% from 1990 levels ([40]).

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



Source: European Environmental Agency.

Sweden faces a potential major challenge related to increasing the carbon sink of its land use sector, with a declining trend of carbon removals over time. Sweden is one of the EU Member States that achieves the highest amount of net carbon removals through its land use, land use change and

([35]) 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.

([36]) 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.

([37]) Sweden's annual emission allocations for 2021 were some 31.2 Mt CO_2eq, and its approximated 2021 emissions were 29.3 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).

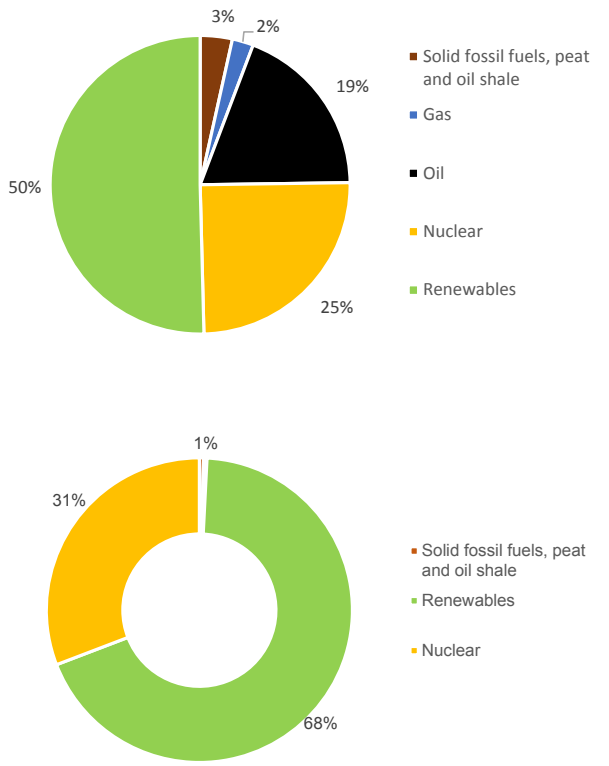
([38]) See the information on the distance to the 2030 climate policy target in Table A6.1. Existing and additional measures as of 15 March 2021.

([39]) Notably, investment to promote innovative technologies to reduce greenhouse gas emissions from industry processes (Industry Leap programme) and to reduce greenhouse gas emissions through measures at local and regional levels (Climate Leap programme), investments in energy efficiency in housing, railroads, and forest and nature protection.

([40]) According to Sweden's climate policy framework, 2017. The national target for the sectors outside the EU Emissions Trading System translates into a reduction of greenhouse gas emissions by around 51% in 2030 compared to 2005.

forestry (LULUCF) sector. Sweden achieved net removals of 39 099 kt CO_2eq (2017-2021 average) from the land use sector, but the trend of removals has been decreasing. In accordance with the revised LULUCF Regulation, Sweden will need to achieve a total of net removals just under 4 million tonnes higher in 2030, compared to the average level during the reference period 2016–2018 (see Table A6.1) ([41]). Emissions from drained peatlands are relatively high and the rewetting of these lands, from agricultural land, is estimated to have a high potential for carbon removals.

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

In 2021, renewable energy still made up the majority of Sweden's energy mix, even though production fell, leading to an increase in the share of nuclear energy. In 2021, renewable energy reached 50% of Sweden's energy mix, followed by nuclear (25%) and oil (19%). Coal (3%) and natural gas (2%) provided the remainder. Sweden's electricity mix is composed of 68% of renewable energy, the main source being hydropower (43%), followed by wind (16%) renewable combustible fuels (8%) and solar (1%). Nuclear energy made up 31% of the electricity mix.

In Sweden, renewable energy capacity has been growing steadily for years, picking up speed especially over the last two years. Sweden's target of 65% of share of energy from renewable sources in gross final energy consumption by 2030 included in the NECP was considered sufficiently ambitious. Sweden 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. The plan currently includes the aim to generate 100% of its electricity from renewable energy by 2040 ([42]). Between 2020 and 2022, Sweden more than doubled its installed capacity of photovoltaics from 1.1 GW to 2.6 GW. Wind generation capacity also increased quickly from 10 GW in 2020 to 14,5 GW in 2022. The total capacity of hydro power in Sweden has been stable over the last decade at 16.4 GW. Under its recovery and resilience plan, Sweden supports its 'Climate Leap' and 'Industry Leap' programmes. These are subsidy schemes for local and regional climate investments and for industrial processes, in particular to fund the conversion to renewable energy for heating in industry and agriculture, the production of biogas and biofuels, sustainable transport and the decarbonisation of industry.

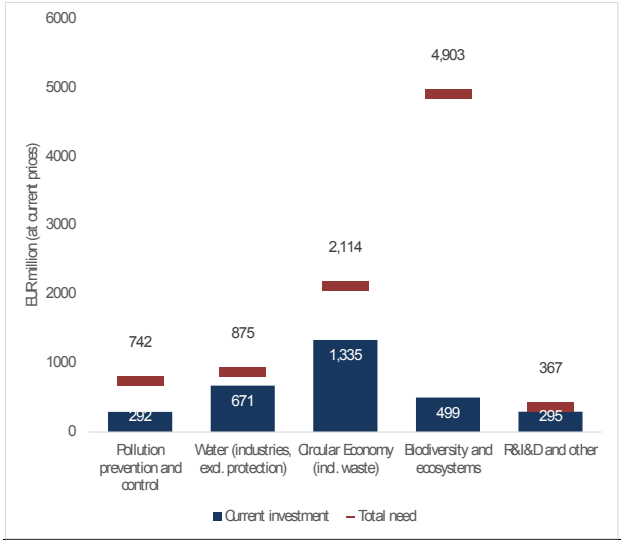
Reducing energy consumption by increasing energy efficiency is crucial for Sweden. It would contribute significantly to reducing

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

([42]) The new government has moved away from a "100% renewables" to a "100% fossil-free" ambition

energy costs for both consumers and businesses. Sweden's NECP targets for primary and final energy consumption (PEC and FEC) were considered modest in ambition, respectively in the 2020 Commission assessment. Based on the energy consumption trajectory for 2018-2021, Sweden 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 ([43]). The NECP sets the target for the country's energy use in 2030 to be 50% more efficient than it was in 2005, with the target expressed in primary energy use in relation to GDP. Though Sweden cut its primary energy consumption from 47.3 Mtoe in 2018 to 41.3 in 2020, it increased again to 43.8 Mtoe in 2021. The country must step up measures taken to achieve the 2030 national energy efficiency target, given that it will miss the target if the trend in primary and final energy consumption between 2005 and 2021 continues. The national energy and climate plan focuses essentially on the buildings, transport and industry sectors and lacks quantified evidence on whether Sweden can meet the overall energy efficiency targets with action in these sectors alone.

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



Source: European Commission.

Sweden would benefit from investing more in environmental protection, in protecting biodiversity and in improving waste and water management ([44]). Between 2014 and 2020, the environmental investment needs were estimated to be at least EUR 9 billion while investment was about EUR 3.1 billion, leaving a gap of at least EUR 5.9 billion per year (see Graph A6.3) ([45]). The gap is especially wide for investment in biodiversity and ecosystem protection. Sweden's land EU Natura 2000 network covers 12% of its land ([46]). Sweden has yet to complete the designation of its network of special protection areas at sea, and challenges remain in water management. The eutrophication of inland and marine waters implies specific challenges. There is a need to develop waste treatment infrastructure associated with the higher steps of the waste hierarchy, in particular for plastic packaging

([43]) 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

([44]) 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 Sweden)

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

([46]) In 2021, Sweden had 15.0% terrestrial protected areas (Natura 2000 and nationally designated areas), against the EU average of 26.4% (European Environment Agency, 2023, Natura 2000 Barometer).

recycling, to reduce the reliance on incineration. Infrastructure investment has fallen short of investment needs in wastewater collection and treatment, nature-based solutions and flood prevention (see also Annex 9).

Climate change will have significant impacts on Sweden's natural and built environment, with major challenges to society. Projected impacts and challenges include landslides and erosion, floods threatening communities, infrastructure, and businesses, and water shortages affecting supply to households, agriculture, and industry ([47]). Climate change is also expected to have considerable impacts on Sweden's forests. Sweden adopted a national adaptation strategy in March 2018. To provide financing, it has created an adaptation fund for municipalities. Sweden is one of nine Member States that have explicitly earmarked a readily available budget for climate adaptation ([48]).

Sweden 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. 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, water supply, sewerage, waste management and services sectors. Examples of such subsidies include the excise tax refund and the reduced CO2 tax rate for diesel used in agriculture, the reduced energy tax rate for light fuel oil used in mobile machinery, the excise tax exemption on the natural gas, the reimbursement of excise duty on diesel used in freight and passenger transport, or the tax relief for natural gas for industrial consumers ([49]). A mapping of all environmentally harmful subsidies by Sweden would help prioritise candidates for reform.

([47]) Handlingsplan för Naturvårdsverkets arbete med klimatanpassning, 2019.

([48]) European Environmental Agency, *Advancing towards climate resilience in Europe*, forthcoming.

([49]) 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 CO2eq; % pp	43.5	-25%	-28%	-27%	-32%	-	-50.0%	-11	-11
	Net carbon removals from LULUCF [2]	kt CO2eq	-43,385	-38,790	-35,451	-38,256	-41,287	-41,711	-47321	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]	%	40%	53%	54%	56%	60%	63%	65%		
	Energy efficiency: primary energy consumption [3]	Mtoe	49.0	46.3	47.3	45.8	41.3	43.8	40.2		
	Energy efficiency: final energy consumption [3]	Mtoe	33.2	32.1	31.9	31.5	30.5	31.7	29.7		
			Sweden						EU		
			2016	2017	2018	2019	2020	2021	2019	2020	2021
Fiscal and financial indicators	Environmental taxes (% of GDP)	% of GDP	2.2	2.1	2.1	2.1	2.0	1.9	2.4	2.2	2.2
	Environmental taxes (% of total taxation) [4]	% of taxation	5.0	4.8	4.8	4.8	4.7	4.5	5.9	5.6	5.5
	Government expenditure on environmental protection	% of total exp.	0.9	1.0	1.0	1.0	1.0	1.1	1.7	1.6	1.6
	Investment in environmental protection [5]	% of GDP	0.4	0.4	0.5	0.5	-	-	0.4	0.4	0.4
	Fossil fuel subsidies [6]	EUR2021bn	1.7	1.4	1.3	1.0	0.8	-	53.0	50.0	-
	Climate protection gap [7]	score 1-4					0.0	0.8			1.5
Climate	Net greenhouse gas emissions	1990 = 100	74.0	77.0	76.0	74.0	67.0	67.0	76.0	69.0	72.0
	Greenhouse gas emission intensity of the economy	kg/EUR10	0.14	0.13	0.13	0.12	0.11	-	0.31	0.30	0.26
	Energy intensity of the economy	kgoe/EUR10	0.11	0.11	0.11	0.11	0.10	-	0.11	0.11	-
Energy	Final energy consumption (FEC)	2015=100	101.4	101.0	100.4	99.2	96.0	99.7	102.9	94.6	-
	FEC in residential building sector	2015=100	103.3	103.9	101.1	99.4	96.9	106.3	101.3	101.3	106.8
	FEC in services building sector	2015=100	104.8	99.2	102.5	100.1	99.6	105.8	100.1	94.4	100.7
Pollution	Smog-precursor emission intensity (to GDP) [8]	tonne/EUR10	0.55	0.51	0.46	0.42	0.39	-	0.93	0.86	-
	Years of life lost due to air pollution by PM2.5	per 100.000 inh.	72.2	39.0	85.1	51.4	32.3	-	581.6	544.5	-
	Years of life lost due to air pollution by NO_2	per 100.000 inh.	42.2	13.0	18.3	10.5	3.6	-	309.6	218.8	-
	Nitrates in ground water	mg NO3/litre	-	-	-	-	-	-	21.0	20.8	-
Biodiversity	Land protected areas	% of total	10.6	13.8	-	14.1	14.1	15.0	26.2	26.4	26.4
	Marine protected areas	% of total	15.3	-	-	15.5	-	14.9	10.7	-	12.1
	Organic farming	% of total utilised agricultural area	18.3	19.2	20.3	20.4	20.3	20.2	8.5	9.1	-
			2017	2018	2019	2020	2021	2022	2020	2021	2022
Mobility	Share of zero-emission vehicles [9]	% in new registrations	1.1	2.0	4.4	9.6	19.1	29.0	5.4	8.9	10.7
	Number of AC/DC recharging points (AFIR categorisation)		-	-	-	15497	19982	23869	188626	330028	432518
	Share of electrified railways	%	75.3	75.3	75.1	75.1	75.1	75.1	56.6	n/a	56.6
	Hours of congestion per commuting driver per year		21.6	21.8	22.0	22.0	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.

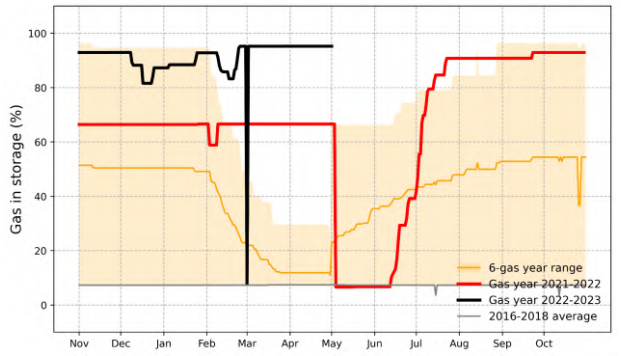
(7) The climate protection gap refers to the share of non-insured economic losses caused by climate-related disasters. This indicator is based on modelling of the current risk from floods, wildfires and windstorms as well as earthquakes, and an estimation of the current insurance penetration rate. The 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).

Sweden is dependent on imports for fossil fuels but also before Russia invaded Ukraine, Sweden had limited exposure to Russian gas and oil. Sweden does not depend on fossil fuels for the electricity sector. This Annex ([50]) sets out actions carried out by Sweden 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 ([51]).

Graph A7.1:**Underground storage levels in Sweden**



Source: JRC calculation based on AGSI+ Transparency Platform, 2022 (Last update 2 May 2023)

Sweden has a high level of national gas supply security, due to its secure gas supply from non-Russian providers and its relatively low consumption. In 2022, most of its gas consumption, historically around 1.55 billion cubic metres (bcm), including off-grid LNG, was imported from Denmark (53%), followed by Finland (13%) and Norway (9%). Full disruption of Russian gas would likely not severely affect the Swedish gas system,. However, it is estimated that greater indirect dependence on Russian exports existed before the Russian war on Ukraine, as a share of liquefied natural gas imports (LNG) transits through other countries while originating from Russia, meaning it has untraceable origins. Sweden fulfilled its gas storage obligations last winter, reaching 92,94% by 1 November, and ended the heating season with a filling gas storage at 95,24% at 15 April 2023 ([52]). However, its single underground storage facility ([53]) has a low total capacity, at 0.01 bcm, corresponding to less than one day of winter consumption to meet peak demand. Sweden operates two small floating LNG regasification terminals with a capacity of 0.47 bcm/year (Nynäshamn) and 0.25 bcm/year (Lysekil). These are not connected to the transmission grid. Recent measures and the high energy prices led to a gas demand reduction of about 37% over the period August 2022 – March 2023 when compared to the previous 5-years average.

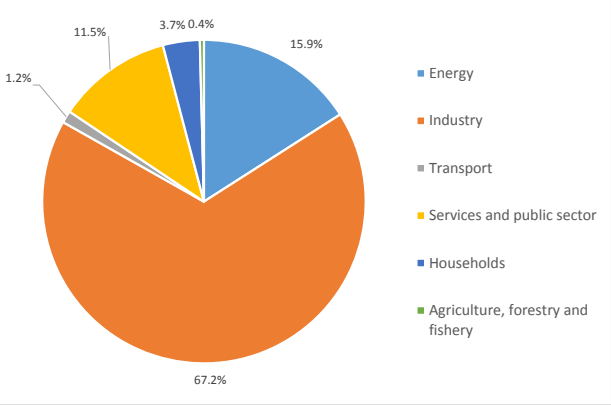
([50]) It is complemented by Annex 6 as the European Green Deal focuses on the clean energy transition, by Annex 8 on the actions taken to mitigate energy poverty and protect the most vulnerable ones, by Annex 9 as the transition to a circular economy will unlock significant energy and resource savings, 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.

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

([52]) Regulation of the European Parliament and of the Council amending Regulations (EU) 2017/1938 and (EC) No 715/2009 with regard to gas storage and Implementing Regulation (EU) 2022/2301 of 23 November 2022 setting the filling trajectory with intermediary targets for 2023 for each Member State with underground gas storage facilities on its territory and directly interconnected to its market area.

([53]) Sweden has one single underground storage facility, Skallen, managed by Swedgas.

Graph A7.2:**Share of gas consumption per sector, 2021**

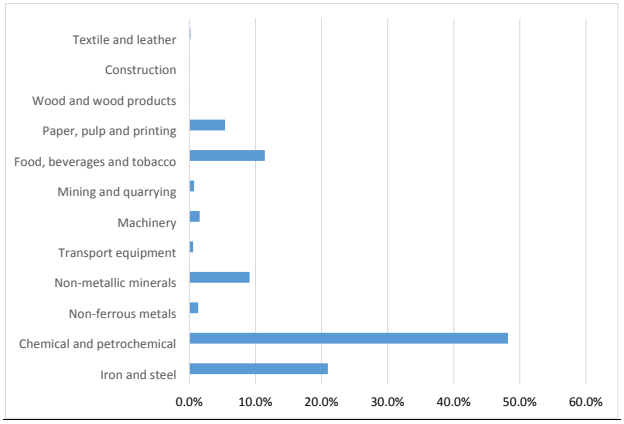


Source: Eurostat

The security of supply of the national gas system and the electricity system are not interlinked, as Sweden has almost no gas-powered installed electric capacity. Electricity security does not depend on gas-fired power plants, as with 42.6 GW installed electric capacity, Sweden depends on gas for only 1% of electricity generation (see Annex 6). In 2021, its gross electricity production of 171 TWh depended on natural gas for only 0.16%. To mitigate the impact of the energy crisis, in 2021 Sweden put in place energy saving measures to reduce electricity use by up to 10%, mainly through behavioural changes.

Sweden is upgrading its grid infrastructure, but further investments are necessary. Power and grid capacity constraints, especially in the south, and the lack of transmission capacity between the north and the south, have detrimental effects on energy prices and economic activity. Further investments in grid and network capacity are needed for Sweden to reach its renewable energy production targets. As part of its recovery and resilience plan, Sweden will carry out investments to digitalise the grid in order to make it easier to integrate renewable energy sources. An increase in electricity cross-border interconnections would increase its energy supply and adaptability to regional variations. While Sweden does not yet have political goals for offshore renewable capacity towards 2040 and 2050, the ongoing exercise by national authorities to look into additional areas for offshore energy production may require not only an expansion of the maritime space allocated to it, but also of hybrid interconnectors with neighboring countries.

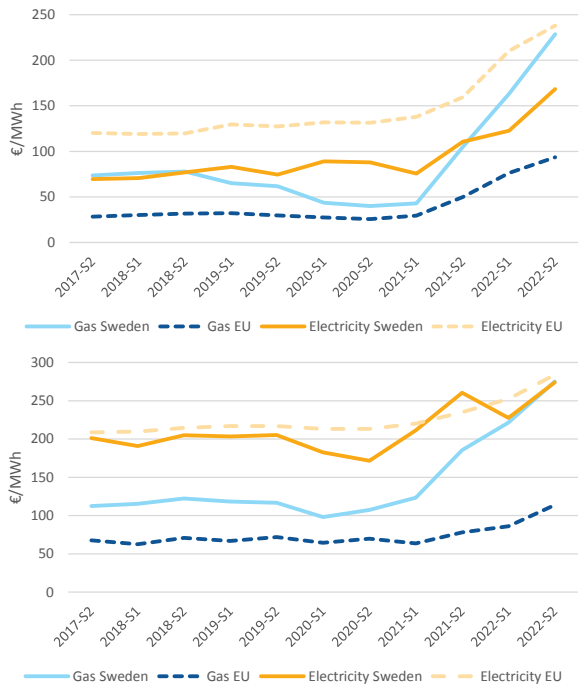
Graph A7.3:**Gas consumption per industrial sector (% of total industry gas consumption)**



Source: Eurostat

Despite the mechanisms introduced by Sweden to mitigate soaring energy prices, households, in particular low-income families, and industries, are being severely hit. The share of gas used in dwellings is relatively low, the high energy prices are hitting households hard (see Annex 8). The surge in energy prices has had a considerable impact on Swedish industry, which accounts for 67.2% of gas consumption. Sectors such as the chemical industry and iron and steel are particularly exposed to energy shocks and are experiencing increasing pressure to raise their prices to safeguard margins or to reduce production. Reducing energy consumption by increasing energy efficiency is crucial for Sweden. It would contribute significantly to reducing energy costs for both consumers and businesses.

Graph A7.4:**Sweden´s retail energy prices for industry (top) and households (bottom)**



(1) For industry: the band consumption is ID for electricity and I4 for gas
(2) For households, the band consumption for electricity is DC and D2 for gas
Source: Eurostat

Sweden aims to further decarbonise its energy system, and further reforms and investments could help it seize the many opportunities it has to do so. Its deployment of renewable energy reached a total of 38 GW in 2022, a 10% increase from 2021. Most of this growth was in solar (+62%) and wind energy (+20%). ([54]) This came after a steady growth during the last decade. However, lengthy authorisation procedures and grid constraints are hampering the rollout of faster renewable generation capacity. Through its recovery and resilience programme and the 'Climate Leap' and 'Industry Leap' programmes, Sweden subsidises local and regional climate investments and supports industrial processes, especially the conversion to renewable energy for heating in industry and agriculture; the production of biogas and biofuels; sustainable transport; and industry decarbonisation. Sweden is carrying out a number of checks on products covered by eco-design and energy labelling that may be too low. This generates concerns concerns with respect to the level playing field among economic operators and uncertainty as to the compliance levels of the concerned products, and therefore possible missed energy and CO2 savings. ([55])

([54]) IRENA, Renewable capacity statistics 2023.

([55]) The internet-supported information and communication system for the pan-European market surveillance

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

		SWEDEN				EU			
		2018	2019	2020	2021	2018	2019	2020	2021
ENERGY DEPENDENCE	**Import Dependency [%]**	29%	30%	32%	21%	58%	61%	57%	56%
	of Solid fossil fuels	100%	103%	100%	94%	44%	44%	36%	37%
	of Oil and petroleum products	91%	107%	118%	72%	95%	97%	97%	92%
	of Natural Gas	100%	100%	100%	100%	83%	90%	84%	83%
	Dependency from Russian Fossil Fuels [%]								
	of Hard Coal	22%	18%	26%	31%	40%	44%	49%	47%
	of Crude Oil	33%	29%	8%	9%	30%	27%	26%	25%
	of Natural Gas	0%	0%	13%	2%	40%	40%	38%	41%

		2015	2016	2017	2018	2019	2020	2021	2022
ELECTRICITY	**Gross Electricity Production (GWh)**	162,112	156,010	164,250	163,400	168,439	163,833	171,798	-
	Combustible Fuels	13,906	15,150	15,547	15,571	16,390	13,618	16,137	-
	Nuclear	56,348	63,101	65,696	68,549	66,130	49,198	52,965	-
	Hydro	75,439	62,137	65,168	62,250	65,393	72,440	73,926	-
	Wind	16,322	15,479	17,609	16,623	19,847	27,526	27,244	-
	Solar	97	143	230	407	679	1,051	1,526	-
	Geothermal	0	0	0	0	0	0	0	-
	Other Sources	0	0	0	0	0	0	0	-
	Net Imports of Electricity (GWh)	-22,600	-11,735	-18,992	-17,223	-26,161	-24,997	-25,568	-
	As a % of electricity available for final consumption	-18%	-9%	-15%	-13%	-20%	-20%	-20%	-
	Electricity Interconnection (%)	-	-	25.60%	26.01%	25.2%	24.2%	16.3%	14.4%

		2015	2016	2017	2018	2019	2020	2021	2022
DIVERSIFICATION OF GAS SUPPLIES	**Gas Consumption (in bcm)**	0.8	0.9	1.1	1.1	1.1	1.3	1.3	1.0
	Gas Imports - by type (in bcm)	0.8	0.9	1.4	1.5	1.4	2.1	1.9	-
	Gas imports - pipeline	0.8	0.9	1.1	1.1	1.1	1.4	1.4	-
	Gas imports - LNG	0.0	0.0	0.3	0.3	0.3	0.7	0.5	-
	Gas Imports - by main source supplier (in bcm) (1)								
	Denmark	0.8	0.9	0.8	0.8	0.8	0.8	0.8	-
	Finland	0.0	0.0	0.0	0.0	0.0	0.4	0.5	-
	Netherlands	0.0	0.0	0.1	0.2	0.1	0.2	0.2	-
	Norway	0.0	0.0	0.4	0.3	0.3	0.2	0.2	-
	Others	0.0	0.0	0.1	0.2	0.2	0.6	0.2	-

		2019	2020	2021	2022
	LNG Terminals				
	Number of LNG Terminals (2)	0	0	0	0
	LNG Storage capacity (m3 LNG)	0	0	0	0
	Underground Storage				
	Number of storage facilities	1	1	1	1
	Operational Storage Capacity (bcm)	0.01	0.01	0.01	0.01

		2019	2020	2021	2022
CLEAN ENERGY	**VC investments in climate tech start-ups and scale-ups (EUR Mln) (3)**	1092.1	783.2	2967.3	n.a.
	as a % of total VC investments in Sweden	36.7%	23.7%	39.5%	n.a.
	Research & Innovation spending in Energy Union R&i priorites (2)				
	Public R&I (EUR mln)	162.0	212.0	245.7	n.a.
	Public R&I (% GDP)	0.034%	0.044%	0.046%	n.a.
	Private R&I (EUR mln)	898.8	n.a.	n.a.	n.a.
	Private R&I (% GDP)	0.19%	n.a.	n.a.	n.a.

(1) The ranking of the main supliers is based on the latest available figures (for 2021)

(2) FSRU included

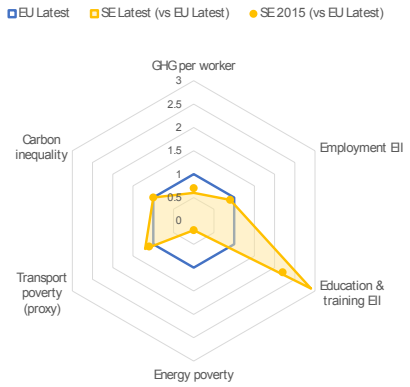
(3) Venture Capital investments include Venture Capital deals (all stages) and Private Equity Growth/Expansion deals (for companies that have previously been part of the portfolio of a VC investment firm).

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

This Annex monitors Sweden's progress in ensuring a fair transition towards climate neutrality and environmental sustainability, notably for workers and households in vulnerable situations. The number of jobs in the green economy has risen quickly. Sweden has the highest upskilling rate for the green transition in the EU, in line with the Council Recommendation ([56]) which supports the fair transition, and the implementation of REPowerEU. Sweden's recovery and resilience plan (RRP) promotes a sustainable and inclusive recovery, for instance through investment to decarbonise the industrial sector and local and regional projects to reduce greenhouse gas (GHG) emissions ([57]), complementing the territorial just transition plans and action supported by the European Social Fund Plus (ESF+). The plan focuses on increasing the number of places in higher education and upper secondary vocational training institutions.

Employment in Sweden's energy-intensive sectors is stable overall, the green economy is further expanding and the number of green jobs is growing. The greenhouse gas emissions intensity of Sweden's workforce declined from 10.1 to 7.9 tonnes per worker between 2015 and 2021, below the EU average of 13.7 tonnes (see Graph A8.1 and Table A8.1). Employment in Sweden's energy-intensive industries (EII) represented a stable share of 2.8% of total employment in 2020 (EU average: 3.0%). Employment in mining and quarrying increased by 12.5% since 2015 (to around 9 000 workers). Sweden produces 90% of Europe's iron ore, and rare earth metals might play an increasing role in the future ([58]). However, employment in other energy-intensive sectors such as manufacturing of basic metals, chemicals and motor vehicles has decreased and the ban on coal, oil and gas extraction might further this trend ([59]). The expansion of mining in Northern Sweden is reported to entail social conflicts and negatively affect natural ecosystems ([60]). Total jobs in the environmental goods and services sector grew strongly by 23.9% (to 149 695) during 2015-19 (EU: +8.3%), reaching 3% of total employment, above the EU average (2.2%). The job vacancy rate in construction, which is a key sector for the green transition, is relatively low, at 2.4% vs 4.0% in the EU in 2022 ([61]). The Swedish Green jobs initiative launched in 2020 offered unemployed people training in occupations in the green industries where there were shortages.

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



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

Sweden is strong on upskilling and reskilling in declining and transforming sectors, thanks to a significant recent increase in participation in learning activities. Skills are of core importance for both preserving jobs in transforming sectors and for smooth labour market transitions. In energy-intensive industries, workers' participation in education and training increased from 23% in 2015 to 29.8% in 2022 – the highest rate in the EU

([56]) 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, essential services and housing..

([57]) See 2022 Country Report (Annex 6) and Annex 3

([58]) Huge rare earth metals discovery in Arctic Sweden - BBC News

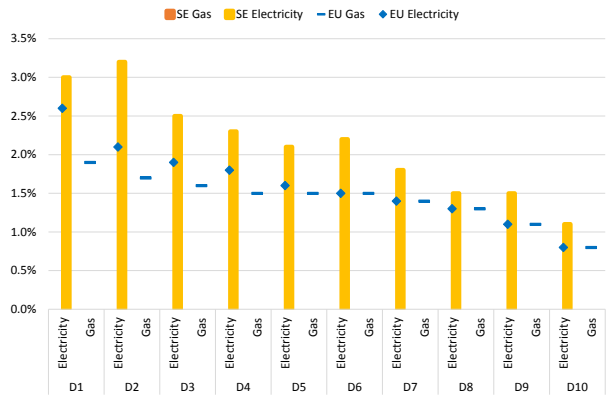
([59]) Ban on oil, coal and gas exploration (July 2022)- riksdagen.se

([60]) Kløcker et al. 2022, Impact of mining on traditional livelihoods of Sami people and lands: UN advisers urge Sweden to stop mine in home of indigenous Sami | Reuters

([61]) Eurostat (JVS_A_RATE_R2)

(average: 10.4% in 2022). In Sweden, only 14% of citizens believe that they do not have the necessary skills to contribute to the green transition (EU: 38%) ([62]). In this context, the Just Transition Mechanism supports action linked to the climate transition in the steel industry in Norrbotten County and in the metal industry in Västerbotten County, while the ESF+ supports the upskilling and reskilling of workers in the whole of Sweden. 1.4% of ESF+ funding (EUR 9.8 million) is specifically set aside for contributing to skills and jobs in the green economy. The RRP also includes a measure to improve incentives for providing vocational training at local level.

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 measures and behavioural responses.
Source: EMPL-JRC GD-AMEDI/AMEDI+ projects, based on Household Budget Survey 2015 and Eurostat inflation data for CP0451 and CP0452.

Energy poverty indicators fluctuated in recent years, with the poorest households most affected, even before the spike in energy prices – although at a lower scale than the EU average. The share of the population unable to keep their home adequately warm increased from 1.2% in 2015 to 1.7% in 2021 ([63]). In particular, 3.3% of the population at risk of poverty (AROP) were affected in 2021 (EU: 16.4% in 2021), as were 1.7% of lower middle-income households (in deciles 4-5) in 2021 (EU: 8.2% in 2021). Before the energy price hikes, an estimated 14.5% of the total population and 26.0% of the (expenditure-based) at-risk-of-poverty (AROP) population had residential expenditure on electricity, gas, and other fuels ([64]) above 10% of their household budget (still below the estimated EU averages of 26.9% and 48.2%, respectively). Sweden explicitly stated in its long-term renovation strategy that it does not consider any distinction between "energy poverty" and poverty, broadly defined. Consequently, there are no measures in place specifically addressing energy poverty ([65]).

The increased energy prices in 2021-2023 are negatively affecting household budgets, but slightly less than in the EU overall. As a result of price changes during the August 2021 to January 2023 period relative to the 18 months prior (cf. 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 11.0 percentage points (pps) for the whole population and by 6.1 pps among the (expenditure-based) AROP population, less than the EU-level increases (16.4 pps and 19.1 pps, respectively) ([66]). Expenditure shares of low and lower-middle income groups would have increased the most for electricity, as shown in Graph A8.2. By contrast, transport fuel price increases in Sweden affect the lower-middle as well as the (upper) middle class. Among the (expenditure-based) AROP population,

([62]) Special Eurobarometer 527.

([63]) 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.

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

([65]) Assessment of the first long-term renovation strategies under the Energy Performance of Building Directive (Art. 2a) - Publications Office of the EU (europa.eu)

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

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

Indicator	Description	SE 2015	SE Latest	EU Latest
GHG per worker	Greenhouse gas emissions per worker - CO2 equivalent tonnes	10.1	7.9 (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) - %	2.8	2.8 (2020)	3 (2020)
Education & training EII	Adult participation in education and training (last 4 weeks) in energy-intensive industries - %	23	29.8 (2022)	10.4 (2022)
Energy poverty	Share of the total population living in a household unable to keep its home adequately warm - %	1.2	1.7 (2021)	6.9 (2021)
Transport poverty (proxy)	Estimated share of the AROP population that spends over 6% of expenditure on fuels for personal transport - %	39.6	43 (2023)	37.1 (2023)
Carbon inequality	Average emissions per capita of top 10% of emitters vs bottom 50% of emitters	5.2	5.1 (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).

individuals living in households with budget shares for private transport fuels ([67]) would have increased by 3.4 pps due to the increase in transport fuel prices, less than the EU average increase (5.3 pps), yet standing slightly above the EU average in January 2023 (43.0% vs 37.9%).

Access to public transport displays an urban-rural divide especially for remote rural areas. Citizens perceive public transport to be available (70% vs 55% in the EU), affordable (59% vs 54%) and of good quality (70% vs 60%). 55% say that more affordable transport would help them to make the switch to sustainable transport modes. As regards these perceptions, rural areas in Sweden perform worse than urban areas, yet still better than the EU average ([68]), while remote rural areas lie below the EU average. The average carbon footprint of the top 10% of emitters among the population in Sweden is about 4.5 times higher than that of the bottom 50% (see Graph A8.1), slightly below the EU average (5.0 times).

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([67]) ECOICOP: CP0722.

([68]) 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. 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.

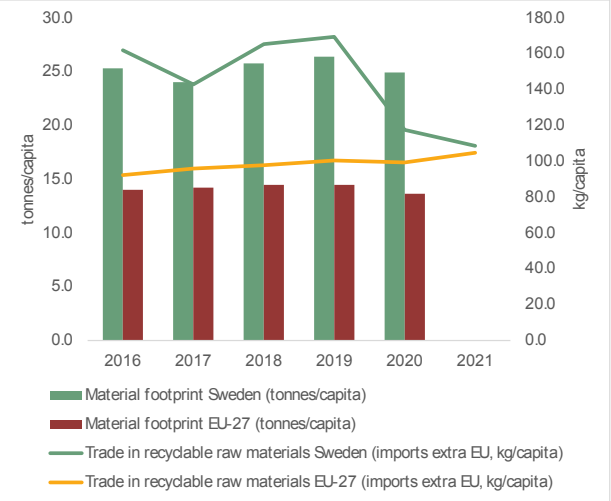
Sweden's circular economy transition is insufficient and needs accelerating to meet the EU's circular economy goals. The EU's 2020 circular economy action plan (CEAP) aims at doubling circular material use by 2030 vs 2020. Sweden's use of circular material has stagnated over recent years (6.8% in 2016 vs 6.6% in 2021) and is well below the EU average of 11.7%. The CEAP also aims to significantly decrease the EU's material footprint. In 2020, Sweden's material footprint (24.9 tonnes per head) was well above the 2020 EU average (13.7 tonnes per head). The labour market benefits of the circular transition remain limited and have hardly evolved since 2016.

Sweden recently adopted new policies to address circular economy challenges, but more measures are needed. In November 2020, Sweden adopted its 'Circular economy – strategy for the transition in Sweden' that is expected to contribute to the environmental and climate objectives, as well as the sustainable development goals in the 2030 Agenda. In January 2021, the country adopted a new action plan as a follow-up to the 2020 strategy. The action plan presents more than 100 different measures along the entire lifecycle of products, but it lacks a concrete timeline for implementing each deliverable. The sectors identified as priorities include plastics, textiles, renewable and bio-based material, food, the construction and property sector (including building and demolition waste), and innovation-critical materials and minerals.

Sweden's waste management performance needs improving to meet EU targets. While hardly any municipal waste is directed to landfills (landfill rate is <1% in 2021), a majority of it is treated in incineration plants, implying a strong reliance on this technique. The rate of incineration was about twice the EU average in 2019 and nearly 60% in 2021. Sweden is at risk of not meeting the 2025 recycling target for municipal waste (i.e. 55%), since its current performance lies at 39.5% (2021 Eurostat data). Sweden will need to make further efforts to meet the more ambitious recycling targets for the period up to 2035 through improvements in separate collection and treatment of waste with a view to recycling.

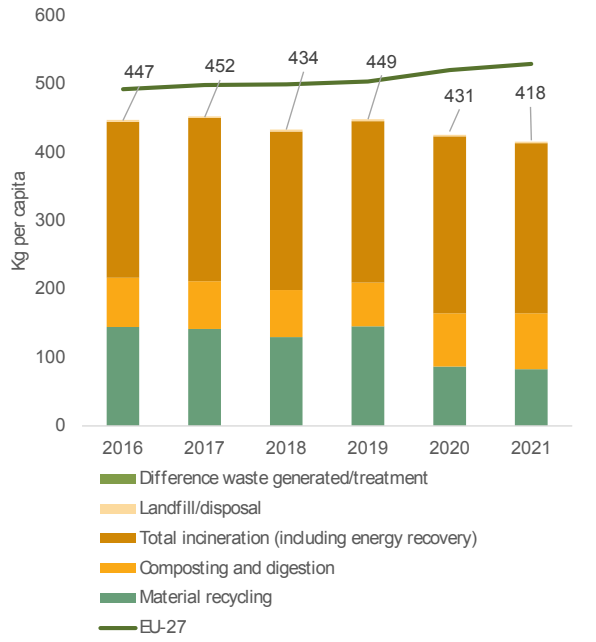
There is potential for the industrial system in Sweden to be more circular and efficient.

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



Source: Eurostat

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



Source: Eurostat

The economy, particularly industry, is less efficient at using materials to produce wealth than the EU average, with a resource productivity of 1.6 purchasing power standard per kilogramme vs 2.3 for the EU. Resource productivity has stagnated since 2016, indicating significant potential to boost repair, reuse and use of secondary raw materials. On the other hand, the 2022 edition of the 'Flash Eurobarometer on small and medium enterprises (SMEs), resource efficiency and green markets' reveals that Swedish SMEs have already undertaken substantive measures to transition their business operations towards environmental sustainability. They perform well above the EU average in terms of actions undertaken (e.g. minimising waste, saving energy, water and materials) to improve their resource efficiency.

The built environment system has scope to reduce the depletion of resources. The recovery rate of construction and demolition waste has increased since 2016 but remains below the EU average (74% vs 89%). On the positive side, Sweden has included requirements on whole life carbon in its building regulations. This provides incentives for both material and energy efficiency, as developers are required to calculate whole life carbon emissions and to gradually reduce them. Sweden requires the developer to prepare and submit a climate declaration for the construction of new buildings from 1 January 2022. Additionally, Sweden has

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

AREA	2016	2017	2018	2019	2020	2021	EU27	Latest year EU27
Overall state of the circular economy								
Material footprint (tonnes/capita)	25.3	24.0	25.8	26.4	24.9	-	13.7	2020
YoY growth in persons employed in the circular economy (%)[1]	-0.6	0.6	-5.0	-0.7	-	-	2.9	2019
Water exploitation index plus (WEI+) (%)	1.1	0.7	1.0	0.2	-	-	3.6	2019
Industry								
Resource productivity (purchasing power standard (PPS) per kilogram)	1.5	1.5	1.5	1.5	1.5	1.6	2.3	2021
Circular material use rate (%)[2]	6.8	6.7	6.6	6.5	6.8	6.6	11.7	2021
Recycling rate (% of municipal waste)	48.4	46.8	45.8	46.6	38.3	39.5	49.6	2021
Built environment								
Recovery rate from construction and demolition waste (%)[3]	61.0	-	90.0	-	74.0	-	89.0	2020
Soil sealing index (base year = 2006)[4]	103.4	-	112.3	-	-	-	108.3	2018
Agri-food								
Food waste (kg per capita)[5]	-	-	-	-	87.0	-	131.0	2020
Composting and digestion (kg per capita)	72.0	70.0	69.0	64.0	78.0	82.0	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

developed and launched a public generic climate database. There are plans to introduce limit values for climate emissions from buildings before 2027.

As for the agri-food system, there is potential to increase composting and digestion. Sweden's composting and anaerobic digestion per head has increased moderately since 2016 but remained below the EU average in 2020 at 82 kg per head vs 100 kg, which was also not in line with best practice. Sweden should step up its efforts to increase composting and anaerobic digestion to make its circular economy more efficient and enhance its strategic autonomy by generating biomethane.

There remains a financing gap in circular economy, including waste management. Additional investments will be required to address growing needs. The financing gap was estimated at EUR 779 million per year between 2014 and 2020. Over this period, investment needs were estimated to be at least EUR 2.1 billion per year while investment baselines were EUR 1.3 billion per year (see Annex 6). Investment in areas such as eco-design, repair, reuse and remanufacturing as well as the uptake of new business models will be necessary to reach the EU's circular economy objectives. Additional investments are necessary in improving separate waste collection and treatment infrastructure to divert waste from incineration.

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 Sweden'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). Sweden allocates 20% of its total RRP budget to digital (EUR 0.7 billion) ([69]).

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 ([70]). 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 ([71]). Digital technologies, infrastructure and tools all play a role in the fundamental transformation needed to adapt the energy system to the current structural challenges ([72]).

Sweden is one of the top performers in digital skills. The country performs well above the EU average for basic and advanced digital skills. To ensure that there is no shortage of skilled digital workers, Sweden considers digital skills as a central component of all relevant strategies and measures (including for higher level education and vocational training). Furthermore, Sweden's RRP contains investment measures that are expected to increase the number of study places at universities and other higher education institutions, including in higher vocational education in relevant fields.

Sweden scores high on digital infrastructure/connectivity. Sweden's very high capacity network (VHCN) coverage is well above the EU average and the Government announced already in its broadband plan ([73]) that it aims to cover the entire country with access to high-speed connectivity, mainly using fibre. In areas where the costs of deploying fibre are prohibitive (affecting 2% of the population) mobile technologies are being assessed. Moreover, as part of its RRP, Sweden aims to invest in fixed high-speed broadband networks in areas where access would not be provided on commercial basis alone. Regarding 5G coverage, however, Sweden is increasingly lagging behind the EU average both on overall 5G coverage and on 5G coverage on the 3.4-3.8 GHz spectrum band which is essential for enabling advanced applications requiring large

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

([70]) 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.

([71]) 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).

([72]) 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.

([73]) Source: Government Offices of Sweden, A Completely Connected Sweden by 2025 – a Broadband Strategy (https://www.government.se/496173/contentassets/afe9f1cfeaac4e39abcdd3b82d9bee5d/sweden-completely-connected-by-2025-eng.pdf[08])https://www.government.se/496173/contentassets/afe9f1cfeaac4e39abcdd3b82d9bee5d/sweden-completely-connected-by-2025-eng.pdf

spectrum bandwidth. An increased use of relevant frequency bands is expected to help the country catch up with the EU average in this regard.

Sweden is an EU forerunner in the digitalisation of businesses. The country scores well above the EU average for SMEs with at least a basic level of digital skills and the companies' use of advanced technologies like cloud computing. There are new or recent strategies on artificial intelligence and the provision and use of data. Sweden often involves academia and the private sector in joint partnerships to ensure the rapid transfer of knowledge and technology to the market.

Sweden performs well on the digitalisation of public services, but its decentralised model of governance leaves some room to improve coordination. The country scores above the EU average in digital public services for people and businesses, but interoperability and data exchange between different authorities could be improved. This is the task of the Agency for Digital Government (DIGG), which acts as a central hub in this area. The government has commissioned a new investigation to suggest a new national law for interoperability in the Swedish public sector. ([74]) The intention is to give DIGG a right to prescribe standards and specifications to secure interoperability in the whole public sector. The investigation shall report a legislative proposal by the end of December 2023. With the aim of standardising solutions for citizens and businesses across the public administration, Sweden's RRP includes investments to develop new digital services and to upgrade and modernise existing services. Sweden currently has three eID means notified under the Swedish eID (Svensk elegitimation) scheme. BankID, Freja eID, and EFOS are notified at the levels of assurance 'substantial' and 'high'. Whilst progress is good, not all categories of the population can apply for an eID. All eID schemes offer the possibility of interacting with public organisations via a smart device.

([74]) I 2022: 03 Utredningen om interoperabilitet vid datadelning.

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

	Sweden			EU	Digital Decade target by 2030 (EU)
	DESI 2021	DESI 2022	DESI 2023	DESI 2023	
Digital skills					
At least basic digital skills	**NA**	**67%**	**67%**	**54%**	**80%**
% individuals		2021	2021	2021	2030
ICT specialists ([1])	**7.5%**	**8.0%**	**8.0%**	**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	**81%**	**83%**	**85%**	**73%**	**100%**
% households	2020	2021	2022	2022	2030
Fibre to the Premises (FTTP) coverage ([2])	**80%**	**82%**	**84%**	**56%**	**-**
% households	2020	2021	2022	2022	2030
Overall 5G coverage	**14%**	**18%**	**20%**	**81%**	**100%**
% populated areas	2020	2021	2022	2022	2030
5G coverage on the 3.4-3.8 GHz spectrum band	**NA**	**NA**	**10%**	**41%**	**-**
% populated areas			2022	2022	2030
Digitalisation of businesses					
SMEs with at least a basic level of digital intensity	**NA**	**NA**	**87%**	**69%**	**90%**
% SMEs			2022	2022	2030
Big data ([3])	**19%**	**19%**	**19%**	**14%**	**75%**
% enterprises	2020	2020	2020	2020	2030
Cloud ([3])	**NA**	**69%**	**69%**	**34%**	**75%**
% enterprises		2021	2021	2021	2030
Artificial Intelligence ([3])	**NA**	**10%**	**10%**	**8%**	**75%**
% enterprises		2021	2021	2021	2030
Digitalisation of public services					
Digital public services for citizens	**NA**	**85**	**88**	**77**	**100**
Score (0 to 100)		2021	2022	2022	2030
Digital public services for businesses	**NA**	**88**	**88**	**84**	**100**
Score (0 to 100)		2021	2022	2022	2030
Access to e-health records	**NA**	**NA**	**70**	**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.

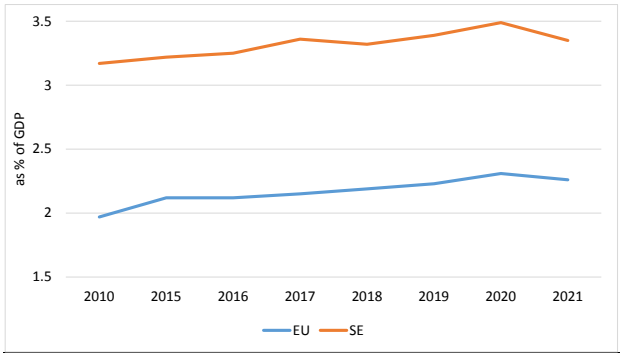
Source: Digital Economy and Society Index

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

Sweden has been an 'innovation leader' for many years. According to the 2022 edition of the European Innovation Scoreboard ([75]), the country's overall performance is 135.7% of the EU average. Furthermore, it is increasing (by 10.5% from 2015 to 2022) at a higher rate than the EU's (9.9%), which means Sweden's performance lead over the EU average is widening.

Sweden has the highest R&D intensity ([76]) in the EU (3.35% of GDP in 2021) ([77]) and it is among the top performers in terms of business investment in R&D (2.41% of GDP in 2021) and public R&D investment (0.94% of GDP in 2021). ([78]) However, compared to 2020, there is a slight decrease in all three indicators.

Graph A11.1:**R&D intensity (Gross domestic expenditure on R&D as % of GDP) 2010-2021**



Source: Eurostat, 2022

The Swedish recovery and resilience plan (RRP) features a EUR 286 million research and innovation investment to support the green transition. This accounts for around 8.7% of the overall expenditure under the RRP. A particular focus is on support for climate investment to help decarbonise the industrial sector, in particular projects that develop, demonstrate and implement new technology with zero, low or negative greenhouse gas emissions in industries with high process emissions.

Sustaining a high-quality public research base and a sufficient pool of talent is essential to keep the Swedish knowledge economy competitive. The country benefits from an innovation-friendly environment, highly skilled workers, attractive research systems and internationally competitive and innovative large companies. Despite these strengths and although Sweden is a leading country in the EU in terms of researchers and scientific publications in relation to population size, there has not been a corresponding increase in scientific impact ([79]), and the number of new doctoral graduates has fallen sharply since 2015. ([80]) A shortage of highly skilled staff in science, technology and engineering might hamper future investment in R&D in Sweden. In Sweden's most R&D-intensive companies, the availability of skilled staff is a key factor in decisions on where to invest in R&D. More than 52% of companies consider it difficult to recruit R&D staff, and more than 54% of companies consider it more difficult to recruit R&D staff than 5 years

([75]) 2022 European Innovation Scoreboard, Country profile: Sweden https://ec.europa.eu/assets/rtd/eis/2022/ec_rtd_eis-country-profile-se.pdf The EIS provides a comparative analysis of innovation performance in EU countries, including the relative strengths and weaknesses of their national innovation systems (also compared to the EU average).

([76]) Defined as gross domestic expenditure on R&D as a percentage of GDP.

([77]) European benchmark target for R&D intensity: 3%.

([78]) Source: Eurostat.

([79]) Swedish Research Barometer, p. 59-64, https://www.vr.se/english/analysis/reports/our-reports/2022-01-25-the-swedish-research-barometer-2021and https://ec.europa.eu/research-and-innovation/en/statistics/performance-indicators/european-innovation-scoreboard/eis#.

([80]) New doctoral graduates per 1 000 population aged 25-34, https://ec.europa.eu/research-and-innovation/en/statistics/performance-indicators/european-innovation-scoreboard/eis.

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

Sweden	2010	2015	2019	2020	2021	EU average (1)
Key indicators						
R&D intensity (GERD as % of GDP)	3,17	3,22	3,39	3,49	*3,35*	*2,26*
Public expenditure on R&D as % of GDP	0,99	0,97	0,95	0,96	*0,94*	*0,76*
Business enterprise expenditure on R&D (BERD) as % of GDP	2,18	2,24	2,43	2,52	*2,41*	*1,49*
Quality of the R&I system						
Scientific publications of the country within the top 10% most cited publications worldwide as % of total publications of the country	12,6	13,1	12,6	:	**:**	*9,8*
Patent Cooperation Treaty (PCT) patent applications per billion GDP (in PPS)	9,5	9,3	9	:	**:**	*3,3*
Academia-business cooperation						
Public-private scientific co-publications as % of total publications	10,5	10,5	11,7	11,1	11,1	*7,1*
Public expenditure on R&D financed by business enterprise (national) as % of GDP	:	0,039	0,031	:	:	*0.054*
Human capital and skills availability						
New graduates in science & engineering per thousand pop. aged 25-34	14,3	13,9	12,4	12,9	:	*16*
Public support for business enterprise expenditure on R&D (BERD)						
Total public sector support for BERD as % of GDP	:	:	0,122	:	:	*0,194*
R&D tax incentives: foregone revenues as % of GDP	0	0,012	0,015	:	:	*0,1*
Green innovation						
Share of environment-related patents in total patent applications filed under PCT (%)	13,7	12,5	12,6	:	:	*13,3*
Finance for innovation and economic renewal						
Venture capital (market statistics) as % of GDP	0,087	0,053	0,073	0,098	0,126	*0,074*
Employment in fast-growing enterprises in 50% most innovative sectors	6,5	5,5	6,5	:	**:**	*5,5*

(1) EU average for the latest available year or the year with the highest number of country data.
Source: Eurostat, OECD, DG JRC, Science-Metrix (Scopus database and EPO's Patent Statistical database), Invest Europe

ago ([81]) The number of new graduates in science & engineering per thousand population aged 25-34 has also decreased over the last 10 years, although a slightly positive trend has been noticed since 2019. ([82])

([81]) Royal Swedish Academy of Engineering Sciences, https://www.iva.se/projekt/naringslivets-fou-investeringar/fou-barometern-2022/.

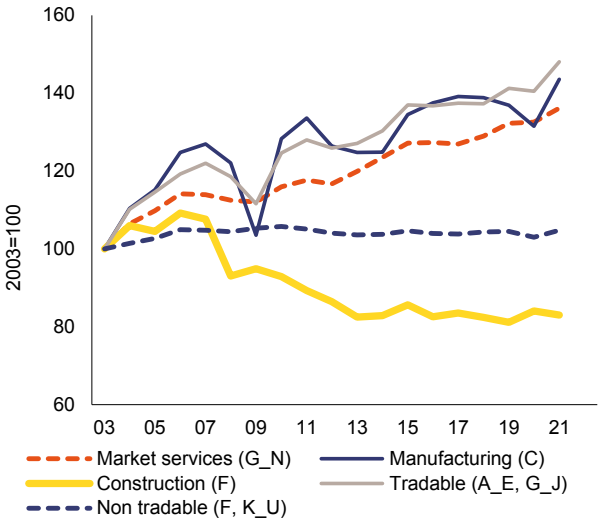
([82]) European Innovation Scoreboard 2022

Productivity in Sweden is high, but skills and labour shortages, combined with the soaring energy costs pose new challenges for firms' competitiveness. While Sweden's strong ICT sector and leading performance in innovation helps drive high productivity in services, productivity is uneven across sectors such as construction, where structural weaknesses, such as obstacles to housing affordability hinder productivity growth. In 2022, Sweden's productivity in industry declined (-0.5% year on year) while the EU average grew (1.4% year on year). In addition, labour shortages in industry may become an increasingly constraining factor in realising planned investment to support the transition to a greener, increasingly digitalised economy and further boost Sweden's productivity.

Swedish industry is increasingly affected by labour shortages. In 2022, 18% of firms reported facing such constraints (compared to 28% for the EU average), however, this figure has more than doubled for Sweden compared to 2021 and has been on a steep increasing trend since 2020 where it was only 3%. Reports from the Swedish Agency for Growth Policy Analysis have stressed the role of human capital in the development of labour productivity in knowledge-intensive industries ([83]), highlighting the importance for Sweden to tackle skills shortages to further improve its productivity.

Containing production costs is key to preserving the competitiveness of Swedish industry. According to Statistics Sweden, the annual rate of the Producer Price Index was 19.5% in November. Compared with November 2021, prices rose by 50.5% on energy-related products ([84]). Small businesses, which are particularly vulnerable to the increase in energy prices, are confronted with an additional challenge and uncertainty as the Swedish Government's proposal on electricity subsidies for companies is facing a slow roll out and proving to be an administrative challenge, notably due to mounting administrative costs.

Graph A12.1:**Labour productivity by sector**



Source: European Commission calculations based on AMECO

Industry in Sweden is increasingly suffering from the disruptions in supply chains. In 2022, 55% of Swedish firms faced constraints linked to materials shortages, above the EU average of 47%. This share has been soaring since 2020, when it was 10% only, and has more than doubled since 2021. A study conducted by the Confederation of Swedish Enterprise showed that in 2022, 77% of companies surveyed experienced difficulties in importing goods and services. 62% experienced problems with prices going up and 60% with delays in deliveries ([85]). These constraints heavily impact industries which have a high share of materials inputs such as automotive, aerospace, defence and consumer goods. Such constraints are mainly due to disruptions in global logistics and disrupted or reduced access to raw materials, services and inputs. ([86]) Regarding critical raw materials,

([83]) Swedish Agency for Growth Policy Analysis – Productivity Growth and its driving forces, 2021

([84]) Statistics Sweden

([85]) https://www.svensktnaringsliv.se/english/supply-chain-instability-worries-businesses_1191449.html

([86]) EIB Investment Survey 2022

Sweden's import concentration index is equal to the EU average with an index of 0.18.

Sweden proposes a conducive business environment for firms and entrepreneurs. In the 2022 IMD World Competitiveness Ranking, Sweden ranks in 4th place (losing 2 places compared to 2021). Sweden's high position in the ranking is secured by its very good business efficiency and infrastructure. Its economic performance is lower, however, notably due to youth unemployment and shortages of skilled labour. Sweden performs very well on digitalisation. In the 2022 Digital Economy and Society Index (DESI), Sweden ranks 4th overall. Sweden's human capital is one of its strongest competitive advantages compared to the other Member States (ranking 4th). However, more action is needed to increase the pool of digital experts. Estimates indicate that Sweden will have a shortage of 70,000 ICT specialists by 2024. On connectivity, Sweden has fallen back to 9th place and is below the EU average on 5G coverage. It has also fallen back to 9th place for digital public services (See Annex 10). Among the long-term barriers to investment, Swedish firms most frequently cite availability of skilled staff (90%) and energy costs (74%) ([87]). Business regulation is much less of an obstacle for firms in Sweden than for the rest of the firms in the EU, with only 10.5% of firms reporting business regulation as an obstacle to long-term investment compared to the EU average of 29.6%.

Private investment in Sweden has been maintained at high levels. In 2022, net private investment represented 7.5% of Sweden's GDP, double the EU average of 3.7%. In addition, Swedish firms were among the top investors in developing new products, processes and services in 2021 ([88]). According to the 2022 European Innovation Scoreboard, Sweden is the innovation leader in the EU and is even increasing its lead over the other Member States (See also Annex 11).

Access to finance conditions in Sweden remain good. While the EIF loan index in 2021 was slightly below the EU average and on a continuous declining trend compared to previous years, the equity index remains on an increasing trend and well above the EU average (1 in 2021 compared to the EU average of 0.23). In addition, the proportion of SMEs experiencing late payments from both private and public entities is below the EU average, with 31.7% in Sweden against 43%.

Sweden performs well overall according to the Single Market Scoreboard. It displays a very low level of regulatory restrictiveness in regulated professions, except for real estate agents where restrictiveness is significantly above the EU average (EU restrictiveness indicator of 3.2 compared to 1.3 for the EU average) ([89]). Integration of SMEs in the single market could be improved to support growth. Swedish SMEs represent a share of Swedish added value which is slightly smaller (48.1%) than the EU average (51.8%) ([90]). To grow, Swedish businesses and in particular SMEs could better exploit opportunities in the single market. Overall, imports from and exports to other EU Member States only represent 29.2% of Swedish GDP (against 45.8% on average for EU Member States). According to the 2022 Single Market Scoreboard, Sweden could improve the transposition of directives into national law, as it has registered a transposition deficit of 2% (higher than the 1.6% EU average). This represents a considerable deterioration of 1.3 percentage points (2nd highest increase among Member States within a year). Sweden is in a group of 6 Member States that more than doubled their deficit within a year and consequently missed the 1% target. Sweden also considerably

([87]) EIB Investment Survey 2022

([88]) EIB Investment Survey 2022

([89]) Communication on updating the reform recommendations for regulation in professional services, COM(2021)385)

([90]) EC, SME Performance Review, Sweden country sheet, 1/7/2022

increased its backlog in transposition of directives with 20 overdue directives compared to 7 in the previous year

Sweden is the leading Member State with the highest share of renewables in its energy mix. Sweden's installed renewables electricity capacity accounted for 69.6% of its total electricity produced in 2021, far above the EU average of 50.9%. However, extended permitting procedures, in particular for the development of wind energy, are a bottleneck for the further deployment of renewables. In certain cases, this can lead to a situation where, once the project finally acquires a construction permit, so much time has passed that the intended technology has already become outdated. In other cases, a delayed permit (grid connection permit, for example) can lead to the expiry of another permit (environmental permit, for example). Shortening the time it takes to get a permit would accelerate additional investment in renewable energy. The permitting procedures for mining and exploration activities could be made less cumbersome, while keeping high standards for impact assessments (e.g. on local communities, the climate or the environment), including consultations of stakeholders.

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]	6.5	5.7	5.8	6.7	7.5	**3.7**
		Net public investments, level of public capital stock, net of depreciation, % GDP [1]	1.7	1.7	1.7	1.5	1.4	**0.4**
		Real labour productivity per person in industry (% yoy)[2]	-1.9	0.8	-0.5	8.1	-0.5	**1.4**
	Cost competitive-ness	Nominal unit labour cost in industry (% yoy)[2]	-1.7	-1.4	2.7	1	-0.8	**2.9**
RESILIENCE	Shortages	Material shortage (industry), firms facing constraints, % [3]	28	20	11	25	55	**47**
		Labour shortage using survey data (industry), firms facing constraints, % [3]	13	6	3	8	18	**28**
		Vacancy rate (business economy)[4]	2.7	2.5	1.8	2.5	3.2	**3.1**
	Strategic dependencies	Concentration in selected raw materials, Import concentration index based on a basket of critical raw materials [5]	0.16	0.17	0.17	0.15	0.18	**0.18**
		Installed renewables electricity capacity, % of total electricity produced [6]	60.7	62.4	65	69.6	n.a.	**50.9**
SINGLE MARKET	Single Market integration	EU trade integration, % [7]	25.3	25.5	23.5	25.5	29.2	**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]	10	8	9	10	13	**29**
BUSINESS ENVIRONMENT - SMEs	Investment obstacles	Impact of regulation on long-term investment, % of firms reporting business regulation as major obstacle [10]	14	11.1	7.6	9.2	10.5	**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]	4	4	18	11	13	**13**
		Payment gap - public sector, difference in days between offered and actual payment [12]	4	5	18	10	14	**15**
		Share of SMEs experiencing late payments in past 6 months, % [13]	n.a.	32.5	29.2	35.2	31.7	**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]	0.66	0.61	0.48	0.41	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]	0.72	0.87	0.94	1	n.a.	**0.23**

(*) Last available year

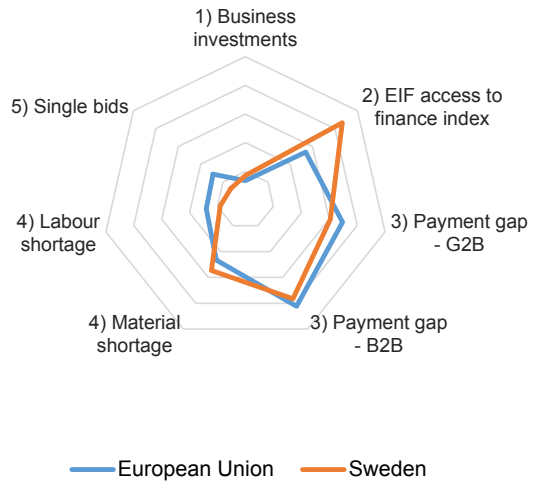
Source: (1) AMECO, (2) Eurostat, (3) ECFIN BCS, (4) Eurostat, (5) COMEXT and Commission calculations, (6) Eurostat, (7) Eurostat, (8) OECD, (9) Single Market Scoreboard, (10) EIB survey, (11) Eurostat: (12) Intrum, (13) SAFE Survey, (14) EIF SME Access to Finance Index.

In light of the explosive growth in demand for the raw materials needed to achieve the green and digital transitions in Sweden and in the EU, Sweden is in a strong position to help address strategic dependencies by further developing value chains in critical raw materials. Sweden has a long-standing and strong mining tradition and mineral potential, it accounts for 93% of all iron ore produced within the EU ([91]). According to the Geological Survey of Sweden, known deposits include antimony, fluorspar, phosphate rock, graphite, cobalt, PGE, REE, and tungsten ([92]), which all feature on the European Commission's list of critical raw materials.

([91]) Sweden's Minerals Strategy

([92]) Geological Survey of Sweden

Graph A12.2:**Business environment and productivity drivers**



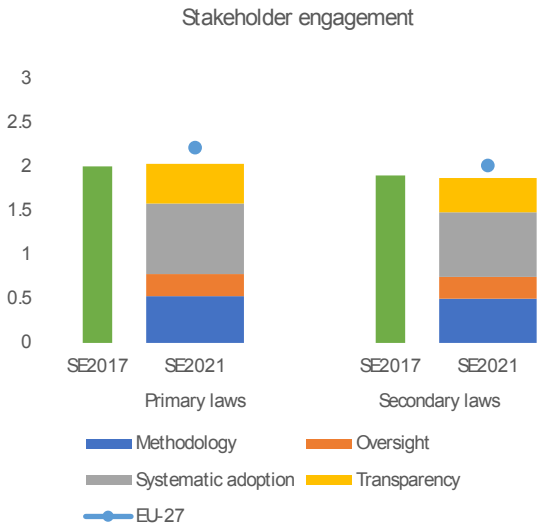
Source: 1) % of GDP, 2021 Eurostat;
2) composite indicator, 2021 European Investment Fund access to finance index;
3) average payment delay in number of days, 2022 Intrum;
4) % of firms in manufacturing facing constraints, 2022 European Commission business consumer survey;
5) proportion of contracts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

This Annex outlines the performance of Sweden's public administration, which is essential for providing services and carrying out reforms. Sweden's public administration continues to be one of the most effective in the EU-27 ([93]), however its overall score has not changed since 2017. Current priorities of the public administration include improving coordination between municipalities, involving public agencies in climate policy, identifying and reducing risks of corruption, and improving how newly-arrived immigrants are integrated into the labour market ([94]).

Regulatory governance in Sweden is good. While policymaking is based on consensus-building ([95]), stakeholder engagement (Graph A13.1) and *ex post* evaluation of legislation score below the average for the EU-27 (Graph A13.2). Sweden now makes more systematic use of its central government portal where consultations, with relevant documentation, are posted for feedback from relevant stakeholders and the public ([96]). *Ex ante* evaluation is envisaged for all legislation. *Ex post* evaluation is not mandatory and is normally conducted ad hoc by a ministry, government agency, or by a committee of inquiry. The increasing segmentation and specialisation of ministries presents a significant challenge, leading to more extensive and time-consuming coordination between ministries ([97]).

The government has made digitalisation one of its priorities. Alongside Denmark, Sweden has the highest proportion in the EU-27 of people who use the internet to interact with public authorities. The e-government benchmark score is also above the EU-27 average. The Swedish recovery and resilience facility includes the development of a new digital infrastructure (EUR 21 million) that will eventually encompass all parts of the public administration ([98]). In December 2022 the government appointed a commission of inquiry on how an e-identification issued by a pubic authority can be designed. The inquiry will submit its first report in October 2023.

Graph A13.1:**Sweden. Stakeholder engagement**



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

([93]) Worldwide Governance Indicators, 2021.

([94]) SAPM (https://www.statskontoret.se/in-english/).

([95]) Statens Offentliga Utredningar, 2022 (https://www.sou.gov.se/fragor-och-svar-om-kommitteer/).

([96]) Indicators of Regulatory Policy and Governance, Europe 2022: Sweden

([97]) European Commission, DG REFORM, Public administration and governance: Sweden, Publications Office of the EU, 2023 (forthcoming).

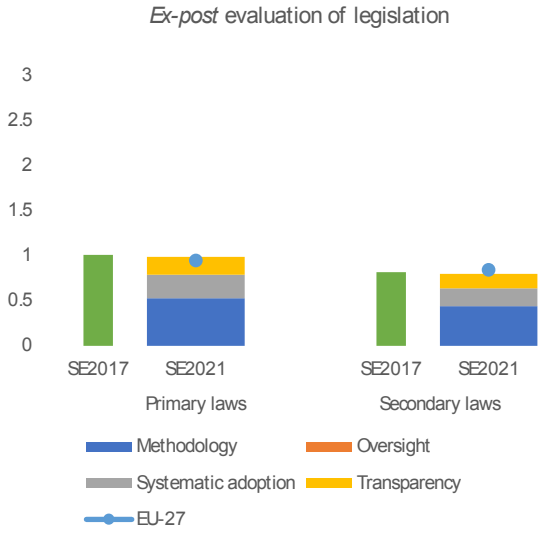
([98]) Recovery and Resilience Plan for Sweden (https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/recovery-and-resilience-plan-sweden_en).

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

	SE 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 (%)	87.2 (b)	89.5	88.0 (b)	87.9	93.3	n/a	64.8
2	E-government benchmark overall score ([3])	n/a	n/a	n/a	75.4	73.6	76.7	72.9
3	Open data and portal maturity index	n/a	0.5	0.6	0.8	0.8	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, %)	68.4	68.9 (b)	71.5	72.8	73.4 (b)	72.7	52.0
5	Participation rate of public administration employees in adult learning (%)	36.5	38.5 (b)	42.4	33.6	39.9 (b)	43.1	16.9
6	Gender parity in senior civil service positions ([4])	6.0	8.6	0.6	0.6	2.2	3.4	11.0
7	Ratio of 25-49 to 50-64 year olds in NACE sector O	1.9	1.8 (b)	1.8	1.9	1.8 (b)	1.8	1.5
Public financial management								
8	Medium term budgetary framework index	0.8	0.8	0.8	0.7	0.8	n/a	0.7
9	Strength of fiscal rules index	1.2	1.2	1.7	1.7	1.7	n/a	1.5
Evidence-based policy making								
10	Regulatory governance	1.66	n/a	n/a	n/a	1.66	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).

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



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

The capacity and quality of the Swedish civil service remains high. Civil servants are highly educated and are strongly encouraged to develop their skills during their career. Sweden is among the best-performing countries on gender parity in senior civil service management positions. The age structure of the civil service is younger than that of the EU-27 average (Table A13.1). The government has been developing new online tools to promote jobs in the public sector. On preventing corruption and conflicts of interest, in June 2022 the government launched a new initiative for a mandatory transition period between government positions and private sector jobs ([99]).

([99]) European Commission, DG REFORM, Public administration and governance: Sweden, Publications Office of the EU, 2023 (forthcoming).

The justice system performs efficiently. The time needed to resolve administrative cases at first instance in 2021 was 102 days and remains comparatively the lowest among Member States. The clearance rate remains positive for civil and commercial litigious cases (from 102,8% in 2020 to 102,7% in 2021) and further improved for administrative cases in 2021 (from 102,3% in 2020 to 103,4% in 2021). The quality of the justice system is overall good and the level of digitalisation is advanced. particular, digital tools are broadly used in courts, including an electronic case management system, technology for distance communication as well as secure remote work by judges and staff. As regards judicial independence, no systemic deficiencies have been reported ([100]) .

([100]) For a more detailed analysis of the performance of the justice system in Sweden, see the 2023 EU Justice Scoreboard (forthcoming) and the country chapter for Sweden 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 Sweden'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 Sweden**

Policy area	Headline indicator	
Equal opportunities and access to the labour market	Early leavers from education and training (% of population aged 18-24, 2022)	8.8
	Share of individuals who have basic or above basic overall digital skills (% of population aged 16-74, 2021)	66.52
	Youth NEET rate (% of population aged 15-29, 2022)	5.7
	Gender employment gap (percentage points, 2022)	5.8
	Income quintile ratio (S80/S20, 2021)	4.04
Dynamic labour markets and fair working conditions	Employment rate (% of population aged 20-64, 2022)	82.2
	Unemployment rate (% of active population aged 15-74, 2022)	7.5
	Long term unemployment (% of active population aged 15-74, 2022)	1.9
	GDHI per capita growth (2008=100, 2021)	122.6
Social protection and inclusion	At risk of poverty or social exclusion rate (% of total population, 2021)	17.2
	At risk of poverty or social exclusion rate for children (% of population aged 0-17, 2021)	19.7
	Impact of social transfers (other than pensions) on poverty reduction (% reduction of AROP, 2021)	44.52
	Disability employment gap (percentage points, 2021)	19.9
	Housing cost overburden (% of total population, 2021)	8.5
	Children aged less than 3 years in formal childcare (% of population under 3-years-old, 2021)	55.8
	Self-reported unmet need for medical care (% of population 16+, 2021)	1.3

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 of and changes in 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 labour market in Sweden is performing well overall, but significant challenges remain for youth unemployment. Despite a near-stagnating gross domestic product (-0.6% in Q4-2022 compared to Q4-2021), the employment rate reached 82.2% in 2022, one of the highest values since 2009, against the EU average of 74.7%. The unemployment rate among people aged 15-74 decreased from 8.8% in 2021 to 7.5% in 2022 which is above the EU average (6.1%). Unemployment particularly affects young people (aged 15-29): the youth unemployment rate now stood at 15.3% in 2022, which is well above the EU average of 11.3%. At the same time, the rate of young people not in education, employment, or training (NEET) in the same age group is 5.7%, about half the EU average of 11.7% (indicating that inactivity of young people is less of an issue). The European Social Fund Plus (ESF+) will aim specifically to activate those that are furthest away from the labour market (long-term unemployed people, young people, older people, newly arrived migrants, persons with disabilities and people on sick leave who need support to get back to work).

Despite the overall positive trend, Sweden still faces difficulties in integrating people with a migrant background into the labour market. 29.4% of the population aged 20-64 in Sweden are either first- ([101]) or second-generation migrants ([102]) (2021), compared to the EU average of 16.8%. In Q4-2022, the employment rate (20-64 age group) of first-generation migrants stood at 73.0% (EU average: 69.2%). In contrast, the one of people of Swedish descent ([103]) was 85.7% (EU average: 76.2%). This means that the employment gap between natives and first-generation migrants was 12.7 percentage points (pps), well above the EU average gap between these two groups (7.0 pps). For second-generation migrants, the

([101])First-generation migrants are foreign-born people.

([102]) Second-generation migrants are native-born people whose both parents are foreign-born.

([103])People of Swedish descent are native-born people whose both parents are native-born.

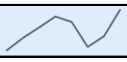
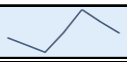
employment rate was 80.2% (EU average: 74.0%), 5.5 pps below people of Swedish descent (EU average gap: 2.2 pps). The situation is of particular concern for women: only 67.0% of first-generation migrant women are employed, in contrast to 83.6% of women of Swedish descent. Even if they are employed, people born outside the EU (20-64 age group) are more likely to be at risk of poverty (15.2% in 2021) than those born in Sweden (4.5%). If they are unemployed, they are more likely to be in long-term unemployment. Among native-born unemployed people (15-74 age group), the proportion of those who have been unemployed for longer than 12 months is 15.5%, while this figure rises to 30.4% for those born outside the EU.

Labour demand increased sharply at the beginning of 2022, and Sweden has been experiencing an increase in labour shortages, coupled with skills mismatches. The job vacancy rate for industry, construction, and services stood at 3.1% in 2022, in line with the EU average (2.9%). It was highest for electricity, gas, steam, and air conditioning supply (6.3%, EU average 1.7%). Labour shortages are also felt in the service sector, where the share of employers who report that the availability of labour is a factor limiting production stands at 42.6% (Q4-2022), one of the highest in the EU. Sweden's recovery and resilience plan includes investments in education to support up- and reskilling with a strong focus on the green transition; this will increase the number of places in higher education, higher vocational education and upper secondary vocational training institutions. The measures will contribute to reaching the 2030 national target on adult learning.

Swedish workers participate to a high degree in training activities, but the number of early leavers from education is rising, especially among young adults born outside the EU. The share of adults participating in learning activities over the past 4 weeks stood at 34.7% in 2021, much higher than the EU average of 10.8%. In the 16-74 age bracket, the share of individuals who have basic or above basic overall digital skills stood at 67.0%, also higher than the EU average of 54.0%. However, the share of early leavers from education or training (18-24 age group) has been rising since 2020, reaching 8.8% in 2022. Young adults (18-24) born outside the EU are more than twice as likely as their native peers to not have completed upper secondary school (16.3% against 6.3%). (see Annex 15 for more in-depth analysis on disparities in access to high-quality education).

The social situation is improving, reversing the long-term negative trends in poverty and income inequality. The share of people at risk of poverty or social exclusion stood at 17.2% in 2021. This was below pre-pandemic levels (18.4% in 2019) and below the EU average of 21.7%. This improvement is partly due to the increase in the impact of social transfers (other than pensions) on reducing poverty. In 2021, social transfers were able to reduce the at-risk-of-poverty rate by 44.5%, up from 40.8% in 2019 (and more than the EU average of 36.4%). Nonetheless, this only partially compensated the long-term negative trend: the impact of social transfers on poverty reduction was 66.9% in 2005, and it kept declining until 2017. Similar considerations apply to income inequality: the ratio between the earnings of the fifth and the first quintile of the income distribution stood at 4.04 in 2021 (below the EU average of 4.97). This has been decreasing since 2019 (4.33), but it is still far above the lowest value recorded in 2005 (3.33). The risk of poverty or social exclusion disproportionately affects people born outside the EU (39.7%) compared to the native-born (11.3%). The gap is as wide as 28.4 pps, against the EU average of 22.0 pps.

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

Indicators	Latest data	Trend (2015-2022)	National target by 2030	EU target by 2030
Employment (%)	82.2 (2022)		82	78
Adult learning[1] (%)	58.8 (2016)		60	60
Poverty reduction[2] (thousands)	-89 (2021)		-15	-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

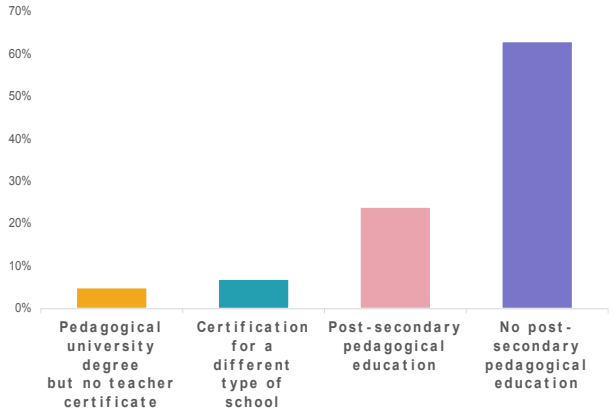
Sweden managed to partially improve integrating persons with disabilities into the labour market and is continuing to expand the coverage of formal childcare services. The disability employment gap had been stable since 2015 (30.2 pps) but began a steep decline in 2019 (24.9 pps) and reached 19.9 pps in 2021 (below the EU average of 23.0 pps). This was entirely due to the improved conditions of people with only some activity limitations (from 19.0 pps in 2019 to 13.0 pps in 2021), while the situation deteriorated for people with severe activity limitations (from 38.7 pps in 2019 to 46.7 pps in 2021). The percentage of children aged less than 3 years in formal childcare has been rising since 2018 and reached 55.8% in 2021, well above the EU average of 36.6%. Furthermore, housing shortages have been widespread in recent years, reflecting a lack of affordable housing, as shown by the share of people living in overcrowded conditions, which is now at its highest since 2010 (16.2%, still below the EU average of 17.1%).

This Annex outlines the main challenges for Sweden'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.

Government is looking into improving teachers' career progression to address the shortage of qualified teachers. In 2020, only 72% of all teachers were qualified (varying between 20% and 85% depending on the type and level of education). An additional 12% had a teaching degree, but not the appropriate subject/school-level qualification. The shortages are most acute for special needs teachers, subject teachers in compulsory school and vocational teachers in secondary school (NAE, 2021b). In compulsory schools, 21% of teachers were not qualified in 2020/21. Most (63% of those 21%) had no post-secondary pedagogical education (see Graph A15.1) ([104]). In June 2022, the government proposed creating a national professional programme for principals, teachers, and teachers in early childhood education and care (ECEC). This would create a national structure for continuous professional skills development and enable teachers' career progression ([105]). In higher education, two initiatives with alternative pathways to the teaching profession exist for those with a previous degree.

Recent studies confirm a link between school choice and increasing segregation of pupils. Research suggests that school choice leads to increasing segregation of pupils based on parents' country of birth and level of education ([106]), with the more privileged pupils (also among pupils with a migrant background) more often attending

Graph A15.1:**Unqualified teachers in compulsory schools (ISCED 1-2) in Sweden according to their qualification status in 2020/2021**



Source: National Agency for Education (2021). Obehöriga lärare i grundskolan - läsåret 2020/21 (Unqualified teachers in compulsory school in 2020/21).
Note: The calculations are based on the data from the teachers' register of the National Agency for Education.

independent schools ([107]). The Swedish Schools Inspectorate's investigation into the selection of pupils in independent schools, (including the link between queuing time and pupils' migrant background) found that schools sometimes applied additional criteria that the applicants had not been informed about ([108]).

Differences in grading across schools have an impact on equal opportunities. Gap in the share of underachievers according to socio-economic status is smaller than the EU average (14.5% vs EU: 19.3%). Yet more than one out of three pupils with migrant background does not achieve basic level of skills in reading. The

([104]) National Agency for Education – NAE (2021a). Obehöriga lärare i grundskolan - läsåret 2020/21. Stockholm. Skolverket. https://www.skolverket.se/publikationsserier/beskrivande-statistik/2021/obehoriga-lärare-i-grundskolan--- lasaret-2020-21

([105])Utbildningsdepartementet (2022), Förslag om inrättande av ett nationellt professionsprogram, https://www.regeringen.se/pressmeddelanden/2022/06/förslag-om-inrattande-av-ett-nationelltprofessionsprogram/.

([106]) Brandén, M., & Bygren, M. (2021). The opportunity structure of segregation: School choice and school segregation in Sweden. Acta Sociologica. https://doi.org/10.1177/0001699321106831 8

([107])Lärarförbundet (2022) En stor segregation bakom siffrorna. Bakgrunden hos elever med utländsk bakgrund på fristående skolor. Stockholm, Lärarförbundet.

([108]) Skolinspektionen (2022) Fristående skolors mottagande och urval av elever till förskoleklass och grundskola. En tematisk tillsyn. Diarienummer: 2020:8442. Stockholm, Skolinspektionen.

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

				2015		2022	
Indicator			Target	Sweden	EU27	Sweden	EU27
[1]Participation in early childhood education (age 3+)			96%	94.1%	91.9%	95.9% 2020	93.0% 2020
[2]Low achieving 15-year-olds in:		Reading	< 15%	18.4%	20.0%	18.4% 2018	22.5% 2018
		Mathematics	< 15%	20.8%	22.3%	18.8% 2018	22.9% 2018
		Science	< 15%	21.6%	21.1%	19.0% 2018	22.3% 2018
Early leavers from education and training (age 18-24)	[3]Total		< 9 %	7.0%	11.0%	8.8%	9.6%
	[3] By gender	Men		7.6%	12.5%	10.5%	11.1%
		Women		6.4%	9.4%	6.8%	8.0%
	[4] By degree of urbanisation	Cities		6.4%	9.6%	6.1%	8.6%
		Rural areas		8.2%	12.2%	11.0%	10.0%
	[5] By country of birth	Native		5.9%	10.0%	6.7%	8.3%
		EU-born		11.6%	20.7%	: u	20.3%
		Non EU-born		14.3%	23.4%	17.3% u	22.1%
[6]Equity indicator (percentage points)				:	:	14.5 2018	19.3 2018
[7]Exposure of VET graduates to work based learning	Total		≥ 60% (2025)	:	:	67.0%	60.1%
Tertiary educational attainment (age 25-34)	[8]Total		45%	46.5%	36.5%	52.4%	42.0%
	[8] By gender	Men		38.9%	31.2%	44.2%	36.5%
		Women		54.5%	41.8%	60.9%	47.6%
	[9] By degree of urbanisation	Cities		56.8%	46.2%	66.2%	52.2%
		Rural areas		31.1%	26.9%	34.8%	30.2%
	[10] By country of birth	Native		47.2%	37.7%	53.8%	43.0%
		EU-born		59.9%	32.7%	69.7%	39.5%
		Non EU-born		41.4%	27.0%	43.4%	35.7%
[11]Share of school teachers (ISCED 1-3) who are 50 years or over				39.3%	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.

National Agency for Education (NAE) has found systemic variation in the relationship between grades and the results of national tests. As different grading practices may affect further education possibilities, the Swedish Schools Inspectorate is now looking into how to address this issue. Moreover, pupils coming from independent schools are less likely to complete upper secondary education compared with their peers from municipal schools with equal grades from compulsory education ([109]). The cancellation of national tests in 2020 and 2021 due to the pandemic further increased grade inflation, especially in independent upper secondary schools ([110]).

Participation in ECEC is high, but staff qualifications and language skills are an issue. Participation of children from 3 years to school age is 95.9% vs EU 93%. However, a national inquiry has shown that only 39.5% of the staff are qualified ECEC teachers – going down to even 28.5% in ECEC institutions with minimum 90% of children with a migrant background is dominant. There, staff with a migrant background (sometimes including ECEC teachers) often also lack a sufficient knowledge of Swedish, which negatively affects children's language development ([111]). The

([109]) National Agency for Education – NAE (2022). Grundskolebetygens betydelse för resultaten i gymnasieskolan. Stockholm, Skolverket. https://www.skolverket.se/getFile?file=9360

([110]) National Agency for Education – NAE (2021b). Covid19-pandemins påverkan på skolväsendet Delredovisning 4 – Gymnasieskolan. Diarienummer: 2020:1056. Stockholm. Skolverket. https://www.skolverket.se/getFile?file=9010

([111]) Statens offentliga utredningar - SOU (2020). Förskola för alla barn – för bättre språkutveckling i svenska. SOU 2020:67. Stockholm, Statens offentliga utredningar, https://www.regeringen.se/contentassets/73de9759ac8a41548fe7a7a7e3641b73/forskola-for-alla-barn--for-battre-sprakutveckling-i-svenska-sou-202067/.

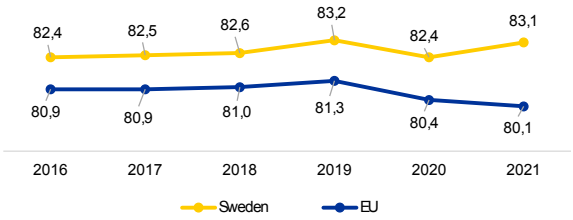
share of qualified ECEC teachers is also low in Stockholm and Malmö.

Tertiary education attainment (TEA) is above the EU target, but the attainment gaps are widening. In 2022, TEA was 52.4% vs EU 42%. The TEA rate of young people born outside the EU is lower, at 43.4%, however still high and above EU average. The urban-rural gap in TEA is one of the highest in the EU (31.4 pps vs 22 pps), and it has doubled over the past 16 years. In 2022, the share of VET graduates who have been exposed to work-based learning is higher than the EU average: 67% vs EU 60.1%.

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 Sweden.

Life expectancy in Sweden remains among the highest in the EU and has rebounded after it fell in 2020. This rebound reflects the significant decrease in COVID-19 mortality in 2021 compared to 2020 in Sweden ([112]). Sweden fares comparatively well in avoiding deaths from treatable causes. Leading causes of death are diseases of the circulatory system ("cardiovascular diseases") followed by cancer and COVID-19, which accounted for a large share of deaths in 2020. A specific cause for concern is Sweden's comparatively high death rate due to suicide.

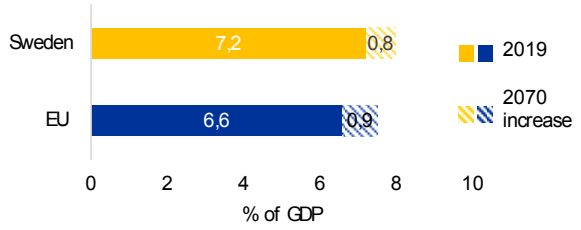
Graph A16.1:**Life expectancy at birth, years**



Source: Eurostat

In 2020, total expenditure on healthcare increased to 11.4% of GDP, more than the EU average level (10.9%). This is in line with the upward trend in the rest of the EU, which is driven – to a varying extent – by decreases in GDP at Member State level (for the EU overall, a 5.7% contraction in GDP was observed). For Sweden, public expenditure on health as a share of total public spending dropped by 0.1 percentage points (pps) to 14.1% in 2020. Outpatient care (including home care) is the largest category of health spending in Sweden and accounted for well over a third (36%) of all health spending in 2020. Inpatient care accounted for 20.7% of total healthcare spending (26.4% for the EU overall) in 2020. This presents a marked decline since 2010, when the budget share held by inpatient care stood at 26.9%. Public spending on health is projected to increase by 1.3 pps of GDP by 2070 (compared to 0.9 pps for the EU overall), raising long-term fiscal sustainability concerns (see Annex 21).

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



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

In 2020, spending on prevention increased slightly, with the share of total spending on preventive care rising to 3.3%, up from 3.2% in 2019. Between 2020 and 2019, spending on prevention in Sweden increased by 11% (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 Sweden for epidemiological surveillance and risk and disease control programmes.

([112])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)	66.6	65.6	60.2	62.1	NA	91.7 (2020)
Cancer mortality per 100 000 population	229.6	221.3	216.7	214.1	NA	242.2 (2020)
Current expenditure on health, % GDP	10.8	10.9	10.8	11.4	NA	10.9 (2020)
Public share of health expenditure, % of current health expenditure	84.7	84.8	85.1	85.9	NA	81.2 (2020)
Spending on prevention, % of current health expenditure	3.3	3.4	3.2	3.3	NA	3.4 (2020)
Acute care beds per 100 000 population	204	196	190	NA	NA	387.4 (2019)
Doctors per 1 000 population *	4.3	4.3	4.3	NA	NA	3.9 (2020)
Nurses per 1 000 population *	10.9	10.9	10.9	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 for CY and CZ) **	11.3	10.8	10.3	8.9	8.7	14.5 (2021)

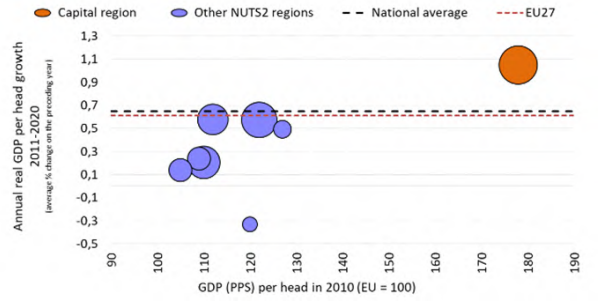
Note: The EU average is weighted for all indicators, except for (*) and (**), for which the EU simple average is used. The simple average for (*) uses data for 2020 or most recent year if former not available. Doctors' density data refer to practising doctors in all countries except EL, PT (licensed 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

This Annex showcases the economic and social regional dynamics in Sweden, providing an update on economic, social and territorial cohesion in and among the Swedish regions compared with the rest of the EU and the main regional economic recovery challenges.

Sweden's regions are performing well but regional disparities have slightly increased over the last two decades. This is thus also increasing the gap between urban centres and the rest of the country.

GDP per capita (PPS) at country level was 123% of the EU average in 2021. All NUTS 2 regions were above or close to this EU average, but the Stockholm capital region's figure of 178% was by far the highest (see Graph A17.1). On the other side of the spectrum, Norra Mellansverige had the lowest figure of 99% – so just below the EU average.

Graph A17.1:**Average GDP per capita growth vs GDP per capita in 2010**

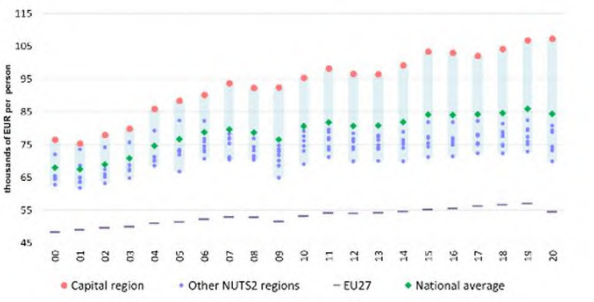


Source: EUROSTAT, DG REGIO elaboration

Labour productivity in Sweden is higher than the EU average in all NUTS 2 regions (see Graph A17.2). However, the productivity gap between the capital and the other regions has increased over time. As highlighted by the OECD ([113]), lower productivity is often associated with poor transport links, lower employment in knowledge-intensive sectors, lower R&D expenditure and a lower share of tertiary education.

The three northern regions were much less accessible than the others in 2018. 96.7% of the population living within a radius of 120 km could be reached in less than 90 minutes in the Stockholm region, but this ratio drops to 64% in Mellersta Norrland, 59.6% in Övre Norrland and 55.5% in Norra Mellansverige. Accessibility was also lower in Småland med öarna (61.4%), due mainly to the region's configuration (one of its constituent counties, Gotland, is an island that can only be reached by air and sea).

Graph A17.2:**Real labour productivity in Sweden, 2000-2019**



Source: EUROSTAT, DG REGIO elaboration

Skilled labour shortages are an obstacle to the regional development of Sweden's most northerly region. It is estimated that more than 100 000 skilled people will be needed by 2035 in the Swedish Northern Sparsely Populated Areas. This constitutes a major skills gap ([114]). The Just Transition Fund will contribute almost EUR 17 million to addressing this skills mismatch by retraining and reskilling workers from the steel and metal industry in those regions.

The population is growing in all Swedish regions, mainly due to migration, but the capital region's population is growing fastest. Stockholm's population increased by 1.52% in 2011-2020, while the population grew by only around 0.17% in Mellersta Norrland,

([113]) OECD, Regional differences in productivity in Sweden: insights from OECD regions, ECO/WKP(2021)39.

([114]) Larsson, Peter, Rapport från samordnaren för samhällsomställning vid större företagsetableringar och företagsexpansioner i Norrbotten och Västerbotten, Government Offices – Ministry of Enterprise and Innovation, (2022)23.

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

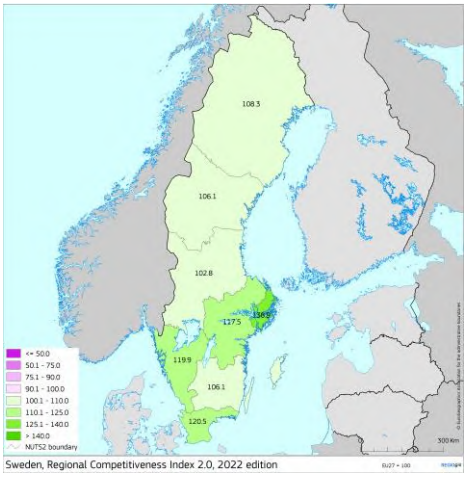
NUTS region name	GDP per head (PPS)	Productivity (GVA (PPS) per person employed)	GDP per head growth	Population growth	Net migration	Employment rate, ages 20-64	Unemployment rate	At-risk-of-poverty or social exclusion	R&D expenditure	Transport performance by car	Regional Competitiveness Index (RCI)
	Index, EU27 = 100, 2021	Index, EU27 = 100, 2021	Average % change on the preceding year, 2011-2020	Average annual change per 1000 residents, 2011-2020	Average annual change per 1000 residents, 2011-2020	% of population aged 20-64, 2021	% of active population, 2021	% of population, 2021	% of GDP, 2019	Pop. within a 1h30 journey / pop. within 120 km radius x 100, 2018	Index, EU27 = 100, 2019
European Union	100	100	1			73	7	22	2	82	100
Sverige	123	115	0.65	9.8	7.4	80.7	8.7	17.2	3.4	80.0	120.2
Stockholm	171	142	1.04	15.2	9.4	83.8	8.1	13.3	3.3	96.7	138.9
Östra Mellansverige	104	104	0.21	10.2	8.5	78.3	9.7	19.4	3.9	77.4	117.5
Småland med öarna	103	97	0.24	7.3	6.7	81.8	7.4	17.1	1.2	61.4	106.1
Sydsverige	105	106	0.58	10.3	8.0	77.1	11.1	20.2	3.6	85.4	120.5
Västsverige	116	107	0.58	9.7	7.3	81.5	8.3	17.3	5.1	85.0	119.9
Norra Mellansverige	99	102	0.15	3.7	4.8	78.9	9.6	18.8	1.3	55.5	102.8
Mellersta Norrland	108	105	-0.33	1.7	3.4	84.0	6.1	21.5	0.7	64.0	106.1
Övre Norrland	127	121	0.49	2.9	3.2	80.0	6.1	14.0	2.5	59.6	108.3

Source: Eurostat, EDGAR database

0.29% in Övre Norrland and 0.37% in Norra Mellansverige.

Sweden is an innovation leader, but there are notable differences in regional innovation performance. Stockholm was the most innovative region in the EU with 154.5% of the EU average in 2021, while Norra Mellansverige and Mellersta Norrland scored 100.7% and 101.1% respectively ([115]) . All Swedish regions spend more on R&D than the EU average (2% of GDP) except Mellersta Norrland (0.7%), Småland med öarna (1.2%) and Norra Mellansverige (1.3%). The Regional Competitiveness Index 2022 attributed the sixth best ranking to Stockholm (138.9% of EU average) while the three northern regions as well as Småland med öarna scored just slightly above the EU average, mostly due to their smaller markets and weaker infrastructure (see Map A17.1).

Map A17.1: **Regional Competitiveness index 2022 - Sweden**



The employment rate was well above the EU average in all Swedish regions in 2021 (80.7% altogether). The rate was highest in Mellersta Norrland (84%, just slightly above Stockholm) and lowest in Sydsverige (77.1%). The high-technology sector is particularly prominent in the capital region, where it employs 11.5% of the workforce, compared with 2% in Norra Mellansverige and 2.8% in Småland med öarna. Similarly, while Stockholm has the highest percentage of individuals employed in knowledge-intensive services (63,8%), Småland med öarna has the lowest percentage for this indicator (48.2%) There are also major disparities in terms of educational attainment: around 62% of Stockholm's population has a tertiary education degree but

([115]) Hollanders, Hugo, Regional Innovation Scoreboard 2021, Publications Office of the European Union, 2021 (33).

42% in Mellersta Norrland and Övre Norrland ([116]).

Sweden has the fourth highest level of unemployment in the EU (with an average 8.7% compared with the EU average of 7%). The unemployment rate was lowest in Mellersta Norrland and Övre Norrland (both at 6.1% and the only Swedish regions below the EU average) but was more than 11% in Sydsverige and still above the pre-pandemic level in all regions (with the exception of the most northerly regions, Övre Norrland and Mellersta Norrland).

The COVID-19 pandemic affected the whole country and caused a recession. The economic fallout was distributed rather unequally. Between 2019 and 2020, GDP per capita fell in all Swedish regions – except Stockholm, the most northern region (Övre Norrland) and the most southern region (Sydsverige).

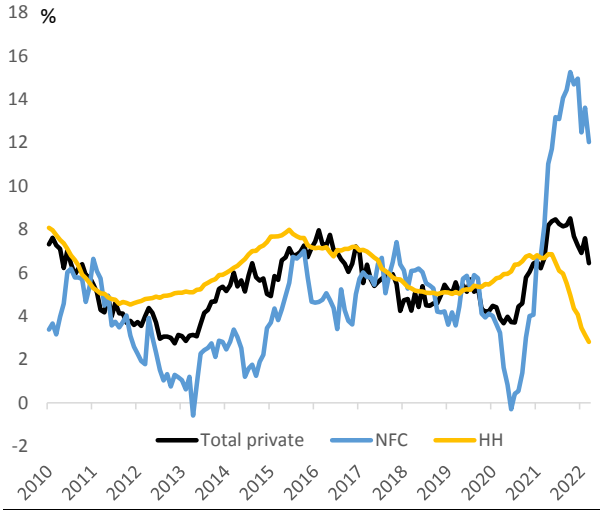
([116])The share of early leavers from education or training (aged 18-24) has been rising since 2020, reaching 8.4% in 2021. The share differs significantly between rural areas and cities (11.0% compared with 5.8%).

The Swedish banking system is large and concentrated and characterised by high profitability and strong capital and liquidity positions. Total banking-sector assets are equivalent to around 300% of GDP, of which the five largest banks hold 75%. At the end of 2022, Sweden's banks have profitability above the EU average (annualised return on equity of 8.8% vs 6.1% in the EU) and the capital adequacy ratio stood at 21.7% (vs 18.6% in the EU), well above existing capital requirements. The liquidity coverage ratio amounted to 163%. In late 2022, Swedish banks also posted the highest loan-to-deposit ratio in the EU (147% vs 88.6% in the EU) implying a high dependence on market funding. At 0.8%, the non-performing-loan ratio is one of the lowest in the EU (the EU average is 1.8%). However, the leverage ratio (0.5%) also remains one of the lowest in the EU.

To cover their funding gap, the largest banks in Sweden rely on the domestic and international capital markets. This exposes them to: (i) changes in the risk sentiment of investors; (ii) higher funding costs or risks in accessing funding; and (iii) liquidity shortages, given that some two thirds of the securities issued are denominated in foreign currency, and the short-term debt is mainly issued in dollars. The banking sector has tried to increasingly fund its activities through deposits, which has reduced the need for long-term market-based financing, and made funding more stable. The banks are now funded by roughly equal shares of deposits from households/businesses and securities issued in the capital markets. Swedish banks also have large holdings of each other's covered bonds, which increases interconnectedness and entails significant contagion risks in the event of a financial disruption. Increased interest-rate spreads on banks' bonds over sovereign bonds seem to indicate that investors see rising risks.

The swift tightening by Sweden's central bank in 2022 has ricocheted through the housing market. In recent years, Sweden had experienced one of the fastest upswings in housing prices in Europe, and household indebtedness reached an all-time high in 2021, with a debt-to-income ratio of 172% in 2021, which is also very high by international standards. At the same time, house prices had been buoyed by ultra-low interest rates. However, in 2022, in response to the sharp increase in inflation, Sveriges Riksbank, the Swedish central bank, started to raise the policy rate from 0% in April to 2.5% in November. Long-term covered bonds provide a substantial part of the financing structure of the banks, and so the rise in interest rates is also passed on to mortgage rates. As a result, year-on-year growth in lending to households eased to 3.5% (vs 4.4% in the euro area) in 2022 down from 6.8% in 2021. Moreover, loan losses are at risk of increasing in a system where households have become increasingly sensitive to rapidly rising loan-servicing costs. Some 73.4% of mortgage loans are financed with variable rates and many of the rest are on short-term fixed rates. Nearly half of household mortgages have maturities of less than one year before they must be refinanced. The vast majority of mortgage borrowers are expected to be able to meet their debt-payment obligations, but some households may struggle to service their loans as high inflation is eroding disposable income, while interest costs are rising fast and house prices are falling.

Graph A18.1:**Evolution of credit activity**



Source: ECB.

Vulnerabilities also relate to the large share of commercial real-estate loans in the loan portfolios of the banks. Commercial real-estate companies, which are often highly leveraged, have continued to increase their debt levels in recent years, and the annual growth rate of bank lending to non-financial corporations over 2022 was at a record-high 12.5% (vs 8.0% in the euro area). This has made commercial real-estate companies more sensitive to changing economic conditions, and in particular to an increase in loan-servicing costs. This feeds into their financial statements, negatively impacting interest coverage and property values and driving up loan-to-value ratios in the sector. Commercial real-estate firms' refinancing existing debt and taking out new loans will thus be more costly, especially for those with lower creditworthiness. In turn, this may drive some investors to sell properties to cope with debt maturities, adding further downward pressure to prices with additional effects on financial stability. Downward price pressure on real estate has already brought about a deterioration in investor sentiment, and this has sharply pushed up refinancing costs in the bond market. If the economy were to slow down and financing conditions to change, the market value of real estate could fall further. Decreased access to market-based financing also increases pressure on the already exposed banking sector to provide financing. Commercial real-estate firms are increasingly using their already agreed and unused credit and liquidity facilities at banks to secure funding. On the whole, this may pose an additional challenge for both property companies and banks. For property companies, the increased proportion of secured loans means that their credit ratings may be affected, while for banks the credit risk is becoming more concentrated. Cross-border investment flows and credit exposures to other countries are much stronger in the commercial real-estate sector than in the residential real-estate sector.

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

	2017	2018	2019	2020	2021	2022	EU	Median
Total assets of the banking sector (% of GDP)	289.6	272.8	279.1	311.8	281.8	290.6	276.8	207.9
Share (total assets) of the five largest banks (%)	58.2	54.3	54.8	54.1	55.0	-	-	68.7
Share (total assets) of domestic credit institutions (%)[1]	92.7	77.7	79.1	78.7	80.3	80.5	-	60.2
NFC credit growth (year-on-year % change)	5.7	6.1	3.6	4.0	6.8	12.5	-	9.1
HH credit growth (year-on-year % change)	7.0	5.5	5.1	5.6	6.8	3.5	-	5.4
Financial soundness indicators:[1]								
- non-performing loans (% of total loans)	1.3	1.0	1.1	1.0	1.0	0.8	1.8	1.8
- capital adequacy ratio (%)	25.9	20.7	21.6	22.3	22.2	21.7	18.6	19.8
- return on equity (%)[2]	10.9	12.2	10.9	8.4	10.0	8.8	6.1	6.6
Cost-to-income ratio (%)[1]	54.2	51.9	56.5	57.1	54.5	57.4	60.6	51.8
Loan-to-deposit ratio (%)[1]	172.7	190.7	187.9	163.2	152.6	147.0	88.6	78.0
Central bank liquidity as % of liabilities	0.0	0.0	0.0	1.2	0.1	0.0	-	2.9
Private sector debt (% of GDP)	198.7	195.0	200.0	212.8	215.3	-	-	120.7
Long-term interest rate spread versus Bund (basis points)	33.3	25.5	29.3	47.3	64.2	39.2	-	93.3
Market funding ratio (%)	61.3	61.2	62.3	62.2	62.3	-	50.8	40.0
Green bonds issued to all bonds (%)	0.1	0.7	2.2	3.6	5.5	7.6	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 Pro.

To reduce excessive borrowing, the supervisory authority of Sweden has stepped up the macro-prudential measures that were eased at the beginning of the pandemic. Stress tests conducted by Sweden's Financial Supervisory Authority indicate that banks could suffer significant credit losses if financing costs remain elevated, as highly leveraged real-estate companies would face lower earnings. With this risk in mind, the Financial Supervisory Authority decided to increase the countercyclical capital buffer to 2%, effective from June 2023.

Structural flaws make the Swedish market for corporate bonds vulnerable to stressed market conditions. Poor liquidity, especially on the secondary markets, and a lack of transparent price-setting mechanisms result in elevated volatility in times of financial turbulence. The risks associated with real-estate exposures are amplified as commercial real-estate represents a significant part of the outstanding volume of corporate bonds. These challenges are made all the greater by: (i) pro-cyclicality; (ii) a paucity of issuers compared to the number of corporates that have bank loans; and (iii) a relatively high proportion of traded bond volumes in bonds that do not have a credit rating. The work now being carried out by the Riksbank, Sweden's Financial Supervisory Authority and the private sector to increase transparency, improve liquidity and increase the standardisation of issuances (e.g. by using fully transaction-based reference rates) is therefore positive.

This Annex provides an indicator-based overview of Sweden's tax system. It includes information on the tax structure (the types of tax that Sweden 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.

Sweden's tax revenues are relatively high in relation to GDP, with the highest contribution coming from labour taxation. Table A19.1 shows that Sweden's tax revenues as a percentage of GDP were considerably above the EU aggregate in 2021. The share of labour tax in total tax revenue is significantly higher than the EU aggregate while the share of capital taxes is clearly below the EU aggregate (see Graph A19.1). Revenues from environmental taxes were slightly below the EU aggregate as a share of GDP and of total tax revenue. Sweden has introduced energy taxation measures in its RRP. Reducing the tax deductibility of mortgage interest payments and/or increasing recurrent property taxes for home owners could help reduce risks related to high household debt and housing market vulnerabilities. Revenues from property taxes in Sweden were just 1% of GDP, which was significantly below the EU aggregate. In addition, recurrent taxes on immovable property, which are considered to be among the taxes least detrimental to economic growth, are below the EU aggregate. Moreover, Sweden does not tax inheritances and gifts. Despite some minor reforms in 2021 and 2022, only limited progress has been made on broader property tax reforms.

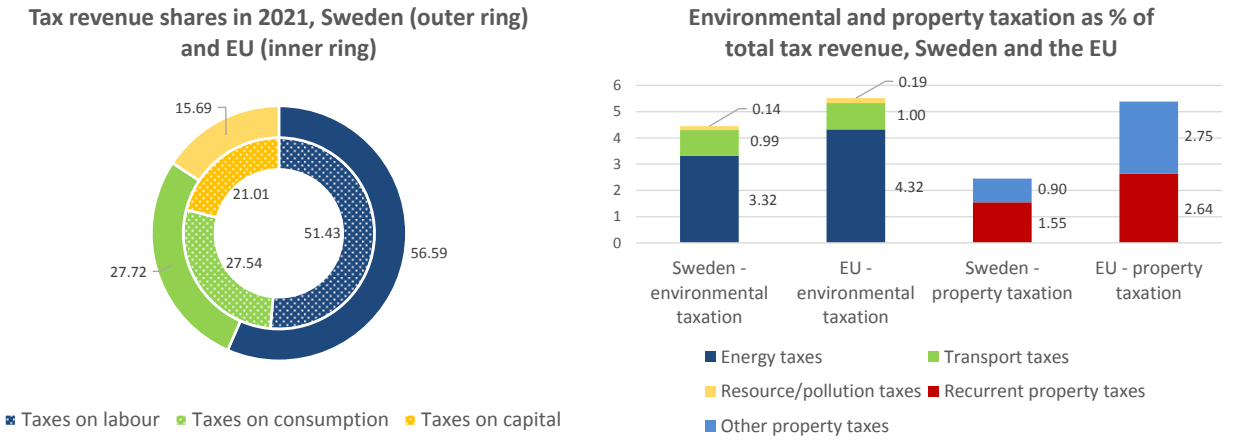
While the tax-benefit system helps reduce income inequality, Sweden's labour tax burden is higher than the EU average at all wage levels. The negative impact of a high tax wedge is particularly pronounced for vulnerable groups such as low-income and second earners. Graph A19.2 shows that the labour tax wedge in Sweden is higher than the EU average for all income levels. The tax wedge for low-income earners at 50% of the average wage is particularly high compared to the EU average. The tax wedge for second earners with an income of 67% of average wage, whose

Table A19.1: **Taxation indicators**

		Sweden					EU-27				
		2010	2019	2020	2021	2022	2010	2019	2020	2021	2022
Tax structure	Total taxes (including compulsory actual social contributions) (% of GDP)	42.9	42.8	42.4	42.8	41.7	37.9	39.9	40.0	40.6	
	Labour taxes (as % of GDP)	24.2	24.9	24.6	24.2		20.0	20.7	21.3	20.9	
	Consumption taxes (as % of GDP)	12.6	11.9	12.0	11.9		10.8	11.1	10.7	11.2	
	Capital taxes (as % of GDP)	6.1	6.0	5.8	6.7		7.1	8.1	8.0	8.5	
	Total property taxes (as % of GDP)	1.0	1.1	1.0	1.0		1.9	2.2	2.2	2.2	
	Recurrent taxes on immovable property (as % of GDP)	0.7	0.7	0.7	0.7		1.1	1.2	1.2	1.1	
	Environmental taxes as % of GDP	2.7	2.1	2.0	1.9		2.4	2.4	2.2	2.2	
Progressivity & fairness	Tax wedge at 50% of average wage (Single person) (*)	39.0	38.8	38.9	37.9	37.5	33.9	32.3	31.9	32.1	31.7
	Tax wedge at 100% of average wage (Single person) (*)	42.8	42.6	42.7	42.5	42.4	41.0	40.1	39.9	39.7	39.7
	Corporate income tax - effective average tax rates (1) (*)		20.4	20.4	19.7			19.5	19.4	19.1	
	Difference in Gini coefficient before and after taxes and cash social transfers (pensions excluded from social transfers) (2) (*)	10.3	9.8	9.6	9.9		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 %) (*)		0.2	0.4				31.6	40.7		
	VAT Gap (% of VAT total tax liability, VTTL)		3.3	2.0				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, data 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 from different tax types as % of total taxation**

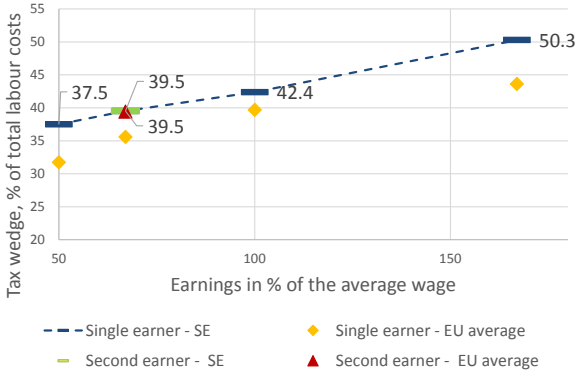


Note: Values for EU are GDP-weighted EU averages (EU aggregates)
Source: European Commission

spouses earns the average wage, is at the EU average. Also, it is identical to the tax wedge for single earners at this wage level, indicating that work incentives for second earners moving into employment are equal to those for single persons at 67% of the average wage. Overall, the Swedish tax-benefit system reduced income inequality, as measured by the GINI coefficient, by more than the EU average in 2021.

Sweden performs relatively well on tax compliance and tax administration. Outstanding tax arrears are 0.4% of total tax revenue in 2020 (0.2% in 2019) and significantly below the EU average of 40.7%. The EU average could however be inflated due to a small number of Member States with very high values. Features of the Swedish tax system that contribute to low arrears are a strong focus on cooperative compliance, a high proportion of source-based taxation, and the use of tax accounts, which each individual and company has with the Swedish Tax Agency, to make payments. Furthermore, the VAT gap (the gap between revenues actually collected and the theoretical tax liability) was 2% in 2020, significantly below the EU-average of 9.1%.

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



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

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)	3.8	0.7	2.4	-2.2	5.4	2.6	-0.5	1.1
Potential growth (y-o-y)	2.7	1.7	2.1	1.9	2.0	1.8	1.6	1.5
Private consumption (y-o-y)	3.3	1.7	2.3	-3.2	6.3	2.1	-1.7	1.2
Public consumption (y-o-y)	0.5	1.4	1.4	-1.8	2.8	0.0	0.7	0.1
Gross fixed capital formation (y-o-y)	6.9	-0.5	3.4	1.7	6.0	5.2	-3.2	-0.2
Exports of goods and services (y-o-y)	7.7	0.8	3.7	-5.5	10.0	6.6	2.0	2.6
Imports of goods and services (y-o-y)	7.5	1.2	3.9	-6.0	11.5	8.7	-1.1	1.4
Contribution to GDP growth:								
Domestic demand (y-o-y)	3.2	1.0	2.2	-1.5	5.0	2.2	-1.4	0.5
Inventories (y-o-y)	0.1	-0.1	0.1	-0.7	0.5	1.0	-0.7	0.0
Net exports (y-o-y)	0.5	-0.1	0.0	0.0	-0.1	-0.6	1.6	0.7
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	0.6	0.7	0.7	0.4	0.5	0.5	0.6	0.5
Capital accumulation (y-o-y)	0.8	0.6	0.8	0.8	0.9	0.9	0.8	0.7
Total factor productivity (y-o-y)	1.3	0.4	0.6	0.7	0.6	0.4	0.2	0.3
Output gap	1.6	-1.6	-0.2	-3.7	-0.5	0.3	-1.8	-2.1
Unemployment rate	6.9	7.9	7.3	8.5	8.8	7.5	7.7	8.2
GDP deflator (y-o-y)	1.4	1.7	1.9	2.0	2.9	5.7	5.7	1.6
Harmonised index of consumer prices (HICP, y-o-y)	1.3	1.9	1.2	0.7	2.7	8.1	6.0	1.9
HICP excluding energy and unprocessed food (y-o-y)	0.8	1.6	1.1	1.5	1.6	5.5	6.4	2.7
Nominal compensation per employee (y-o-y)	4.0	3.0	2.6	2.5	4.3	2.8	4.0	3.7
Labour productivity (real, hours worked, y-o-y)	2.4	0.1	1.1	1.1	2.7	0.3	-1.5	0.4
Unit labour costs (ULC, whole economy, y-o-y)	1.1	2.8	1.7	3.4	0.2	2.9	4.8	2.8
Real unit labour costs (y-o-y)	-0.3	1.0	-0.2	1.3	-2.6	-2.7	-0.8	1.2
Real effective exchange rate (ULC, y-o-y)	-0.6	1.9	-2.3	0.3	3.1	-5.4	-6.8	-1.0
Real effective exchange rate (HICP, y-o-y)	-0.4	0.3	-2.2	2.6	3.1	-6.2	.	.
Net savings rate of households (net saving as percentage of net disposable income)	4.7	10.4	13.4	17.0	15.9	13.4	.	.
Private credit flow, consolidated (% of GDP)	12.7	7.8	8.1	14.4	16.6	.	.	.
Private sector debt, consolidated (% of GDP)	153.3	190.5	194.9	212.8	214.8	.	.	.
of which household debt, consolidated (% of GDP)	61.3	75.1	85.0	93.7	92.3	.	.	.
of which non-financial corporate debt, consolidated (% of GDP)	92.1	115.4	109.8	119.2	122.5	.	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (1)	.	.	1.0	0.8	0.8	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	4.4	2.1	-1.9	1.9	0.5	-0.5	1.3	1.0
Corporations, gross operating surplus (% of GDP)	25.4	24.5	24.2	25.6	26.3	26.7	26.8	26.3
Households, net lending (+) or net borrowing (-) (% of GDP)	0.5	3.9	5.3	6.9	6.1	4.3	5.6	6.0
Deflated house price index (y-o-y)	10.1	1.5	4.7	3.3	8.0	-3.4	.	.
Residential investment (% of GDP)	3.9	3.7	4.8	4.9	5.2	5.2	.	.
Current account balance (% of GDP), balance of payments	7.1	6.1	3.6	5.9	6.5	4.3	5.8	6.2
Trade balance (% of GDP), balance of payments	6.7	5.2	3.7	4.5	4.6	2.4	.	.
Terms of trade of goods and services (y-o-y)	-0.4	-0.1	-0.1	1.0	0.6	-3.3	0.8	-0.3
Capital account balance (% of GDP)	-0.2	-0.2	-0.1	0.1	0.0	0.1	.	.
Net international investment position (% of GDP)	-11.8	-8.9	-1.5	9.9	23.8	39.8	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) (2)	-21.4	-22.1	-16.1	-9.7	0.0	-5.4	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) (2)	122.5	153.3	160.5	155.5	146.9	169.1	.	.
Export performance vs. advanced countries (% change over 5 years)	5.4	-5.6	-7.8	3.7	5.9	.	.	.
Export market share, goods and services (y-o-y)	-0.7	-4.3	-0.7	4.1	-0.9	2.6	-0.6	-1.2
Net FDI flows (% of GDP)	2.3	2.5	1.4	0.7	1.1	2.5	.	.
General government balance (% of GDP)	1.8	-0.1	0.1	-2.8	0.0	0.7	-0.9	-0.5
Structural budget balance (% of GDP)	.	.	0.2	-0.7	0.3	0.6	0.1	0.7
General government gross debt (% of GDP)	44.9	38.2	40.9	39.8	36.5	33.0	31.4	30.7

(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 Sweden 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). ([117]) Gross financing needs are expected to be around 7.5% of GDP in the short term (i.e. over 2023-2024), declining compared with the recent peak in 2020 (Table A21.1, Table 1). Financial markets' perceptions of sovereign risk are investment grade, as confirmed by the main rating agencies.

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

The DSA for Sweden shows that, under the baseline, government debt ratio, is projected to decline over the medium term (at 15.7% of the GDP in 2033). (Graph 1) ([118]), ([119]) The assumed structural primary balance (a surplus of 1.3% of GDP) contributes to these developments. At the same time, the baseline projection up to 2033 benefits from a favourable (although diminishing) snowball effect, notably thanks to the impact of Next Generation EU, with real GDP growth at around 1.8% over 2025-2033. Government gross financing needs are expected to remain small over the projection period, declining to around 1% of GDP in 2033, well below the level forecast for 2024.

The baseline projection is stress tested against four alternative scenarios to assess the impact of changes in key assumptions (Graph 1). Overall, the baseline debt projection for Sweden is very robust to changes in the underlying macroeconomic assumptions. Indeed, alternative scenarios do not lead to significant deviations of the debt-to-GDP ratio. Reverting to the historical structural primary balance (corresponding to a 15-year average), as stipulated in the 'historical SPB 'scenario, lowering the improvement of the structural primary balance by half of the cumulative forecast change, as described in the 'lower SPB 'scenario, or assuming a temporary worsening of financial conditions (i.e. temporarily increase of interest rates by 1 pp. on newly issued debt), as reflected in the 'financial stress 'scenario, would lead to a public debt-to-GDP ratio by 2033 close to the baseline. A permanent worsening of the macro-financial conditions, as displayed under the 'adverse interest-growth rate differential' scenario (i.e. 1 pp. higher than the baseline), would only slightly increase the debt-to-GDP ratio by around 2 pps. of GDP by 2033 as compared with the baseline.

Additionally, stochastic debt projections indicate low risk (Graph 2). ([120]) These stochastic simulations point to a 16%

([117]) The So 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.

([118]) The assumptions underlying the Commission's 'no-fiscal policy change' baseline notably comprise: (i) a structural primary surplus, before ageing costs, of 1.3% 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 1.8%); (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).

([119]) Table 1 shows the baseline debt projections 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.

([120]) These projections show the impact on debt of 2000 different shocks affecting the government's primary balance, economic growth, interest rates and exchange rates. The cone covers 80% of all simulated debt paths, therefore excluding tail events

probability of the debt ratio in 2027 being greater than in 2022, entailing low risk given the initial low debt level. In addition, such shocks point to a small degree of uncertainty (i.e. the difference between the 10th and 90th debt distribution percentiles) surrounding the government debt baseline projections.

3 - Long-term risks to fiscal sustainability are low overall. ([121])

The S2 sustainability gap indicator (at 0.9 pps. of GDP) points to low risk, indicating that Sweden would need to only slightly improve its structural primary balance to ensure debt stabilisation over the long term. This result is underpinned by the very favourable initial budgetary position (-1.2 pps. of GDP) that partially compensates for the projected increase in ageing costs (2.1 pps. of GDP), mainly resulting from an increase in long-term care and health care costs (Table 2).

Combined with low debt vulnerabilities, as highlighted by the S1 indicator, overall long-term risks are assessed as low. Indeed, the S1 sustainability gap indicator S1 (at -1.5 pps. of GDP) signals that the country has sufficient safety margin to maintain its debt below the 60% of GDP reference target by 2070. This result is mainly driven by the favourable initial budgetary position (contribution of -1.6 pps. of GDP) and the low starting level of the Swedish government debt ratio (contribution of -0.8 pp. of GDP), which more than compensate for the expected increase in ageing costs by 2070 (contribution of 0.9 pp. of GDP) (Table 2).

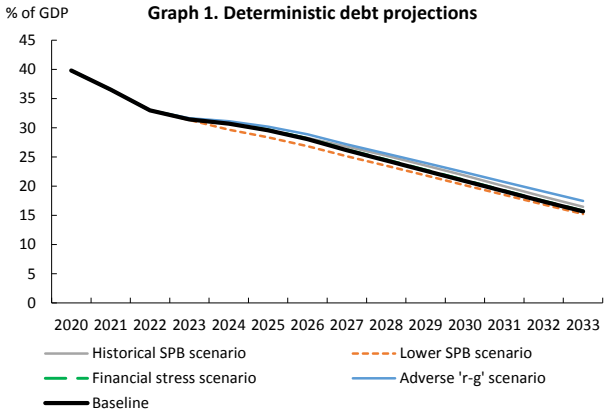
Finally, several additional risk factors need to be considered in the assessment. On the one hand, risk-increasing factors are related to the recent increase in interest rates, a relatively high share of short-term public debt and contingent liability risks stemming from the private sector. However, this risk remains currently limited due to relatively low take-up so far. On the other-hand, risk-mitigating factors include the stability of debt maturity in recent years, relatively stable financing sources (with a diversified and large investor base), a relatively low share of public debt held by non-residents and historically low borrowing costs reflecting a long-standing strong creditor status. In addition, Sweden's positive net international investment position helps mitigating vulnerabilities. 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.

([121])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 a revised S1 indicator, which measures the fiscal gap in 2024 to bring the debt-to-GDP ratio to 60% in the long-term. For both 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 - Sweden**

Table 1. Baseline debt projections	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio (% of GDP)	**39.8**	**36.5**	**33.0**	**31.4**	**30.7**	**29.6**	**28.1**	**26.2**	**24.4**	**22.7**	**20.9**	**19.1**	**17.4**	**15.7**
Changes in the ratio	4.4	-3.3	-3.5	-1.5	-0.7	-1.1	-1.5	-1.9	-1.7	-1.8	-1.8	-1.8	-1.8	-1.7
of which														
Primary deficit	2.5	-0.2	-1.2	0.2	-0.1	-0.5	-0.9	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
Snowball effect	0.4	-2.9	-2.4	-0.9	-0.3	-0.7	-0.6	-0.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
Stock-flow adjustments	1.5	-0.2	0.0	-0.8	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross financing needs (% of GDP)	12.6	8.7	8.0	7.6	7.5	7.2	6.6	5.8	5.0	4.2	3.4	2.6	1.8	1.1

Graph 1. Deterministic debt projections



Graph 2. Stochastic debt projections 2023-2027

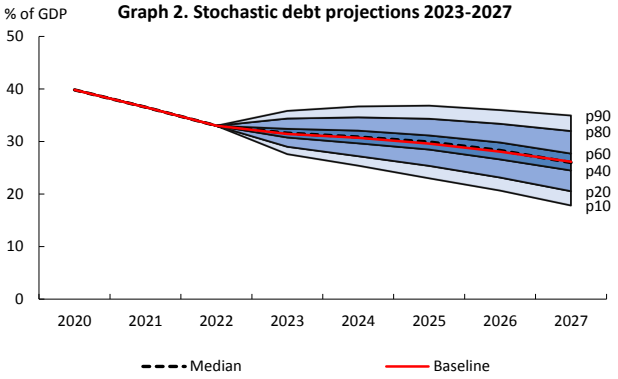


Table 2. Breakdown of the S1 and S2 sustainability gap indicators

		S1	**S2**
Overall index (pps. of GDP)		**-1.5**	**0.9**
of which			
Initial budgetary position		-1.6	-1.2
Debt requirement		-0.8	
Ageing costs		0.9	2.1
of which	*Pensions*	-0.2	0.0
	Health care	0.4	0.6
	Long-term care	1.1	1.8
	Others	-0.4	-0.4

Source: Commission services.

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

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	**LOW**	Overall	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**
		Debt level (2033), % GDP	15.7	16.5	15.2	17.5	15.8				
		Debt peak year	2022	2022	2022	2022	2022				
		Fiscal consolidation space	60%	60%	64%	60%	60%				
		Probability of debt ratio exceeding in 2027 its 2022 level						16%			
		Difference between 90th and 10th percentiles (pps. GDP)						17.1			

(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.

The Macroeconomic Imbalance Procedure matrix presents the main elements of the in-depth review undertaken for Sweden ([122]). Sweden was selected for an in-depth review in the 2023 Alert Mechanism Report. This in-depth review on the prevention and correction of macroeconomic imbalances presents the main findings on the gravity and evolution of the challenges identified, as well as policy responses and potential policy needs. Findings cover all areas of vulnerability assessed in the in-depth review.

Sweden is facing vulnerabilities relating to high private debt and house price valuations that are still stretched. Private debt to GDP was recorded at 217% of GDP in 2022. Household debt stood at 88% of GDP in 2022. Both metrics continue to be at or around the historical highs and well above their respective prudential thresholds and fundamental benchmarks, although household debt has declined a bit from its 2020 peak. Household debt as a percentage of disposable income reached 181% in 2022, below its 2021 peak. Net wealth is under pressure due to the decline in house prices while debt remains high. Nominal house prices peaked in the first half of 2022 and then started to decline. Real house prices declined even more, after a sustained period during which house prices grew faster than income. In addition, the budget of indebted homeowners is under pressure from increased interest rates and, for tenant-owners, by increases in tenant-owner association fees. Going forward, the risk of renewed imbalances is sizeable since the drivers of the imbalances remain in place with the sharp decline in construction activity risking a shortage in supply of new dwellings.

Going forward, net wealth will decline in the short-term, and there are risks associated with the impact of the reductions in house prices. The increased mortgage rates and the loss in real disposable income are the main factors driving the recent house price decline. The more recent homeowners have increased their housing consumption, the closer their net wealth will come to negative territory. New entrants to the housing market are known to have a relatively limited housing equity, in particular, but also those households having moved to more expensive houses – ie. from an apartment to a single-family home – are likely to see a sharp decrease in their housing equity. The central scenario assumes a quite resilient labour market in which unemployment remains contained and there is room for wage increases compensating for a significant part of the loss in real disposable income. Avoiding the uncontrolled unwinding of the macro imbalances defined earlier hinges on the absences of significant feedback effects between a reduction in house prices and the labour market. The reduction in employment in the construction sector will be a first test of this assumption. Another risk factor is the commercial real estate sector that has increased leverage in recent years and still has to adapt to new work and shopping patterns following the pandemic in addition to facing increased capital costs and broader negative developments in real estate.

Several policy initiatives can support the reduction of macroeconomic vulnerabilities. The Swedish recovery plan will ease building constraints and support construction of rental housing. A policy gap still remains, however. In particular, the tax incentives for debt-financed housing acquisition and low recurrent property taxation remain in place. Phasing out mortgage interest payments deductibility could be designed in a way that benefits first-time buyers. The rental market still functions poorly and hardly offers an alternative to housing acquisition for new entrants in the housing market. The absence of wealth and debt data at household level fogs the heterogeneous impact of housing market developments and

([122]) European Commission (2023), In-Depth Review for Sweden, Commission staff working document (COM(2023) 644 final), in accordance with Article 5 of Regulation (EU) No 1176/2011 on the prevention and correction of macroeconomic imbalances.

Table A22.1: **Assessment of macroeconomic imbalances matrix**

	Gravity of the challenge	Evolution and prospects	Policy response
	Unsustainable trends, vulnerabilities and associated risks		
Private debt	Sweden continues to have a high level of private debt, at 217% GDP in 2022. Debt of non-financial corporations (NFCs) stood at 129% GDP and household debt at 88% GDP, both well above prudential and fundamental-based benchmarks indicating that strong deleveraging needs remain. Private real estate-related debt is a particular concern. While household debt stood at 181% of gross disposable income in 2022, including debt owned by tenant-owner associations adds 20 pps to the debt-to-income ratio. Households have good repayment ability and liabilities are on average more than offset by assets but the distribution of debt and assets across age groups is uneven and many household assets are exposed to liquidity and/or market risks. Non-financial corporate debt is high, but matched by a high value of corporate assets and significant equity cushions. Exposure to external financing in market debt instruments is high. Commercial real estate companies are a cause for concern as they are the largest exposure by industry group of Swedish banks. Banks rely on wholesale funding and are well-capitalised, with high profitability and non-performing loans among the lowest in the EU. Bank lending to households, CREs and tenant-owner associations represent 2/3 of all lending.	Private debt grew by 2 ½ percentage points in 2022. Bank lending to the non-financial private sector increased by 8.2% yoy 2022, up from 4.6% yoy in 2021. Lending to the private sector was still above historical average in January 2023. Whereas lending to households is slowing, lending to non-financial corporations is registering high growth. Interest payments are increasing after having been low over an extended period of time. The Riksbank projects after-tax interest payment to increase to 6 % of income by 2025. After-tax interest payments were some 2 ½ % of disposable income in 2021. Commercial real estate companies have found it increasingly hard to access market financing and are switching to bank lending. Further increases in yield requirements and funding costs can put between 20 % and 35 % of CRE debt at risk. Banks' profitability has increasingly depended on increasing loan volume as the gross margins (interest and service charges) has declined. Lower turnover in the housing market is reflected in lower new mortgages. Bond markets have become less liquid which complicates market pricing of risks.	On 22 June 2022, the FSA announced that the countercyclical capital buffer will be raised as from June 2023 to 2%, which it deems is its neutral level. Policy gaps remain regarding the incentives to take on mortgage debt. There have been no changes to mortgage interest payments deductibility or recurrent property taxation. The amortization requirement's calculations of relevant LTV and LTI ratios does not include debt owned by tenant-owner assocations. An inquiry on new statistics on individual household assets and liabilities has been launched. If established, this database can provide better insights into risks at individual household level. Through expanding analyses of the CRE companies' financial situation, policy makers are increasingly aware of the risks. Beyond an increase in the CCyB to the neutral level in June 2023 and a 2020 increase in capital requirements by the FSA, no significant policy action is yet designed. The Riksbank has entered into a quantitative tightening cycle with an active reduction in its government bond holdings and a passive reduction in other bond holdings (mostly covered bonds).
Housing market	House price growth went into reverse in 2022 following an almost uninterrupted increase since the second half of the 1990s. During the pandemic house prices had actually increased faster than on average in the preceding decade. Swedish house prices appear to be overvalued by 29%. High house prices are driven predominantly by a combination of bottlenecks to housing supply, especially in the main urban areas, combined with a favourable tax treatment of homeownership and mortgage debt, as well as a malfunctioning rental market. Overvalued house prices combined with a large mortgage debt entail risk of disorderly unwinding with adverse consequences for the real economy and, potentially, the banking sector.	House prices peaked in the first half of 2022 and then started to decline. Further price declines are expected in 2023 as fundamentals like income and interest put house prices under pressure.	The authorities have taken limited measures and have not addressed the main policy factors driving debt-financed housing acquisition: a malfunctioning rental market offering no alternative to the to-buy market, mortgage interest deductibility and low recurrent property taxation. Several inquiries have been launched including one on a database with individual household data of debt and assets. Such a database would help to understand the individual risk to household's balance sheets and inform policy design. The government has relaxed permitting procedures through the introduction of a certified construction project company that can lower demands on construction from the municipal planning process (31 December 2022) and through the private right of initiative (31 December 2021).

Source: European Commission

policy measures on different groups. This database should include the debt owed by tenant-owners indirectly through the tenant-owner associations. The impact of interest changes could have been reduced if penalty fees for lengthening interest fixation periods had been lower – doing so now, at the time of interest increases, would be a policy investment for the future. Borrower-based measures could be strengthened to reduce the debt service burden on households, by strengthening the amortization requirement and including the debt of tenant-owner associations in the LTV ratio.

Based on this assessment, the Commission considered in its communication European Semester – 2023 Spring Package (COM(2023) 600 final) that Sweden continues to experience imbalances.