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2023 Country Report - Slovakia

Accompanying the document

Recommendation for a COUNCIL RECOMMENDATION

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

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European Commission

Slovakia

2023 Country Report

ECONOMIC AND EMPLOYMENT SNAPSHOT

A global slowdown and structural challenges undermine growth prospects

The highly open Slovak economy is back to the pre-pandemic level in terms of gross domestic product, but prospects for 2023 are moderate. Slovakia is among the countries with the highest share of exporting firms. Its manufacturing sector is its growth engine which renders it vulnerable to external shocks due to its high level of integration in global value chains. Moreover, due to higher prices of commodities and fast growth of unit labour costs, Slovakia's cost competitiveness has declined. Likewise, fast-growing household debt associated with elevated house prices contribute to macroeconomic vulnerabilities in Slovakia (see also chapter 3 *Curbing house price growth and household debt*) ([1]). Inflation is expected to peak during early 2023 and reach the annual level of 10.9% in 2023. Food prices are expected to continue driving inflation in 2023 but non-energy inflation is projected to be persistent overall, affected by higher costs of inputs and labour amid tight labour supply. The growth of the unit labour costs might remain more persistent. Slovakia's current account balance declined sharply in 2022, just like in most other EU countries, due primarily to high energy prices and supply-chain disruptions in the export industries. The Slovak current account balance is forecast to strengthen but to remain in a non-negligible deficit. These vulnerabilities are assessed in the In-Depth Review for Slovakia. ([2])

Slovakia has slowed down in its efforts to catch up with the EU average, although further growth opportunities exist in the green and digital economy. In the last decade, Slovakia has fallen behind substantially in its attempts to catch up the EU average on labour productivity and stands at 74% (measured in PPS per employee for 2021), unlike the direct peers (see Annex 12). The country's export-driven growth model, based on low labour costs in industrial production, faces challenges as its significant car manufacturing sector faces structural change in automation, continued component shortages and the transformation towards electromobility. This underscores the need to speed up preparations for the green and digital transition.

Several challenges still need to be overcome by Slovakia if it is to benefit from the full potential of the green and digital transition. Mismatches between current skillsets of the labour force and future labour market needs are high. Research and innovation (R&I) spending remains relatively low (see Annex 11). Amid high energy intensity, the green transition lacks sufficient investment in energy efficiency, renewable energy, and the

([1]) For more information see Thematic Notes to Support In-Depth Reviews on Housing Market Developments, External Sustainability Analysis and Inflation Differentials in Europe and Implications for Competitiveness

([2]) European Commission (2023), In-Depth Review for Slovakia, Commission staff working document (COM(2023) 643 final).

circular economy. Therefore, raising long-term productivity growth and industrial competitiveness requires shifting to a more diversified and environmentally sustainable economy. To do so, Slovakia should speed up its industrial transition towards net-zero emissions and increase investments in production capacities for clean technologies and the reskilling and upskilling of its workforce in green and digital technologies, as laid out in the EU's Green Deal industrial plan and the Net Zero Industry Act.

Slovakia's labour market has seen a recovery from the pandemic, but employability and labour force participation remain structural challenges, especially in some regions. The capital region is more productive, innovative, and has better job prospects. By contrast, unemployment rates are particularly high in the eastern part of the country. The lack of employment opportunities in these regions, as well as the overall lack of early childhood education and care places for children aged less than 3 years continue to pose challenges to increasing the number of women working or looking for work and overcoming the gender pay gap. Bogus self-employment remains a serious challenge in Slovakia. According to Eurostat, the percentage of self-employed persons with only one client or a dominant client (31.9%) is among the highest in the EU. Youth unemployment was 20.6% in 2021, above the EU average (16.6%). The displaced persons from Ukraine, as well as many Roma people, face challenges in accessing essential services and inclusion in mainstream education, as well as access to affordable housing in the very tight housing market. This hinders their participation on the labour market (Annex 14). Addressing these challenges is crucial for increasing labour market participation and for implementing the European Pillar of Social Rights and reaching the 2030 EU headline targets. In addition to the support from the Recovery and Resilience Facility (see next chapter), Slovakia benefits from a significant amount of EU cohesion funds, which help to overcome regional disparities by fostering regional convergence through investments, in for example, the green and digital transition. However, Slovakia faces challenges in absorbing a significant amount of funds from the 2014-2020 programming period while launching in parallel the new 2021-2027 programming period with the overall allocation of EUR 16 billion (EU contribution and national funding).

Slovakia is progressing towards reaching the UN Sustainable Development Goals (SDGs), but more effort is required in some areas. Slovakia has advanced on SDGs related to environmental sustainability. However, it needs to improve in the provision of and access to affordable and clean energy (SDG 7). Moreover, it remains well below the EU average for SDG 12 (Responsible production and consumption) and SDG 13 (Climate action). Slovak cities and local communities top the EU charts for their sustainability and environmental quality of life (SDG 11). The country's performance on SDGs on fairness has been improving but has been making slower progress on the goals on education, health and gender balance (SDGs 3, 4 and 5) and the country remains below the EU average. It also remains below the EU average for most of the indicators on productivity and macroeconomic stability (SDGs 4, 8, 9 and 16; see Annex 1).

Public finances face sustainability challenges

After the COVID-19 crisis, fiscal policy focused on cushioning the impact of

high inflation and energy prices in 2022. The general government deficit decreased from 5.4% of GDP in 2021 to 2.0% in 2022. Budgetary revenues benefited from the inflationary spike, increasing from 39.4% of GDP in 2020 to 40.2% in 2022. The new measures introduced to lessen the impact of high energy prices had been shifted from 2022 to 2023. Total spending decreased from 44.8% of GDP in 2020 to 42.3% in 2022. The government budget deficit is expected to increase to 6.1% of GDP in 2023, mostly on the back of measures introduced to mitigate the impacts of high energy prices, but also due to decreasing VAT rates in some food and leisure sectors, the family package including a tax bonus and increased child allowances, introducing a parental bonus under the pension reform, as well as re-introducing free lunches for pupils. In 2024, the government budget deficit is expected to narrow to 4.8% of GDP.

The general government debt will again increase on the forecast horizon. After an increase to an all-time high of 61.0% in 2021, the government debt-to-GDP ratio declined to 57.8% in 2022 and is set to increase to 58.3% in 2023 and to 58.7% in 2024.

Spending reviews contribute to fiscal sustainability of public expenditures. The purpose of the review is to identify appropriate saving measures by reconsidering expenditure priorities to upcoming social and environmental needs. Possible legislative changes limiting the scope of expenditure reviews could pose a risk to the sustainability of public finances.

The ageing population poses challenges to the long-term sustainability of public finances. ([3]) Slovakia faces high medium- and long-term fiscal sustainability risks (see Annex 21). Ageing is the biggest challenge as it leads to higher spending on pensions, and to a lesser extent healthcare and long-term care. According to the Commission's 2021 Ageing Report, the old-age dependency ratio (the ratio of people over 65 to people of working age, i.e. 20-64 years old) is expected to almost triple from 2019 to 2060, as life expectancy increases. Pension expenses are estimated to increase from 8.3% of GDP in 2019 to 13.4% in 2050, one of the largest increases in the EU.

Economic and social consequences of Russia's invasion of Ukraine

The effects of Russia's military aggression against Ukraine constrained economic growth in Slovakia. The recovery of industrial exports slowed down due to increased energy prices and lower growth in Slovakia's main export markets, amid an overall weakening of global demand. Energy prices in Slovakia increased by 18.8% in 2022, one of the lowest increases recorded among the EU Member States. Despite an increase in nominal compensation of about 7.7%, real wages (and real minimum wages) fell in 2022 because of elevated inflation.

The inflow of Ukrainian workers may help strengthen Slovakia's workforce across the skills spectrum. An analysis by the Ministry of Labour, Social and Family Affairs ([4]) confirmed that Slovakia has a

([3]) The assessment of the fiscal sustainability risks for Slovakia over the short, medium and long term follows the same multi-dimensional approach as in the European Commission's 2022 Debt Sustainability Monitor, updated based on the Commission's 2023 spring forecast. The analysis further relies on ageing costs from the 2021 Ageing Report. Hence, the recently adopted pension reform has not been taken into account.

([4]) https://www.upsvr.gov.sk/statistiky/nezamestnanost-mesacne-statistiky.html?page_id=1254

Box 1:

Box on energy policy response in Slovakia

Slovakia adopted various support measures to cushion the impact of energy price driven inflation on households and businesses. For 2023, their gross budgetary costs are projected in the Commission 2023 spring forecast to amount to 2.0 % of GDP. ([5]) Most measures preserve the price signal, although they do not target the most vulnerable households.

To mitigate the social impacts of energy inflation, energy prices have been capped for **companies and businesses** at EUR 199 per MWh for electricity and EUR 99 per MWh for natural gas. The State reimburses 100% of what is above the cap for small companies regulated by the national regulator (ÚRSO) and 80% of what is above the caps for unregulated companies. This state support is limited to a maximum monthly subsidy per company of EUR 200 000. In 2023, **households** will have a guaranteed final price of electricity at the level of 2022, the final price of gas increased by 15% compared to 2022. The limit for the price of heat supply in 2023 cannot exceed the single-component value of the maximum price of heat last approved or determined by ÚRSO for 2022 by more than 20 euros, up to a maximum of 199 euros per MWh. Price caps have also been introduced for **energy producers**, which will be taxed at 90% if the caps exceed: EUR 100 per MWh for garbage plants; EUR 120 for solar power plants; EUR 180 for nuclear, wind, hydro, geothermal power plants; EUR 230 for lignite-fired power plants; and EUR 240 for biomass and biogas power plants.

Slovakia applies the EU solidarity contribution in application of Council Regulation (EU) 2022/1854 ([6]), for the 2022 fiscal year at a rate of 55%. Such excess profit is expected to be gained by the oil refinery Slovnaft a.s., with additional tax revenue estimated at about EUR 412 million in 2022 and EUR 209 million in 2023.

Gas is a sizeable component in Slovakia's energy mix. The country has taken action to improve its overall security of energy supply to decrease its reliance on fossil fuels. More specifically, Slovakia has introduced measures to update the electricity load-shedding rules, involving the reassessment of the consumption reductions for individual customers in the load-shedding plan. Slovakia also decided to secure minimum gas supplies for electricity production: the national Transmission System Operator is tasked with preparing a list of critical subjects in the electricity sector, which includes ensuring the necessary gas volumes are delivered, as well as the volumes needed for storage.

high number of job vacancies (81 000 in January 2023, with about 35% concentrated in the Bratislava region). It further shows that around 32 000 vacancies do not require specific skills and are suitable for workers with language barriers, including people from Ukraine.

(5) For 2022, gross budgetary costs of measures amounted to 0.2% of GDP. Some of the measures outlined in this box were already in place in 2022.

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

THE RECOVERY AND RESILIENCE PLAN IS UNDERWAY

Slovakia's recovery and resilience plan (RRP) aims to address the key challenges related to the green transition, education, research and innovation, health and long-term care, public administration and the digital transition. It consists of 58 reforms and 58 investments that are supported by EUR 6 billion in grants, representing 6.1% of GDP (see Annex 3 for more details).

The implementation of Slovakia's recovery and resilience plan has so far been well underway, however it is facing some challenges going forward. During the year 2022, Slovakia submitted two payment requests. On 29 July 2022, the Commission disbursed EUR 398.7 million of grants to Slovakia, based on the country's satisfactory achievement of the first 14 milestones of the RRP. On 22 March 2023, the Commission disbursed another EUR 708.8 million of grants, after Slovakia satisfactorily achieved 14 milestones and 2 targets. As a result, Slovakia has been among the Member States with the fastest progress in the implementation of the recovery and resilience plan, but potential headwinds due to administrative capacity bottlenecks, together with the need to start working on additional measures of the REPowerEU chapter submitted by Slovakia as part of its plan revision on 26 April 2023, call for strengthened focus on implementation. Slovakia's request to modify its plan due to high inflation experienced in 2022, and a decrease by €0.2 billion in the national funds earmarked for financing the plan. The request also reflects the downward revision of Slovakia's maximum RRF grant allocation (from €6.3 to €6 billion). In the REPowerEU chapter Slovakia proposes six new reforms and eight new investments which include considerable reforms in support of renewable energy sources, including geothermal energy and the hydrogen sector, transformative investments in the electricity grid and energy efficiency, as well as in support for transport sector, households at risk of energy poverty and green skills.

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.

The national authorities have adopted several measures that help create the conditions for advancing its green transition. A significant share of the plan is focused on meeting the green and climate objectives. With two components dedicated to industry decarbonisation and climate adaptation, Slovakia's RRP strikes a balance between reforms and investments aimed at climate adaptation and mitigation and sets a promising blueprint to facilitate the green transition from an economic model that is heavily industrialised and carbon-intensive towards one that is more diversified and sustainable. Slovakia passed several reforms that laid the legal groundwork for creating new cycling lanes and expanding rail work infrastructure, therefore contributing to Slovakia's modal shift towards more sustainable means of transportation. The government also passed a reform increasing technical capacity for electricity transmission, which should enable new

renewable energy sources to be connected to the grid and stimulate cross-border energy cooperation with Hungary. Furthermore, Slovakia implemented a measure on modernisation and strengthening of the capacities of police forces, which involved creating a specialised unit for detecting and investigating environmental crimes and unauthorised manipulation with hazardous and toxic materials. Slovakia launched one of the flagship investments of its climate adaptation component, a call for pilot projects to revitalise the Muránska Planina and Polonina national parks and as such promote soft tourism that aims to limit its impact on the environment and sustainable employment opportunities in these regions. The government also improved the system for managing construction and demolition waste, putting in place legal obligations to ensure that at least 70% of non-hazardous construction and demolition waste is recovered. Furthermore, Slovakia passed a reform of the public procurement act which, among other things, solidifies green rules for public procurement.

Slovakia has implemented several education reforms and investments in its education institutions. Slovakia consistently scores below the EU average on key education indicators, and on the quality and inclusiveness, of its education system. The country has repeatedly been subject to country-specific recommendations in this area over the years. To address these challenges, Slovakia reformed the governance structure of its universities and adopted a strategy on their internationalisation. The government also passed a reform aimed at stimulating the research capacity of Slovak universities by setting up partnerships between institutions of higher learning and by sharing their research infrastructure. Furthermore, to strengthen the coordination of R&I policies, the adopted R&I reform creates a new governance structure at the Government Office with a key role for the Governance Council for RDI and improves evaluation processes. The reform of the Slovak Academy of Science will allow the institution to pursue joint projects and research with the private sector and receive private funding. Moreover, Slovakia developed a manual on how to remove physical, technological and informational barriers in schools and make them more accessible for pupils with disabilities. This know-how will be crucial when completing the ensuing investment in removing physical barriers in 252 secondary schools by the second quarter of 2025. The education and skills measures of the Slovak plan are not only targeting young people, but they also allocate significant resources to providing older people with digital skills and equipment.

As the Slovak healthcare sector struggled during the COVID-19 pandemic, reforming the healthcare system became one of the main priorities of the RRP. Slovakia passed a reform on optimising the hospital network and a reform on preparing health investment projects, which will introduce more systematic planning of investments in the healthcare sector (including new hospitals funded as part of the RRP). A new law on establishing the network of general care providers and on introducing zoning was also passed, which should trace the regional disparities in the provision of medical care across the country. Slovakia also introduced a reform consolidating the system for supervising social care, which is fragmented across various regional and national authorities, resulting in an uneven provision of social care.

In the area of public administration, there are important reform and investment measures throughout the RRP. This includes i) strengthening the

administrative capacity both at local and at national level, ii) adopting the Recovery and Resilience Act, iii) establishing the National Implementation and Coordination Authority, iv) setting up a repository system, and v) providing the legal basis for the audit system. Slovakia already implemented key reforms to simplify and speed up public procurement procedures, while ensuring proper safeguards, and to further increase professionalisation by strengthening the capacity of the Public Procurement Office. The government adopted a significant reform reorganising the judicial court map, which is expected to, once operational, ensure that the justice system is more effective, and improve the integrity of the judiciary. Slovakia also took important measures in the fight against corruption and money laundering. Besides organisational changes in the police force to increase the capacity to detect and fight against new forms of crime and corruption, important legislation was adopted to improve the police's authority and capacity to verify the origin of assets, operationalise the office for managing seized assets and a Central Accounts Register, and generally to increase the possibilities for the freezing of assets. Slovakia is also implementing a reform in public investment management, aiming at increasing the economic value and higher return on investment of new projects, with main focus on improved prioritisation, planning and ex ante economic evaluations.

Slovakia has taken several important initial steps towards increasing digitalisation in the public sector, the economy and society. In December 2021, the authorities adopted the 'National Concept for Informatisation of Public Administration' for 2021-2030. This establishes a strategic framework setting out four priority axes that are aligned with the e-government and cybersecurity measures included in the RRP. Moreover, a support scheme has been launched for companies, including SMEs, research institutes, public bodies and other beneficiaries for research, development and application of advanced digital technologies. The scheme will serve as a basis for launching demand calls for support to a wide range of projects in the field of digital technologies. Furthermore, to counter the risk of older and disadvantaged people being left behind in the digital transition, the authorities completed a pilot project for improving their digital skills, which involved a sample of 1000 people. This was achieved through a combination of training in digital skills and providing tablets and internet connections. The pilot project is being followed up in 2023 and beyond through the roll-out of a large-scale programme based on the experience gathered from the pilot stage.

Box 2:

List of key deliverables under the RRP in 2023-2024

- Package of measures to promote alternative propulsions in transport
- Land planning reform
- Reform of pre-primary education
- New curriculum for primary and lower-secondary education
- Introduction of performance contracts in higher education
- Launch of several calls for support for research and innovation
- Reform of emergency healthcare
- Operationalisation of the newly reorganised court network
- Increased infrastructure and capacity to help in the fight against money laundering
- Investment plan for e-government solutions
- Creation of a single electronic platform for public procurement processes
- Package of reforms to reduce administrative burden for businesses

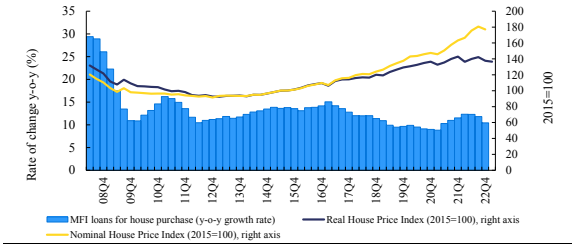
FURTHER PRIORITIES AHEAD

Beyond those tackled in the RRP, Slovakia faces further challenges. These are related in particular to dealing with the overheated housing market, improving administrative efficiency, boosting green and digital skills, strengthening social inclusion, reducing regional disparities and supporting the phasing-out of fossil fuels. Addressing these challenges will also help Slovakia make further progress in achieving the SDGs where currently there is room for further improvement.

Curbing house price growth and household debt

Household debt has been growing strongly, especially for households, whose debt almost doubled over the last decade. The challenging macroeconomic situation has led to a number of vulnerabilities emerging that are assessed in the In-depth Review for Slovakia ([7]). Household debt has been growing due to low interest rates in the years 2012-2021 and favourable macroeconomic developments before the pandemic. Despite adequate macroprudential measures, household borrowing remained strong even during the pandemic thanks to government support schemes (see Graph 3.1). However, the gradual increasing costs of borrowing and the decline in purchasing power will likely weaken demand for mortgages.

Graph 3.1: **House price (2015 = 100) and mortgage growth**



MFI – monetary financial institution
Nominal and real house price index (2015=100) and year-on-year change in loans (outstanding amounts at the end of the period or stocks) for house purchase granted by MFIs
Source: Eurostat, ECB (BSI)

Housing supply lags behind the strong demand, which worsens the availability of housing and results in housing prices rising (see Graph 3.1)**.** System of the state supported rental housing was supposed to address the shortage of housing, but no major progress has yet been made. The time for getting a building permit is one of the longest in the high-income OECD countries. However, this is expected to improve thanks to two newly approved construction laws that aim to reduce the administrative burden in construction procedures. A reform of the rental market could further help reduce the pressure on property prices in some regions and improve workers' ability to move around for employment.

A reform of property taxation could also play a role in tempering the house price dynamics. The recurrent property tax is relatively low (0.5% of GDP vs 1.1% in the EU, see Annex 19). Slovakia uses area-based property taxation, which is common in some central and eastern European countries (e.g. Czechia, Poland), but

([7]) European Commission (2023), In-Depth Review for Slovakia, Commission staff working document (COM(2023) 643 final).

exceptional among OECD countries. A market-based property tax could be considered to increase tax revenue and dampen the growth in property prices.

Improving the business environment, administrative capacity and the justice system

Increasing the ability and capacity of Slovakia's public administration to invest and implement reforms remains a challenge. The effectiveness of Slovakia's public administration continues to rank below the EU-27 average (see Annex 13). Slovakia's absorption capacity of EU funds is among the lowest in the EU, which undermines the country's ability to capitalise on the green and digital transitions. Strong measures are needed to improve the inefficient management of funding and insufficient capacity of line ministries to launch and implement calls under various funding sources (see Annexes 4 and 13). The fragmented system of local government and insufficient coordination between various levels of government continues to create bottlenecks in implementing investment projects and important policies. Slovakia also scores below the EU average on various e-government indicators as well as on government transparency and oversight institutions. While important reforms under the RRP are expected to improve the effectiveness of the justice system, some concerns remain over the cooperation of law enforcement bodies and the objectivity of prosecutorial decisions, linked in particular to the Prosecutor-General's use of discretionary powers in high-level corruption investigations.

Digital processes can be further streamlined and new opportunities to digitalise exploited, especially in the area of the tax system and tax compliance. Despite some simplifications to the tax registration system for new companies, the digitalisation of tax administration is progressing slowly. Electronic invoicing and pre-filled tax returns are overdue, affecting the tax collection capacity. The VAT compliance gap continued its downward trend, decreasing from 15% in 2019 to 13.9% in 2020, but remains above the EU average of 9.1%.

Although the business environment is improving, addressing the remaining challenges is crucial for Slovakia so it can increase its competitiveness and boost investment and innovation. Despite implementing reforms under the RRP in the area of public procurement to simplify and speed up procedures and improve the control mechanism, the use of quality and lifecycle cost criteria remains limited (see Annex 12). Although the RRP includes relevant measures to address Slovakia's innovation performance, for which various indicators score below the EU average, further measures are needed to sustain public R&D funding and improve the entire innovation landscape (see Annex 11). Slovakia has made some progress in reducing the administrative burden for businesses, but professional services (e.g. tax advisers, architects, civil engineers, lawyers, patent agents and tourist guides) remain highly regulated (see Annex 12).

There is scope to limit late payment problems and improve access to finance. Late payments continue to be a serious structural issue, affecting the liquidity of SMEs. This is noticeably the case in the health sector, with an average payment time of 232 days (four times the exceptional period of 60 days as set out in the Late Payment Directive). Furthermore, less productive, and indebted firms have

been affected by the various crises in recent years with the number of bankruptcy declarations significantly exceeding the EU average and business registrations slightly below the EU average in 2022. Access to finance is still underdeveloped with both the loan index and the equity index ranking below the EU average (see Annex 12).

Promoting green and digital skills to foster labour market productivity

Addressing skills mismatches and making further investments in adult learning can help Slovakia's labour productivity catch up with the EU average. In 2021, Slovakia's labour productivity stood at 74% of the EU average, lower than the level observed in preceding years ([8]). Moreover, the Education and Training Monitor 2022 highlights that Slovakia has a skill mismatch rate of 35%, one of the highest among OECD countries, which is particularly evident in key sectors essential to the country's future development. In 2020, 12.4% of employers reported that the unavailability of personnel with the appropriate skills is a major obstacle to achieving climate-related goals, such as lessening the impacts of weather events and reducing emissions, while 33.28% considered it a minor obstacle ([9]).

Including green and digital skills training in adult learning will be crucial to address the labour market needs and boost productivity. For instance, to keep up with the growth in the automotive sector, industry workers need to acquire more advanced technical skills. The shift towards clean vehicles is projected to significantly affect the occupational and skills profile of the sector, with over half of the total job openings forecast to require high-level qualifications by 2025 ([10]). So far Slovakia has carried out limited actions to address the need for upskilling, reskilling and adult learning in this area. In 2019, the Ministry of Environment adopted a 'strategy for the environmental policy of the Slovak Republic until 2030' which envisaged education and training for sustainable development, but no implementation has been observed. The recently adopted 'Programme Slovakia' allocated EUR 72 million from the EU cohesion policy funds to green skills but the details of the planned measures are still undetermined. For now, there is a lack of mapping and forecasting of the need for green skills across sectors and occupations that would enable the appropriate policy interventions to be shaped. According to the European Innovation Scoreboard of 2022, lifelong learning in Slovakia is well below the EU average ([11]). Furthermore, the country is also below the EU average for above-basic overall digital skills. This situation presents significant challenges, as individuals without digital knowledge face greater difficulties in finding jobs. In December 2022, Slovakia adopted a digital skills strategy and an action plan setting out the main priority areas for action in the coming years to improve digital literacy in all segments of the population.

([8]) Labour productivity per person employed and hour worked, EUROSTAT

([9]) EIBIS Survey, 2020.

([10]) Blueprint for sectoral cooperation on skills - Responding to skills mismatches at sectoral level

([11]) European Innovation Scoreboard, 2022

Addressing poverty, social exclusion and regional disparities

Soaring energy and food prices have exacerbated the already challenging situation for low-income families. The share of persons at risk of poverty or social exclusion increased to 15.6% in 2021 ([12]). The electricity and natural gas price caps, which were introduced along with other support measures at the end of 2022, mitigated the effect of inflation on energy poverty. Yet, the poverty rate is expected to increase further due to the rising cost of living and the limited minimum income support. Moreover, as Table A17.1 shows, the intensity of poverty and social exclusion differs across regions. This coexists with a range of other socio-economic problems characterised by strong regional disparities which contribute to the social fragmentation of the country, such as unemployment and greenhouse gas emissions, insufficient water and waste infrastructure, as well as the lack of digital connectivity (Annex 10) and the shortage of schoolteachers (Annex 15).

Social challenges are most predominant in Roma communities and a significant share of Roma continue to be marginalised. The 2021 Roma Survey shows that 45% of Roma in Slovakia felt discriminated against when looking for a job, that 28% live in homes without access to tap water, and that 48% live in severe material deprivation ([13]). Slovakia acknowledges the issue and the need to foster the inclusion of Roma people in all spheres of life. The EU is helping Slovakia to advance on systemic solutions for Roma inclusion, including through the RRF and EU cohesion policy funds. Still, challenges persist as regards access to basic services, inclusion in mainstream education, enhancing social mobility, ensuring that Roma people benefit from labour market policies including those focusing on upskilling and reskilling, and increasing the number of Roma who hold influential positions at public and private institutions ([14]).

The healthcare system is underfunded and experiences inefficiencies, among which a geographically uneven distribution of primary care providers. Public spending on prevention programmes is among the lowest in the EU while the number of outpatient consultations with specialists (Annex 16) and hospitals admissions are among the highest ([15]). The weak position of primary care in part reflects the low number of general practitioners and paediatricians, as well as their uneven distribution across country. The assessment made by the Ministry of Heath, in order to establish the network of general outpatient care providers, shows that as of 1 January 2022 66 out of 71 districts did not have a sufficient number of general practitioners and that the situation is more serious in the western part of Slovakia. Some 58 districts have a shortage of paediatricians ([16]).

([12]) Eurostat, People at risk of poverty or social exclusion (TIPSLC10)

([13]) European Union Agency for Fundamental Rights (2022), Roma in 10 European Countries - Main results.

([14]) European Commission SWD (2023), Assessment report of the Member States' national Roma strategic frameworks.

([15]) OECD/European Commission: State of Health in the EU · Slovakia · Country Health Profile 2021.

([16]) Results of the assessment of the state of the public minimum network of general outpatient care providers and classification of districts as of 1 January 2022 https://www.health.gov.sk/?vseobecna-ambulantna-starostlivost

Advancing the green transition and boosting resource efficiency

Slovakia remains a structurally energy-intensive economy with a high dependency on fossil fuel imports. The primary energy intensity remains high for Slovakia at around 80% above the EU average in 2020 ([17]). Its final energy consumption increased by 13.5% between 2015 and 2021. The progress made in reducing net greenhouse gas emissions has largely stalled in recent years (see Annex 6). After the conclusion of the negotiations for a revision of the Energy Efficiency Directive, 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.

Slovakia was able to diversify its import away from Russia mainly the natural gas imports, but gas saving measures have not been sufficiently deployed ([18])**.** Since summer 2022, the share of imports of natural gas from Russia fell from 85% to currently about 50%, which remains nonetheless significant ([19]). Slovakia's electricity networks remain very well interconnected with its neighbours (see Annex 7). The *Slovenské elektrárne* utility continues efforts to diversify the nuclear fuel supplies, 100% of which is currently imported from Russia ([20]). Slovakia is one of the three countries in the EU not to have achieved the 15% gas demand reduction target. Its natural gas consumption decreased by 1% between August 2022 and March 2023, compared to the 18% of gas demand reduction over the same period at EU-27 level. Due to its high reliance on imported coal and natural gas, the district heating sector has a great potential for investments into decarbonisation. Finally, while energy prices have decreased, uncertainty remains regarding next winter, which requires continued efforts to structurally reduce gas demand. Reducing Slovakia's reliance on fossil fuels is an essential part of ensuring security of supply.

More ambitious EU targets under the 'Fit for 55' and REPowerEU plan underline the urgency for Slovakia to speed up the green transition. The cumulative installed capacity of solar and wind energy was around 7% ([21]) of total installed capacity in 2022, which is the second lowest in the EU. While Slovakia surpassed its 14% renewable energy target for 2020, largely thanks to contributions from solid biomass, an increased level of ambition in renewables would be warranted in the context of the Fit for 55 Package, where the 2030 target would amount to 32%. As a basic planning tool, updated Slovak national energy and climate plan (NECP) should, among other things introduce an increased renewable energy target and a development plan for renewables.

There is potential for further reforms to facilitate the investments into renewable energy sources, despite important

([17]) EU energy in figures, 2022, page 124.

([18]) In 2020, natural gas accounted for 25% of Slovakia´s gross inland consumption. Oil and petroleum products accounted for 22%, nuclear energy for 24%, solid fossil fuels for 14% and renewables and biofuels for 13% (EU Energy in figures 2022, p. 230).

([19]) A new natural gas cross-border interconnector between Slovakia and Poland opened in late 2022, which allows for a significant capacity (5.7 bcm/year) for supplies from Norway and the Baltic Sea terminals. The state-owned SPP utility contracted a number of LNG shipments through terminals in Croatia in 2022 (with imports ensured via a pipeline through Croatia and Hungary). The oil shipped from Adriatic Sea terminals also partly provided an alternative to the Druzhba pipeline imports from Russia.

([20]) Slovakia met gas storage obligations last winter, reaching 91.29% by 1 November 2022 (above the EU legal obligation of 80%).

([21]) EU Energy in Figures (2022). Page. 100.

legislation adopted in 2022. While the RRF reforms have led to a significant increase in the available capacity for connecting renewables to the grid (by up to 1100 MW in early 2023), only a small share of the free capacity has been used to connect new renewable installations. In particular, permitting procedures need to be accelerated, e.g. by simplifying and digitalising the Environmental Impact Assessment (EIA), integrating the EIA and construction permitting into a single procedure, and setting up renewables acceleration areas. The update EIA legislation, which is planned by the Ministry of Environment in 2023, could simplify processes for certain aspects of the renewables permitting procedures. Further measures are needed to increase the uptake of energy communities in Slovakia. Furthermore, the deployment of renewable solutions such as heat pumps, geothermal energy and biomethane could lower the carbon footprint of the heating sector. Around 35% of citizens are are connected to the district heating system, which mainly uses gas.

More investments to increase the flexibility of the Slovak electricity network could help accommodating the expected increase in the volume of intermittent renewables. Investment decisions could be facilitated by more transparent information on releasing the new capacities for connection to the grid. An updated reservation mechanism for connecting new renewable to the grid could further incentivise the use of booked capacities through fees and time limits. Lower grid connection fees (including the 'G-charge') would accelerate new investments into renewables.

As regards the renovation of buildings, further measures would help address energy poverty and accelerate a deep renovation of public property. The RRP green renovation scheme adopted in mid-2022 is incentivising deep renovation and provides the opportunity for households to reduce their energy demand. However, its successful implementation depends on further simplification, assistance and further measures targeting energy poverty and disadvantaged groups. In contrast, energy efficiency improvements in public and private non-residential buildings have lagged behind and could be accelerated by adjusting renovation schemes and tapping more into the private funding. As the effective use of funding requires prioritisation of the worst performing public buildings, energy data on public buildings are still missing. Systemic data collection and a gradual roll-out of energy efficiency passports for buildings would help in the planning of targeted investments.

Taxation and legislative measures to curb the continued rise in transport-related greenhouse gas and pollutant emissions appear insufficient. The share of transport taxation as well as the resource and pollution charges in total tax revenues (0.58% and 0.07% respectively) are well below the EU-27 average (1% and 0.19% respectively, see more information in Annex 19). The registration tax for low-emission cars has recently been reduced, but the current tax regime does not sufficiently encourage people to purchase low and zero-emission vehicles. Moreover, an indexation of environmental charges would promote sustainable tax revenues and address negative environmental externalities.

Slovakia appears to be particularly vulnerable to floods in and wildfires. Between 1980 and 2020, only around 4% of disaster losses were insured in SK. The current protection gap for wildfires suggests that the insurance coverage remains low compared to projected risk,

and this could result in losses to be covered by the public sector, thereby potentially posing a risk to public finances.

KEY FINDINGS

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

- improving the availability of early childhood education and care; increasing the quality, inclusiveness and digitalisation of schools; improving governance, quality and relevance of higher education; and pursuing desegregation of Roma pupils throughout the education system;
- making investments into building renovation, modernisation of railways, decarbonisation of industry, deploying renewable energy sources, strengthening nature and biodiversity protection and boosting the circular economy;
- digitalising the public and private sector and reforming R&I governance as well as funding;
- introducing reforms to improve the efficiency of the public administration and the effectiveness of the judicial system in line with European standards;
- improving the resilience and cost-effectiveness of the healthcare system and the optimisation of the healthcare network.

Slovakia should maintain the momentum in the steady implementation of the recovery and resilience plan and swiftly finalise the addendum, including the REPowerEU chapter, with a view to rapidly initiating its implementation.

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

- reforming property taxation and increasing the supply of affordable housing to reduce concerns about the housing market and household indebtedness;
- strengthening the capacity of the public administration to deliver the reforms and investments and to continue to strengthen the tax compliance and digitisation of tax administration;
- supporting competitiveness and growth of labour productivity by addressing skills mismatches and investing in green and digital skills;
- enhancing social inclusion, in particular of Roma people, by addressing regional disparities in the access to social services and essential infrastructure, and inclusion in education;
- reducing fossil fuel dependence through reforms and investments that enable the uptake of renewable energy, including those that augment grid capacity, and lead to energy savings and energy efficiency, as well as continue to diversify energy imports, especially gas, away from Russia while ensuring security of supply;
- expanding the share of revenue from environmental taxation in total tax revenue, especially in the area of transport-related greenhouse gas and pollutant emissions.

ANNEXES

LIST OF ANNEXES

LIST OF TABLES

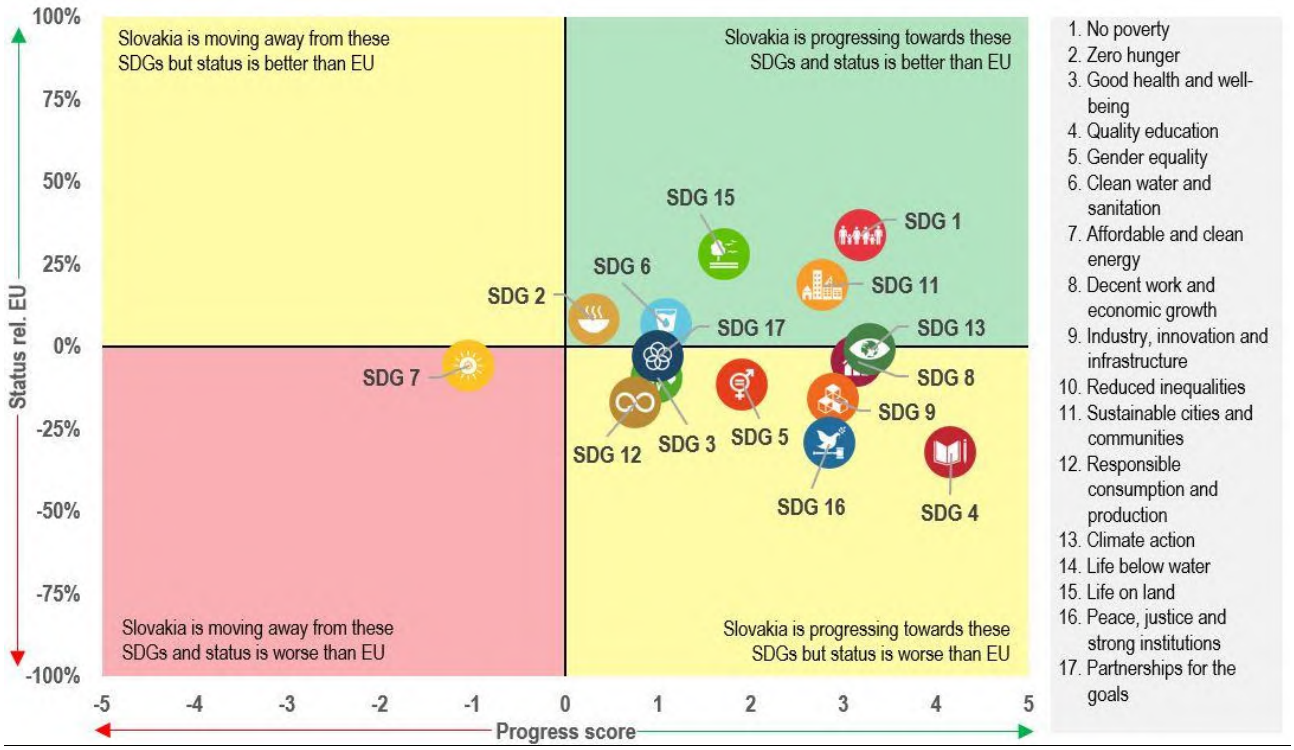
LIST OF GRAPHS

LIST OF MAPS

This Annex assesses Slovakia'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.

Slovakia performs very well or is improving on indicators related to environmental sustainability (SDGs 2, 6, 9, 11, 13, 15) but is moving away on SDG 7. It performs well in sustainable mobility as the share of public transport increased to 26.2%, well above the EU average of 17.2%. Slovakia has reduced its rate of severe housing deprivation to 3.2%, compared to the EU rate of 4.3%. Slovakia is however underperforming on indexes pertaining to affordable and clean energy (SDG 7). While the share of renewable energy increased from 12.9% to 17.4% in 2021, Slovakia's capacity to generate renewable energy falls below the EU average of 21.8%. Energy productivity has only slightly improved, compared to the progress the EU achieved in the same timeframe (from 4.8 to 5.0 EUR/kgoe, compared to the average EU improvement of

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

7.8 to 8.6 EUR/kgoe). Slovakia's dependency on imported energy as part of its overall energy mix decreased from 60.6% in 2016 to 52,6% in 2021, which was slightly below the EU average of 55.5%. Slovakia also performs well on the share of recycling as part of overall municipal waste with the country more than doubling this percentage from 23% in 2016 to 48.9% in 2021, well above the EU average of 49,6%.

Slovakia is progressing on its net greenhouse gas emissions, which have decreased from 6.3 tonnes per capita in 2016 to 5.9 in 2021, performing better than the 2021 EU average of 7.4 tonnes per capita. Investments and reforms included in the recovery and resilience plan's components on renewables, industry decarbonisation, energy efficiency, waste disposal and R&D will boost Slovakia's performance on environmental SDGs.

Slovakia is performing very well on one SDG related to fairness (SDG 1) and is improving, albeit at an uneven pace, on most of the others (SDGs 2, 3, 4, 5, 7, 8) but needs to catch up with the EU notably on SDG 4. Slovakia performs better than the EU on one indicator on poverty and inequality (SDG 1), which is predominantly thanks to the low dispersion of wages in the country. Although still lagging behind the EU average, Slovakia improved on some quality education indicators (SDG 4), such as the participation in early childhood education (rising from 72.2% in 2015 to 78.1% in 2020). The participation of adults in learning programmes and the high rate of early school dropouts still cause concern as these trends affect growth and overall productivity. On SDG 5 (Gender equality), Slovakia is significantly improving on the ratio of senior management positions held by women as the percentage of female board members doubled from 15.1% in 2017 to 30.3% in 2022, hovering just below the EU average of 32.2%. Slovakia's capacity to provide affordable energy has worsened as the percentage of citizens unable to adequately heat their homes has risen from 5,1% in 2016 to 5,8% in 2021. However, this is still below the EU average of 6,9% in 2021. The recovery and resilience plan includes measures to improve pupils' skills and to render the various levels of the education system more inclusive and equitable, i.e. by creating more places in pre-school establishments, updating school curricula, tackling segregation of the Roma population, providing specialised training for teachers and raising the professional prerequisites for employing teaching staff (Components 6, 7, 8).

Slovakia is improving on SDG indicators related to productivity (SDGs 4, 8, 9), although its expenditure on research and development have been stagnating lately. At 0.93% of GDP in 2021, R&D funding is significantly below the EU average of 2.26%. This stifles innovation and prevents Slovakia from boosting its productivity by employing more technological solutions such as artificial intelligence, digitalisation, automation, cloud systems and other benefits of the latest scientific and hi-tech breakthroughs. The ratio of personnel employed in R&D has slightly increased and reached 0.83% of the active population in 2021. However, it remains below the EU average of 1.5%. Slovakia should provide more support to its researchers and companies to patent their research as only 9 patent applications (per one million inhabitants) were submitted in 2022 compared to the EU average of 151 patent applications per one million inhabitants. Tertiary educational attainment, a crucial ingredient for raising the proficiency, competitiveness, and technological aptitude of the Slovak population, has been steadily increasing and, at 39.1% of the population aged 25-34 in 2022, has almost caught up with the EU average of 42%. On that note, the share of adults with at least basic level digital skills stood at 55.2% in 2021, performing better than the EU average of 53.9%. Furthermore, the proportion of adults participating in learning remains improved significantly. In 2022, 12,8% of the Slovak adult population participated in a learning course in the past four weeks, thus surpassing the EU average of 11,9.%. The share of households with an internet connection of at least 100

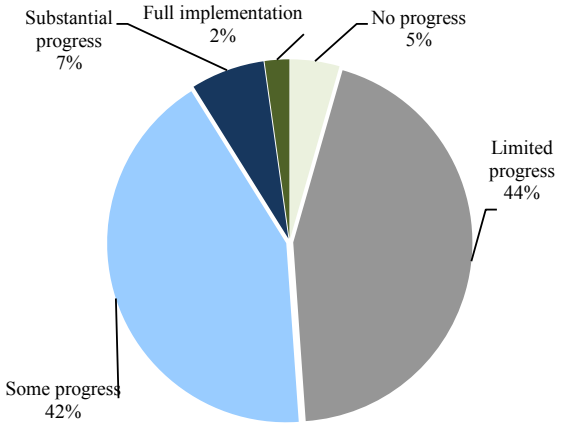
Mbps has increased to 66.7% in 2021 (just below the EU average of 70.2%). Investment in digital infrastructure and educational reforms outlined in the recovery and resilience plan should further improve long-term productivity.

Slovakia is improving on SDG indicators related to macroeconomic stability (SDGs 8 and 16). Real GDP per capita in Slovakia has been increasing, reaching EUR 16,300 in 2022 in real terms. However, with convergence slowing down, the country's performance in this respect is still less than the EU average of EUR 28 820 that same year. The investment share of GDP slightly dropped from 21.1% in 2017 to 20,4% in 2022, trailing behind the EU average of 23.2%. The employment rate has been consistently increasing, reaching 76.7% of the population aged 20-64 in 2022, and outpacing the EU average of 74,6%. The long-term unemployment rate has slightly risen (to 4.1% in 2022), now standing above the EU median of 2.4%. Measures presented in the recovery and resilience plan should stimulate much needed investment and help further reduce long-term unemployment.

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

The Commission has assessed the 2019-2022 country-specific recommendations (CSRs) ([22]) addressed to Slovakia as part of the European Semester. These recommendations concern a wide range of policy areas that are related to 15 of the 17 Sustainable Development Goals (see Annexes 1 and 3). The assessment considers the policy action taken by Slovakia to date ([23]) and the commitments in its recovery and resilience plan (RRP) ([24]). At this stage of RRP implementation, 51% of the CSRs focusing on structural issues from 2019-2022 have recorded at least 'some progress', while 44% 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:**Slovakia's progress on the 2019-2022 CSRs (2023 European Semester)**



Source: European Commission

([22]) 2022 CSRs: EUR-Lex - 32022H0901(25) - EN - EUR-Lex (europa.eu)

2021 CSRs: EUR-Lex - 32021H0729(26) - EN - EUR-Lex (europa.eu)
2020 CSRs: EUR-Lex - 32020H0826(25) - EN - EUR-Lex (europa.eu)
2019 CSRs: EUR-Lex - 32019H0905(25) - EN - EUR-Lex (europa.eu)

([23]) 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).

([24]) 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**

Slovakia	Assessment in May 2023*	RRP coverage of CSRs until 2026**	Revelant SDGs
2019 CSR 1	**Some progress**		
Achieve the medium-term budgetary objective in 2020.	Not relevant anymore	Not applicable	SDG 8, 16
Safeguard the long-term sustainability of public finances, notably that of the healthcare and pension systems.	Some Progress	Relevant RRP measures implemented in 2022 and planned for 2023 and 2025.	SDG 3, 8
2019 CSR 2	**Limited progress**		
Improve the quality and inclusiveness of education at all levels and foster skills.	Limited Progress	Relevant RRP measures implemented in 2022 and planned as of 2023.	SDG 4, 8, 10
Enhance access to affordable and quality childcare and long-term care.	Limited Progress	Relevant RRP measures implemented in 2022 and planned as of 2023, 2024	SDG 3, 4, 5
Promote integration of disadvantaged groups, in particular Roma.	Limited Progress	Relevant RRP measures planned as of 2022, 2023, 2024	SDG 1, 2, 4, 8, 10
2019 CSR 3	**Limited progress**		
Focus investment-related economic policy on healthcare,	Some Progress	Relevant RRP measures implemented in 2022 and planned as of 2023, 2024, 2025	SDG 3, 10, 11
research and innovation,	Some Progress	Relevant RRP measures implemented in 2022 and planned as of 2023	SDG 9, 10, 11
transport, notably on its sustainability,	Limited Progress	Relevant RRP measures implemented in 2021 and 2022 and planned as of 2023, 2025 and 2026.	SDG 10, 11
digital infrastructure,	Limited Progress	Relevant RRP measures planned as of 2023.	SDG 9, 10, 11
energy efficiency,	Some Progress	Relevant RRP measures implemented in 2022 planned as of 2023, 2024 and 2026.	SDG 7, 10, 11
competitiveness of small and medium-sized enterprises,	Some Progress	Relevant RRP measures planned as of 2023, 2024 and 2025.	SDG 8, 9, 10, 11
and social housing, taking into account regional disparities.	Limited Progress		SDG 1, 2, 10, 11
Increase the use of quality-related and lifecycle cost criteria in public procurement operations.	Limited Progress	Relevant RRP measures implemented in 2022 and planned as of 2023.	SDG 9
2019 CSR 4	**Some progress**		
Continue to improve the effectiveness of the justice system, focussing on strengthening its independence, including on judicial appointments.	Some Progress	Relevant RRP measures implemented in 2022 and planned as of 2023 and 2024.	SDG 16
Increase efforts to detect and prosecute corruption, in particular in large-scale corruption cases.	Limited Progress	Relevant RRP measures implemented in 2022 and planned as of 2023.	SDG 16
2020 CSR 1	**Some progress**		
In line with the general escape clause, take all necessary measures to effectively address the pandemic, sustain the economy and support the ensuing recovery. When economic conditions allow, pursue fiscal policies aimed at achieving prudent medium-term fiscal positions and ensuring debt sustainability, while enhancing investment.	Not relevant anymore	Not applicable	SDG 8, 16
Strengthen the resilience of the health system in the areas of health workforce, critical medical products and infrastructure.	Limited Progress	Relevant RRP measures implemented in 2022 and planned as of 2023,2024 and 2025.	SDG 3
Improve primary care provision and coordination between types of care.	Some Progress	Relevant RRP measures implemented in 2022 and planned as of 2023,2024 and 2025.	SDG 3
2020 CSR 2	**Some progress**		
Provide adequate income replacement,	Substantial Progress		SDG 1, 2, 8, 10
and ensure access to social protection and essential services for all.	Limited Progress		SDG 1, 2, 10
Strengthen digital skills.	Limited Progress	Relevant RRP measures implemented in 2022 and planned as of 2023 and 2024.	SDG 4
Ensure equal access to quality education.	Limited Progress	Relevant RRP measures implemented in 2022 and planned as of 2023, 2024 and 2025	SDG 4, 8, 10
2020 CSR 3	**Some progress**		
Effectively implement measures to ensure liquidity for small and medium-sized enterprises and self-employed.	Substantial Progress		SDG 8, 9
Close digital infrastructure gaps.	Limited Progress	Relevant RRP measures planned as of 2023 and 2024.	SDG 9
Front-load mature public investment projects	Some Progress	Relevant RRP measures implemented in 2021 and 2022 and planned as of 2023, 2024, 2025 and 2026.	SDG 8, 16
and promote private investment to foster the economic recovery.	Some Progress	Relevant RRP measures implemented in 2021 and 2022 and planned as of 2023, 2024, 2025 and 2026.	SDG 8, 9
Focus investment on the green and digital transition, in particular on clean and efficient production and use of energy and resources,	Some Progress	Relevant RRP measures implemented in 2021 and 2022 and planned as of 2023, 2024 and 2026.	SDG 6, 7, 9, 12, 13, 15
sustainable public transport,	Limited Progress	Relevant RRP measures implemented in 2022 and planned as of 2023, 2025 and 2026.	SDG 11
and waste management.	Some Progress	Relevant RRP measures implemented in 2022.	SDG 6, 12, 15

(Continued on the next page)

Table (continued)

2020 CSR 4	**Some progress**		
Ensure effective supervision and enforcement of the anti-money laundering framework.	Some Progress	Relevant RRP measures implemented in 2022 and planned as of 2023.	SDG 8, 16
Ensure a favourable business environment	Some Progress	Relevant RRP measures planned as of 2023, 2024 and 2025.	SDG 8, 9
and quality public services through enhanced coordination and policy-making.	Limited Progress	Relevant RRP measures planned as of 2022, 2023, 2024 and 2026.	SDG 10, 11, 16
Address the integrity concerns in the justice system.	Some Progress	Relevant RRP measures implemented in 2022 and planned as of 2023 and 2024.	SDG 16
2021 CSR 1	**Some 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.	Some Progress	Not applicable	SDG 8, 16
At the same time, enhance investment to boost growth potential. Pay particular attention to the composition of public finances, on both the revenue and expenditure sides of the budget, and to the quality of budgetary measures in order to ensure a sustainable and inclusive recovery. Prioritise sustainable and growth-enhancing investment, in particular investment supporting the green and digital transition.	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.	Some Progress	Not applicable	SDG 8, 16
2022 CSR 1	**Limited Progress**		
In 2023, ensure that the growth of nationally financed primary current expenditure is in line with an overall neutral policy stance, taking into account continued temporary and targeted support to households and firms most vulnerable to energy price hikes and to people fleeing Ukraine. Stand ready to adjust current spending to the evolving situation.	No Progress	Not applicable	SDG 8, 16
Expand public investment for the green and digital transitions, and for energy security taking into account the REPowerEU initiative, including by making use of the Recovery and Resilience Facility and other Union funds.	Substantial Progress	Relevant RRP measures planned as of 2023	SDG 8, 16
For the period beyond 2023, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions.	Some Progress	Not applicable	SDG 8, 16
Make the tax mix more efficient and more supportive to inclusive and sustainable growth, including by leveraging the potential of environmental and property taxation.	No Progress	Not applicable	SDG 8, 10, 12
Continue to strengthen tax compliance, including by further digitalising tax administration.	Limited Progress	Not applicable	SDG 8, 9, 16
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 13 July 2021.	RRP implementation is monitored by assessing RRP payment requests and analysing reports published twice a year on the achievement of the milestones and targets. These are to be reflected in the country reports.		
Submit the 2021-2027 cohesion policy programming documents with a view to finalising their negotiations with the Commission and subsequently starting their implementation.	Progress on the cohesion policy programming documents is monitored under the EU cohesion policy.		
2022 CSR 3	**Limited progress**		
Reduce overall reliance on fossil fuels and diversify imports of fossil fuels.	Limited Progress	Relevant RRP measures planned as of 2023	SDG 7, 9, 13
Accelerate the deployment of renewables by further facilitating grid access, introducing measures to streamline permitting and administrative procedures	Limited Progress	Relevant RRP measures planned as of 2023	SDG 7, 8, 9, 13
and modernising the electricity network.	Limited Progress	Relevant RRP measures planned as of 2023, 2024 and 2025	SDG 7, 9, 13
Reduce reliance on natural gas in heating and industry.	Limited Progress	Relevant RRP measures planned as of 2023	SDG 7, 9, 13
Adjust renovation policies to accelerate and incentivise deep renovations of buildings.	Some Progress	Relevant RRP measures being implemented as of 2022	SDG 7

Note:

* See footnote ([24]).

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

Source: European Commission.

The Recovery and Resilience Facility (RRF) is the centrepiece of the EU's efforts to help it recover from the COVID-19 pandemic, speed up the twin transition and strengthen resilience against future shocks. The RRF also contributes to implementation of the SDGs and helps to address the Country Specific Recommendations (see Annex 2). Slovakia submitted its current recovery and resilience plan (RRP) on 29 April 2021. The Commission's positive assessment on 16 June 2021 and Council's approval on 13 July 2021 paved the way for disbursing EUR 6.3 billion in grants under the RRF over the 2021-2026 period.

Since the entry into force of the RRF Regulation and the assessment of the national recovery and resilience plans, geopolitical and economic developments have caused major disruptions across the EU. In order to effectively address these disruptions, the (adjusted) RRF Regulation allows Member States to amend their recovery and resilience plan for a variety of reasons. In line with article 11(2) of the RRF, the maximum financial contribution for Slovakia was moreover updated on 30 June 2022 to an amount of EUR 6 billion in grants.

In this context, **Slovakia submitted an amended RRP to the Commission on 26 April 2023** to take account of its revised maximum financial contribution, in line with Article 18 of the RRF Regulation and due to objective circumstances that make it no longer possible to achieve certain milestones and targets in the RRP in line with Article 21 of the RRF Regulation. The reduced financial allocation (EUR 300 million in RRF grants) spreads across the whole RRP, leading to a proportional reduction of targets. The scope and timeline of a number of measures in areas such as education, health and long-term care, transport and justice, were considered to be negatively affected by inflation on construction costs, market shortages and delays. The revised RRP includes **a new REPowerEU chapter** with additional reforms and investments covering four thematic areas: renewables and grids, energy efficiency, transport and green skills. This is part of the **EU's efforts to respond to the economic hardship and global energy market disruptions caused by Russia's invasion of Ukraine.**

Slovakia's progress in implementing its plan is published in the Recovery and Resilience Scoreboard ([25]). The Scoreboard also gives an overview of the progress made in implementing the RRF as a whole, in a transparent manner. The graphs in this Annex show the current state of play of the milestones and targets to be reached by Slovakia and subsequently assessed as satisfactorily fulfilled by the Commission.

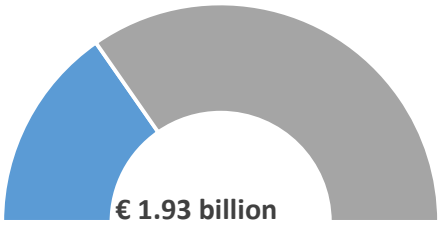
Table A3.1: **Key elements of Slovakia's RRP**

	Current RRP
Scope	Initial plan
CID adoption date (date of submission)	13 July 2021
Total allocation	EUR 6.3 billion in grants (6.5% of 2021 GDP)
Investments and reforms	58 investments and 58 reforms
Total number of milestones and targets	196

Source: RRF Scoreboard

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

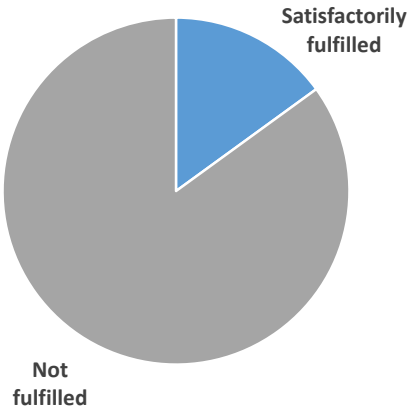
Graph A3.1:**Total grants disbursed under the RRF**



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

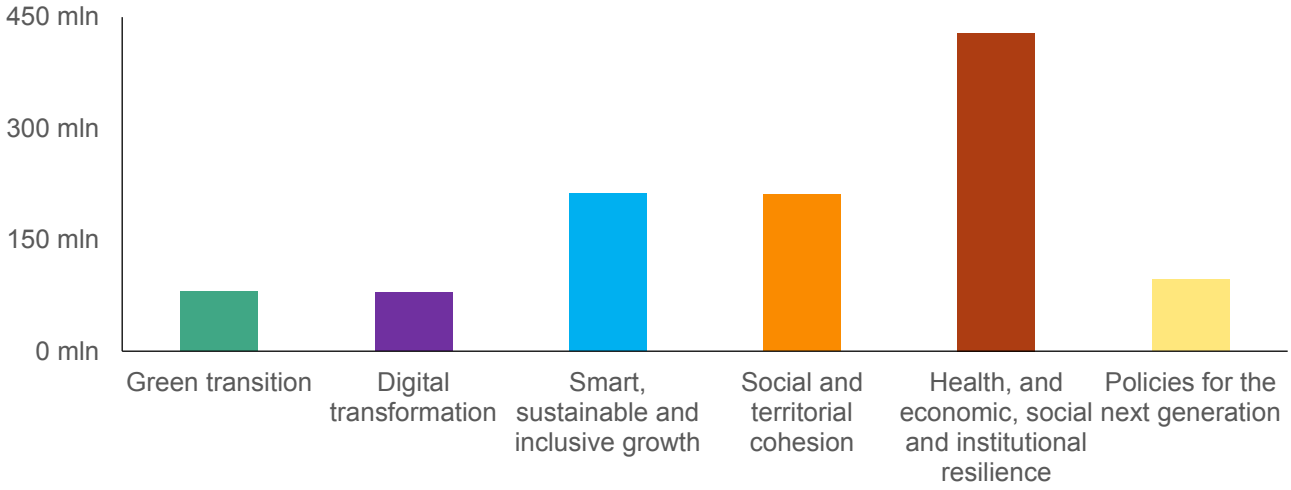
Slovakia's second payment request was positively assessed by the Commission, taking into account the opinion of the Economic and Financial Committee, leading to EUR 708.8 million being disbursed in financial support (net of pre-financing) on 22 March 2023. The related 16 milestones and targets cover reforms of education and training, healthcare, research and innovation, measures to attract skilled workers, boost digitalisation and make the economy more circular and to fight money laundering and to accelerate procurement procedures, as well as investments aimed at the protection of nature and biodiversity.

Graph A3.2:**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

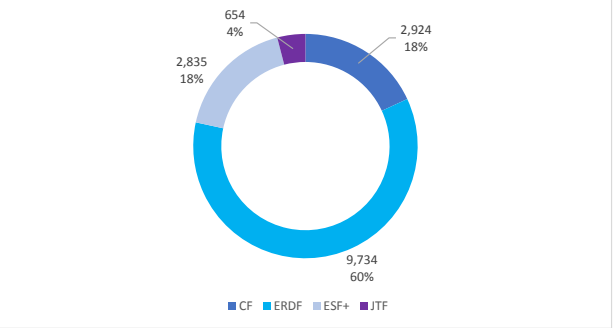
Graph A3.3:**Disbursements per pillar**



Note: Each disbursement reflects progress in the implementation of the RRF, across the six policy pillars. This graph displays how disbursements under the RRF (excluding pre-financing) relate to the pillars. The amounts were calculated by linking the milestones and targets covered by a given disbursement to the pillar tagging (primary and secondary) of their respective measures.
Source: RRF Scoreboard

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 Slovakia: budget by fund**

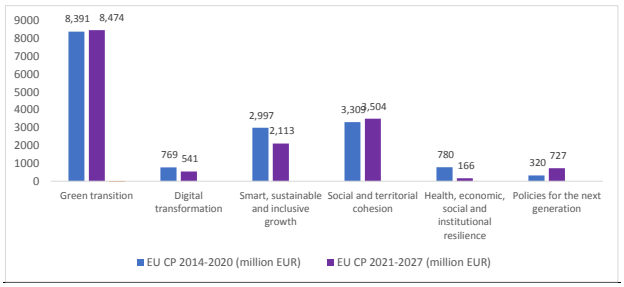


(1) million EUR in current prices, % of total; (total amount including EU and national co-financing)
Source: European Commission, Cohesion Open Data

In 2021-2027, in Slovakia, cohesion policy funds ([26]) **will invest EUR 8.5 billion in the green transition and EUR 0.5 million in the digital transformation as part of the country's total allocation of EUR 16.1 billion.** In particular, the European Regional Development Fund (ERDF) ([27]) will boost research and innovation, digitalisation and energy efficiency. SMEs lie at the heart of ERDF support to companies, and financial instruments will be deployed widely to improve their access to finance. Over 16 000 households will improve their energy performance and 20 000 will get high-capacity internet connection. Particular attention should be paid to ensuring administrative capacity at regional and local levels to implement investment projects, in particular for marginalised Roma communities. The Just Transition Fund will facilitate the green transition and foster job creation in regions with coal mining and emission-intensive industries. This will help Slovakia fulfil its commitment to phase out coal extraction and coal-based electric power generation by 2023. The European Social Fund Plus (ESF+) allocates notably EUR 353 million to the thematic area of education and skills, with EUR 535 million dedicated to the development of digital skills and jobs. his funding will be stronger green and digital skills thanks to support for digital reskilling/upskilling, including through individual earning accounts, and to educational curricula adapted to the twin transitions.

Of the investments mentioned above, EUR 2 billion will be invested in line with REPowerEU objectives. This is on top of the EUR 1 billion dedicated to REPowerEU under the 2014-2020 budget**.** EUR 1 332 million (2021-2027) and EUR 782 million (2014-2020) is for improving energy efficiency; EUR 665 million (2021-2027) and EUR 248 million (2014-2020) is for renewable energy and low-carbon R&I.

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



(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 14.3 billion available to Slovakia ([28]),

([26]) European Regional Development Fund (ERDF), Cohesion Fund (CF), European Social Fund+ (ESF+), Just Transition Fund (JTF) excluding Interreg programmes. Total amount includes national and EU contributions. Data source: Cohesion Open Data.

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

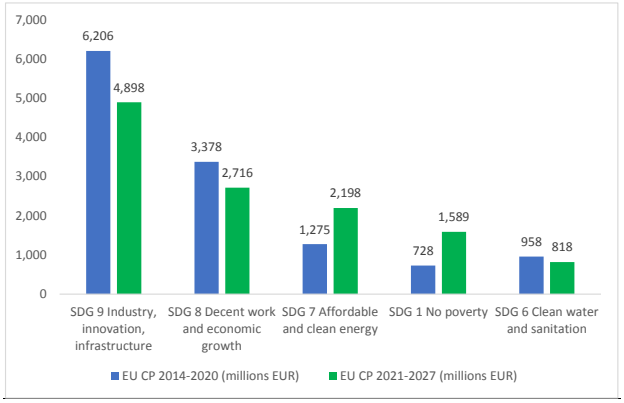
([28]) Cohesion policy funds include the ERDF, CF, ESF and the Youth Employment Initiative (YEI). ETC programmes are excluded here. According to the 'N+3 rule', the funds committed for 2014-2020 must be spent by 2023. REACT-EU is included in all figures. The total amount includes EU and national co-financing. Data source: Cohesion Open Data.

with an absorption of 72% ([29]). Including national financing, the total investment amounted to EUR 17.8 billion - around 3% of GDP for 2014-2020.

Slovakia 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) ([30]) under NextGenerationEU provides EUR 745 million on top of the 2014-2020 cohesion policy allocation for Slovakia. REACT-EU financed close to 2 million COVID-19 vaccines and other medical supplies. Close to 5 500 SMEs received loans to overcome the lockdown period and 450,000 workers benefited from short-time work and similar schemes. With SAFE (Supporting Affordable Energy), the 2014-2020 cohesion policy funds may also be mobilised by Slovakia to support vulnerable households, jobs and companies particularly affected by high energy prices. In addition, Cohesion's Action for Refugees in Europe (CARE) supports Slovakia and its regions in providing emergency assistance to people fleeing from Russia's invasion of Ukraine with a total budget of EUR 41 million.

In both 2014-2020 and 2021-2027, cohesion policy funds have contributed substantially to the Sustainable Development Goals (SDGs). These funds support 11 of the 17 SDGs, notably SDG 9 'industry, innovation and infrastructure' and SDG 8 'decent work and economic growth' ([31]).

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



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

Other EU funds make significant resources available for Slovakia. The common agricultural policy (CAP) made EUR 5.5 billion available in 2014-2022, and will continue to support Slovakia with EUR 3.4 billion in 2023-2027. The two CAP Funds (European Agricultural Guarantee Fund and European Agricultural Fund for Rural Development), contribute to the European Green Deal while ensuring long-term food security. They promote social, environmental and economic sustainability and innovation in agriculture and rural areas, in coordination with other EU funds. The European Maritime, Fisheries and Aquaculture Fund makes EUR 15 million available in 2021-2027.

Slovakia 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 223.3 million to seven specific projects on strategic transport networks. Similarly, Horizon Europe has so far allocated more than EUR 300 million to Slovak R&I actors, while in the previous programming period, Horizon 2020 earmarked EUR 1.4 billion. The Public Sector Loan Facility established under the Just Transition Mechanism makes EUR 34.8 million of grant support from the Commission available for projects located in Slovakia for 2021-2027, which will be combined with loans from the EIB

([29]) 2014-2020 Cohesion policy EU payments by MS is updated daily on Cohesion Open Data.

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

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

to support investments by public sector entities in just transition regions.

Slovakia received support under the European instrument for temporary support to mitigate unemployment risks in an emergency (SURE) to finance short-time work schemes to mitigate the impact of COVID-19. The Council granted financial assistance to Slovakia of EUR 630 million in loans, which supported around 30% of workers and 25% of firms in 2020, and around 11% of workers and 15% of firms in 2021.

The Technical Support Instrument (TSI) supports Slovakia in designing and implementing growth-enhancing reforms, including the implementation of its recovery and resilience plan (RRP). Slovakia has received significant support since 2016, including for: (i) reforming local and regional governance; (ii) identifying the most suitable reforms and investments in line with the REPowerEU plan; and (iii) increasing the efficiency of public spending ([32]).

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

This Annex illustrates Slovakia's relative resilience capacities and vulnerabilities using the Commission's resilience dashboards (RDB) ([33]). 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 ([34]) and capacities ([35]) that can become increasingly relevant, both to navigate ongoing transitions and to cope with potential future shocks. In doing so, the RDB help to identify areas for further analysis to build stronger and more resilient economies and societies. They are summarised in Table A5.1 as synthetic resilience indices, which illustrate the overall relative situation for each of the four dimensions and their underlying areas for Slovakia and the EU-27 ([36]).

According to the set of resilience indicators under the RDB, Slovakia generally displays a similar level of vulnerabilities compared to the EU average. Slovakia shows medium-low vulnerabilities in the green dimension, and medium vulnerabilities in the social and economic, digital and geopolitical dimensions. It has higher vulnerabilities than the EU average in relation to 'inequalities and social impact of the transitions' (due mainly to high employment in energy-intensive and automation-prone sectors), 'digitalisation for industry' (due to gender and access gaps in ICT) and 'financial globalisation' (due to high outward FDI concentration). Slovakia has lower vulnerabilities in the areas 'climate change mitigation and adaptation', 'sustainable use of resources', 'cybersecurity' and 'security and demography'.

Compared to the EU average, Slovakia shows an overall lower level of capacities across all RDB indicators. It has medium-low resilience capacities in the social and economic dimension, and medium capacities in the other three dimensions. Slovakia shows stronger capacities than the EU average in the areas 'raw material and energy supply' (due mainly to increasing supplier diversification) and, notably, 'value chains and trade' (due mainly to both high intra and extra-EU trade openness). There is room for improving capacities compared to the EU in all areas of the social and economic dimension (for example, in terms of healthy life years at birth, preventable and treatable mortality, and childcare access), but also in relation to 'climate change mitigation and adaptation', 'digitalisation for industry', 'cybersecurity', 'financial globalisation' and 'security and demography'.

([33]) 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).

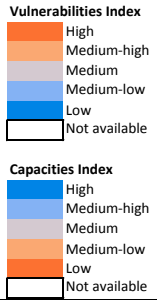
([34]) Vulnerabilities describe features that can exacerbate the negative impact of crises and transitions, or obstacles that may hinder the achievement of long-term strategic goals.

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

([36]) 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.

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

Dimension/Area	Vulnerabilities		Capacities	
	SK	EU-27	SK	EU-27
Social and economic				
Inequalities and social impact of the transitions				
Health, education and work				
Economic & financial stability and sustainability				
Green				
Climate change mitigation & adaptation				
Sustainable use of resources				
Ecosystems, biodiversity, sustainable agriculture				
Digital				
Digital for personal space				
Digital for industry				
Digital for public space				
Cybersecurity				
Geopolitical				
Raw material and energy supply				
Value chains and trade				
Financial globalisation				
Security and demography				

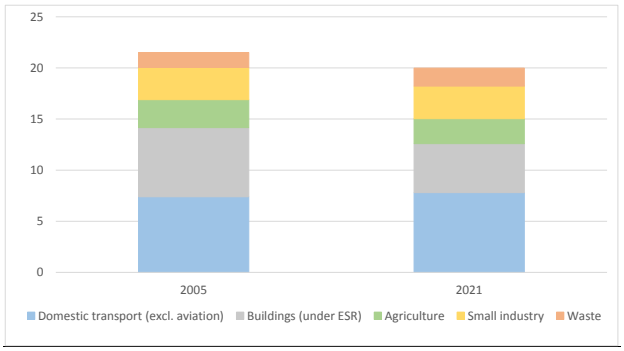


(1) Data are for 2021, and EU-27 refers to the value for the EU as a whole. Data underlying EU-27 vulnerabilities in the area 'value chains and trade' are not available as they comprise partner concentration measures that are not comparable with Member States' level values.
Source: JRC Resilience Dashboards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

Slovakia's green transition requires continued action on renewable energy, energy efficiency and sustainable transport among others. Implementation of the European Green Deal is underway in Slovakia; this Annex provides a snapshot of the key areas involved ([37]).

Slovakia has not yet defined all the climate policy measures it needs to reach its 2030 climate target for the effort sharing sectors ([38]). Data for 2021 on greenhouse gas emissions in these sectors are expected to show the country generated less than its annual emission allocations ([39]). Current policies in Slovakia are projected to keep the increase of these emissions contained at 9% relative to 2005 levels in 2030. The additional measures tabled would contain them at an increase of 1%. This is too high to comply with the effort sharing target even before the target was made more ambitious to meet the EU's 55% objective, let alone Slovakia's new target to reduce emissions by 22.7% ([40]). In its recovery and resilience plan (RRP), Slovakia has allocated 43 % of its Recovery and Resilience Facility grants to key reforms and investments to attain climate objectives ([41]).

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



Source: European Environmental Agency.

The capacity of Slovakia's land use sector to remove carbon can only be upheld with afforestation and reforestation and better landscape protection and management. Despite increases in 1992 and 2020 due to lower harvesting, net removals through Slovakia's land use sector are shrinking due to the unbalanced age structure of its forests. Slovakia's land use, land-use change and forestry (LULUCF) net removals target for 2030 implies to remove 6 821 kt CO_2eq (see Table A6.1) ([42]).

Fossil fuels and nuclear energy play a substantial role in Slovakia's energy mix with renewable energy playing a more secondary role. In 2021, natural gas accounted for 26% of Slovakia's energy mix, and coal for 16%, while oil makes up 21%. Nuclear is also a

([37]) 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.

([38]) 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.

([39]) Slovakia's annual emission allocations for 2021 were some 22.8 Mt CO_2eq, and its approximated 2021 emissions were at 20.0 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).

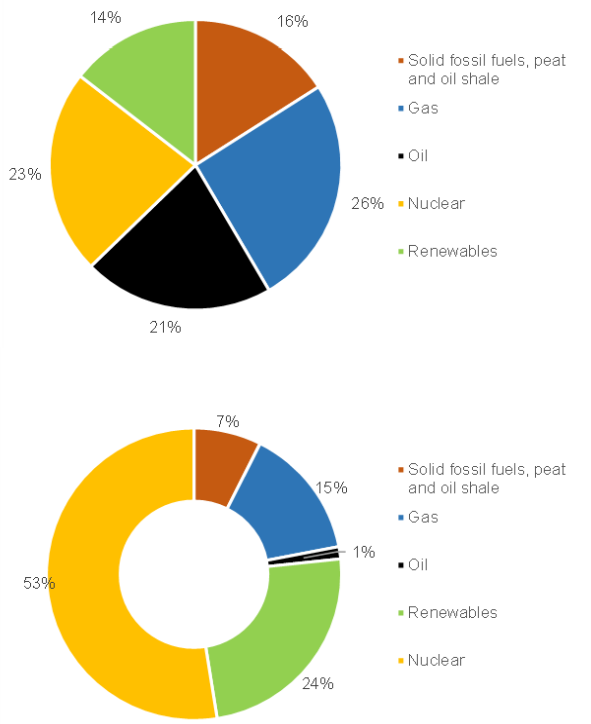
([40]) See the information on the distance to the 2030 climate policy target in Table A6.1. Existing and additional measures as of 15 March 2021.

([41]) For example, investments in industrial decarbonisation, energy efficiency, rail expansion, water retention and nature restoration measures.

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

very significant component in Slovakia's energy mix, amounting to 23%, while renewables only make up 14% of the total energy mix. Slovakia's renewables target presented in the NECP is 24%. However, the current trajectory is at 19.2%. In 2021, Slovakia's electricity mix was substantially fuelled by nuclear energy (53%), with only a quarter coming from renewable sources. Natural gas comes in third, with 15%. The Nováky coal power plant will stop receiving subsidies to burn local coal by the end of 2023, as set out under the action plan for the transformation of the Upper Nitra Coal Region, but a specific date for the closure of the plant has not been set yet.

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

Renewable energy plays a significant role in decarbonising Slovakia's energy system. Slovakia's target of 19.2% of share of energy from renewable sources in gross final energy consumption by 2030 included in the NECP was considered unambitious in the 2020 assessment by the Commission. Slovakia 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 RRP envisages direct investments which are set to increase the installed renewables capacity by 120 MW, representing approximately 20% of its current wind and solar capacity. The plan envisages key reforms in the area of market design and support to renewables which will set the basis for an accelerated uptake of clean energy in Slovakia. In particular, the updated legal framework will facilitate new activities and access for participants to the electricity market (energy communities, aggregators, self-consumers, and electricity storage) and will improve the possibilities to connect new renewable sources to the grid.

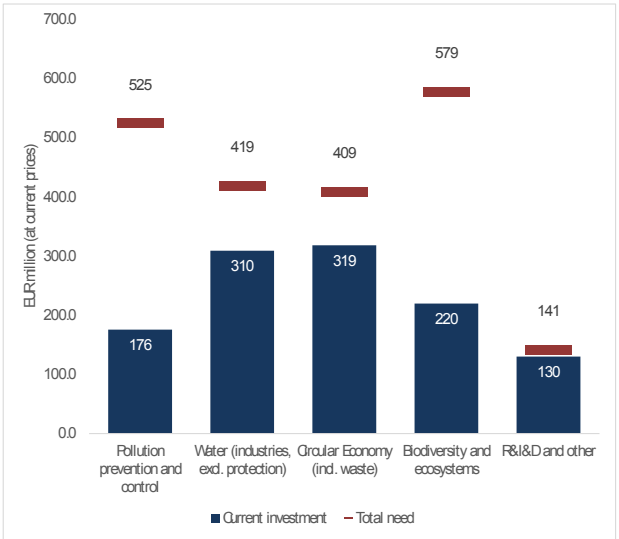
Slovakia's RRP focuses on energy efficiency, particularly through a large-scale and comprehensive renovation wave of family houses, promoting improved energy performance and adaptation to the changing climate (e.g., green roofs, water retention systems). Slovakia's NECP targets for primary and final energy consumption (PEC and FEC) were considered of low ambition in the 2020 Commission assessment. Based on the energy consumption trajectory for 2018-2021, Slovakia is not expected to be on track to meet its 2030 targets nor for PEC or for FEC, as these were notified in its NECP. ([43]) The investment in the Slovak RRP of EUR 528 million will result in 30 000 family houses being renovated and at least 30% primary energy savings on average. To reach out to homeowners, regional centres have been created and accompanied by a communication campaign. In addition, the investment will promote the recycling of construction materials and prevention of demolition waste supported by a reform offering simplified and user-friendly access to the support schemes. The

([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.

Slovak RRP also pledges to invest EUR 206.6 million into renovating public and protected historic buildings to improve their energy efficiency.

Transport emissions keep rising while the share of cleaner means of transport is only slowly increasing. In 2021, applicable air quality limits ([44]) on particulate matter (PM10) were exceeded in the Banská Bystrica and Košice regions and the Košice agglomeration. Furthermore, for two air quality zones the target values regarding ozone concentration were not met in 2020. With 1.5%, the share of zero-emission vehicles in newly registered passenger cars in Slovakia is very low, mostly due to the high price compared with household incomes. But the stock of zero-emission vehicles is growing fast, despite no incentives being offered.

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



Source: European Commission.

Slovakia would benefit from investing more in protecting nature and biodiversity, better landscape and water management, and addressing pollution in particular. Between 2014 and 2020, environmental investment needs ([45]) were estimated to be at least EUR 2.1 billion while investment stood at around EUR 1.2 billion, leaving a gap of at least EUR 0.9 billion per year (see Graph A6.4) ([46]). With about 30%, Slovakia is among the EU countries with the highest Natura 2000 coverage of its territory ([47]). Sufficient resources are to be allocated to protection, management, and conservation measures, and leveraged with private investment to maintain and restore the protected species and habitats.

Climate change is affecting many sectors in Slovakia, implying challenges to water management among others ([48]). Between 2000 and 2020, the hydrological regime became more extreme. Slovakia intends to review its adaptation strategy by 2025 in order to include a framework for monitoring and evaluation, boost implementation, and step up capacity building and cooperation between stakeholders. Heat-related mortality and morbidity are projected to significantly rise, mostly in cities. Slovakia's RRP has measures on restoring water courses, water retention, and protecting forests. Slovakia's insurance protection gap for floods and wildfire needs to be monitored as it could pose a risk to public finances if insurance penetration remains low.

Slovakia still provides fossil fuel and other environmentally harmful subsidies that could be considered for reform, while ensuring food and energy security and mitigating social effects. Fossil fuel subsidies in Slovakia amounted to EUR 502 million in

([44]) As established by the Ambient Air Quality Directive. In 2020, no exceedances were registered in neither the Košice agglomeration nor in the Košice region.

([45]) 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 Slovakia)

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

([47]) In 2021, Slovakia had 37.4% terrestrial protected areas (Natura 2000 and nationally designated areas), against the EU average of 26.4% (European Environment Agency, 2023, Natura 2000 Barometer).

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

2020, a 100% increase since 2015, which puts low carbon alternatives at a disadvantage. Environmentally harmful subsidies have been identified, via an initial assessment, in the agriculture, forestry and fishing, electricity, gas, steam and air conditioning, transportation and storage and mining and quarrying sectors. Slovakia is taking its first steps to phase out a subsidy on power generation from lignite, as part of the reforms included in its RRP. Examples of such subsidies include the flat rate taxation of privately used company cars or the fuel tax refund for agriculture ([49]). A mapping of all environmentally harmful subsidies by Slovakia would help prioritise candidates for reform.

Slovakia has the potential to rely more on environmental taxes, making polluters pay. Slovakia gradually increased landfill fees since 2019 for municipal, hazardous and other waste and for construction and demolition waste, under a reform implemented in mid-2022, as part of its RRP. As of early 2022, the deposit-refund system for single-use beverage packaging began operating. Slovakia still has scope for stepping up the use of pollution taxes, for example, on solid fuels or a pay-as-you-throw scheme in addition to an increase in the landfill tax for municipal waste ([50]).

By earmarking a higher share of EU Emissions Trading System (ETS) revenue for climate action, Slovakia could reduce its exposure to the cost of carbon. In 2021, its revenue from the EU ETS amounted to some EUR 276 million. In recent years, Slovakia has been allocating less than 20% to climate and energy-related purposes, far below the minimum 50% set by the ETS Directive.

([49]) Fossil fuel figures in 2021 in EUR 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.

([50]) European Commission, 2021, Green taxation and other economic instruments – Internalising environmental costs to make the polluter pay, Ensuring that polluters pay.

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

									'Fit for 55' 2030 target/value	Distance WEM	Distance WAM
			2005	2017	2018	2019	2020	2021			
Progress to policy targets	Greenhouse gas emission reductions in effort sharing sectors [1]	Mt CO_2 eq; %; pp	23.0	-7%	-8%	-13%	-18%	-	-22.7%	-31.7	-23.7
	Net carbon removals from LULUCF[2]	kt CO_2eq	-4,750	-5,725	-4,751	-5,515	-7,695	-7,658	-6821	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]	%	6%	11%	12%	17%	17%	17%	19%		
	Energy efficiency: primary energy consumption [3]	Mtoe	17.4	16.1	15.8	16.0	15.2	16.3	15.7		
	Energy efficiency: final energy consumption [3]	Mtoe	11.6	11.1	11.1	11.2	10.4	11.4	10.3		
			Slovakia						EU		
			2016	2017	2018	2019	2020	2021	2019	2020	2021
Fiscal and financial indicators	Environmental taxes (% of GDP)	% of GDP	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.2	2.2
	Environmental taxes (% of total taxation)[4]	% of taxation	7.6	7.5	7.3	7.3	7.1	6.7	5.9	5.6	5.5
	Government expenditure on environmental protection	% of total exp.	1.7	2.0	2.0	2.0	2.1	2.0	1.7	1.6	1.6
	Investment in environmental protection [5]	% of GDP	0.4	0.4	0.4	0.3	-	-	0.4	0.4	0.4
	Fossil fuel subsidies [6]	EUR2021bn	0.3	0.3	0.3	0.6	0.5	-	53.0	50.0	-
	Climate protection gap [7]	score 1-4					2.4	1.6			1.5
Climate	Net greenhouse gas emissions	1990 = 100	56.0	58.0	58.0	55.0	51.0	56.0	76.0	69.0	72.0
	Greenhouse gas emission intensity of the economy	kg/EUR10	0.52	0.52	0.50	0.46	0.45	-	0.31	0.30	0.26
	Energy intensity of the economy	kgoe/EUR10	0.21	0.21	0.20	0.20	0.20	-	0.11	0.11	-
Energy	Final energy consumption (FEC)	2015=100	103.4	110.6	110.4	111.0	103.0	113.5	102.9	94.6	-
	FEC in residential building sector	2015=100	102.1	106.1	103.5	133.0	138.1	140.9	101.3	101.3	106.8
	FEC in services building sector	2015=100	100.7	109.8	101.2	94.0	85.3	108.4	100.1	94.4	100.7
Pollution	Smog-precursor emission intensity (to GDP) [8]	tonne/EUR10	1.03	1.02	0.93	0.84	0.80	-	0.93	0.86	-
	Years of life lost due to air pollution by $PM_{2.5}$	per 100.000 inh.	1020.7	1118.4	1103.3	808.8	845.2	-	581.6	544.5	-
	Years of life lost due to air pollution by NO_2	per 100.000 inh.	83.6	108.9	113.5	87.0	45.1	-	309.6	218.8	-
	Nitrates in ground water	mg NO_3/litre	16.5	16.2	18.3	16.2	18.6	-	21.0	20.8	-
Biodiversity	Terrestrial protected areas	% of total	36.4	37.4	-	37.4	37.4	37.4	26.2	26.4	26.4
	Marine protected areas	% of total	-	-	-	-	-	-	10.7	-	12.1
	Organic farming	% of total utilised agricultural area	9.8	9.9	9.9	10.3	11.7	8.8	8.5	9.1	-
			2017	2018	2019	2020	2021	2022	2020	2021	2022
Mobility	Share of zero-emission vehicles [9]	% in new registrations	0.2	0.3	0.2	1.2	1.5	1.8	5.4	8.9	10.7
	Number of AFDC recharging points (AFIR categorisation)		-	-	-	469	1621	2517	188626	330028	432518
	Share of electrified railways	%	43.8	43.8	43.7	43.7	43.7	43.7	56.6	n/a	56.6
	Hours of congestion per commuting driver per year		23.3	23.4	23.8	23.4	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).

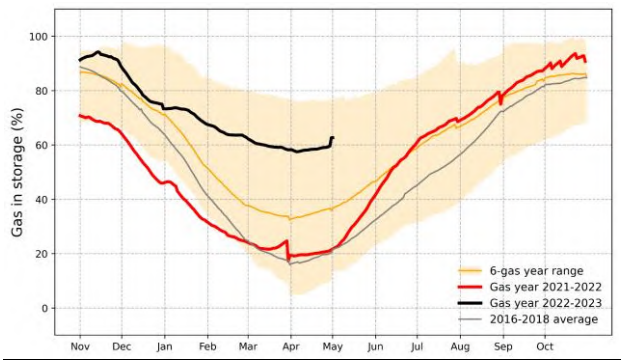
(8) Sulphur oxides (SO2 equivalent), ammonia, particulates < 10 µm, nitrogen oxides in total economy (divided by GDP).

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

Slovakia continues to depend on Russian fossil fuels, and efforts to reduce this dependency are progressing too slowly. Fossil fuels and nuclear energy are a big part of its energy mix. This makes its economy particularly sensitive to global price developments, requiring it to step up efforts on the energy transition. This Annex ([51]) sets out actions carried out by Slovakia 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 ([52]).

Slovakia is highly exposed to a possible disruption of Russian energy imports and rising import costs, which would adversely affect the supply side of the economy. It is in a very good position in terms of natural gas underground storage capacities ([53]) due to its favourable geological condition, with a total storage capacity amounting to 3.98 billion cubic metres (bcm). Slovakia fulfilled its gas storage obligations last winter, reaching 91.29% by 1 November (above the EU legal obligation of 80%), and ended the heating season with a filling gas storage at 58.23% at 15 April 2023 ([54]). Slovakia, like other EU countries, has been trying to diversify since the start of the war in Ukraine. However, the country's major gas supplier, SPP, only signed larger contracts with Norway and liquefied natural gas (LNG) suppliers in May 2022, and since summer 2022, only 50% of Slovakia's gas flows come from Russia. Slovakia is looking into making some changes to the gas transmission system to support new gas supply routes, e.g. by importing gas through the reverse flow from Austria and Czechia, or through the planned Slovak-Hungarian pipeline expected to be commissioned in 2027. The interconnection between Slovakia and Poland, with a capacity of 5.7 bcm/year going to Poland and up to 4.7 bcm/year going to Slovakia, was completed and became operational in November 2022. Other infrastructure projects in neighbouring countries might help Slovakia to secure gas supply, e.g. from the floating storage regasification unit being developed in Gdansk or the LNG terminal being developed in Krk.

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



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

The security of supply of the gas and electricity systems are closely related, and Slovakia has some specific measures in place in case of full disruption. In case of gas emergency, Slovakia introduced measures to choose from, such as immediate preparedness measures, e.g. the diversification of supply sources, withdrawal from gas storage, and

([51]) 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.

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

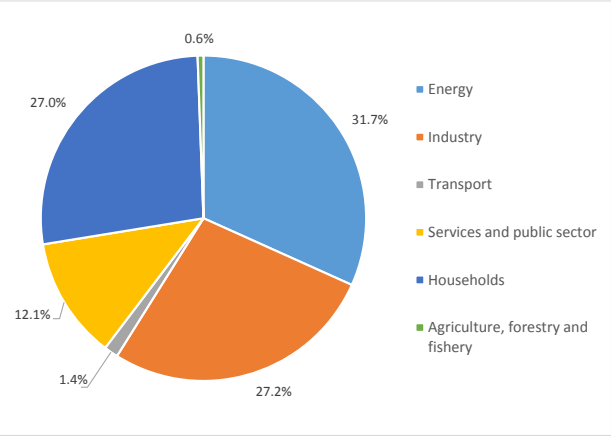
([53]) Slovakia operates two underground storage facilities: Láb (including Gajary baden) managed by Nafta, and UGS Lab IV – Pozagas managed by Pozagas.

([54]) 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.

voluntary consumption reduction. Alternatively, it is considering fuel switching measures, e.g. from coal to gas, and additional nuclear capacity is planned for 2023. Slovakia has measures such as energy efficiency improvements to help reduce natural gas demand in the residential sector and in public and private non-residential buildings, thermostat adjustments, or the use of heat pumps. Over the period August 2022 – March 2023, 1% of gas consumption has been saved in Slovakia compared to the previous 5-years average.

The nuclear fuel diversification process is underway. Slovakia's nuclear fuel comes from Russia, but discussions are ongoing with potential suppliers to diversify supplies.

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

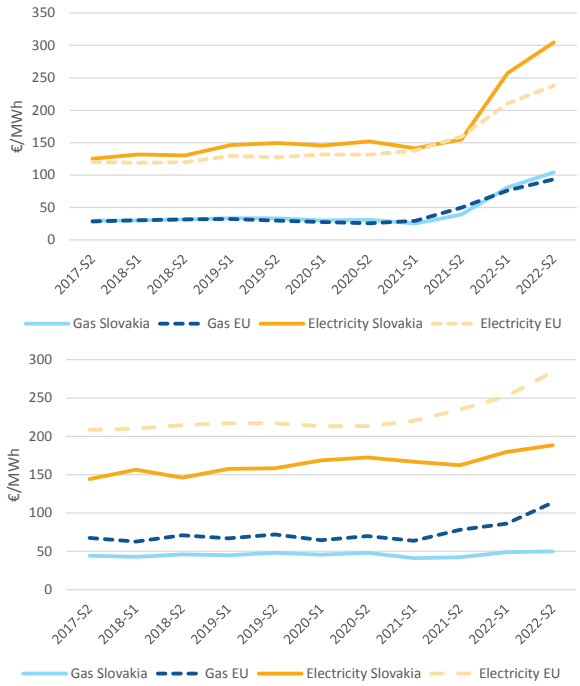


Source: Eurostat

Slovakia is upgrading its grid infrastructure, but further infrastructure investments would make it possible to accommodate a higher share of renewable electricity. Slovakia is well interconnected with its neighbours in terms of electricity. The focus of investments is on smart grids and distribution grid modernisation for better integration of renewables. Slovakia has two on-going Projects of Common Interest on smart electricity grids with its neighbours. It is a net importer of electricity.

To shield consumers from soaring prices, the government has put various measures in place. Several of them are aimed at families (such as bigger tax breaks for families with children, or child allowances). However, the main way of minimising the impact of price spikes has been regulated electricity and gas prices for households and small businesses. Energy price caps for companies and businesses from 2023 have also been announced. Energy prices will be capped at EUR 199/MWh for electricity and EUR 99/MWh for natural gas. Prices for households have been capped at EUR 61/MWh for electricity and natural gas prices could increase by no more than 15% compared to 2022. Electricity consumption by households, but even more by businesses, has dropped. The reason for this is that prices are so high that consumers are forced to save energy (e.g. in sectors like aluminium, fertilisers).

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



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

Slovakia is lagging behind in its framework to support energy communities and enable consumers to actively participate in the

energy transition. However, family homes and apartment blocks can apply for support in the form of a voucher for small installations for the use of renewable energy sources, thanks to a national project run by the Slovak Innovation and Energy Agency called *Zelená domácnostiam* (Green for Households). The project is funded by the operational programme Quality of the Environment, managed by the Slovak Ministry of the Environment. The support is for small installations to produce electricity up to 10 kW and for heat-generating equipment ([55]).

Slovakia has high ambitions to transform its energy system, and further policy support could help decarbonise the economy. The recovery and resilience plan envisages direct investments, set to increase installed renewables capacity by 120 MW, representing approximately 20% of its current wind and solar capacity. The plan envisages key market design reforms and support for renewables to pave the way for the accelerated uptake of clean energy. In particular, the updated legal framework will facilitate new activities and access to the electricity market (energy communities, aggregators, self-consumers, and electricity storage) and increase the possibilities of connecting new renewable sources to the grid. There is still potential in key sectors for Slovakia to be able to reach its renewables penetration and decarbonisation targets. This includes doing more to harness its geothermal potential.

Slovakia belongs to the countries that invest very little in energy R&I. Public investment in R&I as an EU Energy Union priority is alarming. It decreased more than threefold, from 0,029% in 2014 to 0,08% in 2021 (share of GDP). Private R&I investments saw, on the other hand, an increase from EUR 7 million in 2014 to EUR 25 million in 2019. While the public investments focus on sustainable transport (55%) and efficient systems (34%), private investments are overwhelmingly dominated by nuclear safety (92%). The number of patent families filed in 2019 for clean technologies was 6, representing around 1,1 patent families per million inhabitants.

([55]) Green Households Programme – Policies – International Energy Agency

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

		SLOVAKIA				EU			
		2018	2019	2020	2021	2018	2019	2020	2021
ENERGY DEPENDENCE	**Import Dependency [%]**	64%	70%	56%	53%	58%	61%	57%	56%
	of Solid fossil fuels	92%	92%	86%	88%	44%	44%	36%	37%
	of Oil and petroleum products	101%	101%	102%	98%	95%	97%	97%	92%
	of Natural Gas	90%	137%	88%	69%	83%	90%	84%	83%
	Dependency from Russian Fossil Fuels [%]								
	of Hard Coal	39%	39%	35%	26%	40%	44%	49%	47%
	of Crude Oil	100%	100%	100%	100%	30%	27%	26%	25%
	of Natural Gas	100%	100%	85%	69%	40%	40%	38%	41%

		2015	2016	2017	2018	2019	2020	2021	2022
ELECTRICITY	**Gross Electricity Production (GWh)**	26,903	27,064	27,738	26,971	28,434	28,838	30,016	-
	Combustible Fuels	7,008	7,015	7,367	7,542	7,953	7,897	8,999	-
	Nuclear	15,146	14,774	15,081	14,843	15,282	15,444	15,730	-
	Hydro	4,137	4,606	4,623	3,879	4,571	4,799	4,552	-
	Wind	6	6	6	6	6	4	5	-
	Solar	506	533	506	585	589	663	671	-
	Geothermal	0	0	0	0	0	0	0	-
	Other Sources	100	130	155	116	33	31	59	-
	Net Imports of Electricity (GWh)	2,388	2,651	3,028	3,682	1,700	319	774	-
	As a % of electricity available for final consumption	9%	10%	11%	14%	7%	1%	3%	-
	Electricity Interconnection (%)	-	-	43.30%	42.65%	45.3%	41.4%	40.2%	47.0%

		2015	2016	2017	2018	2019	2020	2021	2022
DIVERSIFICATION OF GAS SUPPLIES	**Gas Consumption (in bcm)**	4.6	4.7	4.7	4.6	4.7	4.9	5.5	5.3
	Gas Imports - by type (in bcm)	4.4	4.4	5.2	4.4	6.7	4.3	5.1	-
	Gas imports - pipeline	4.4	4.4	5.2	4.4	6.7	4.3	5.1	-
	Gas imports - LNG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
	Gas Imports - by main source supplier (in bcm) (1)								
	Russia	4.4	4.3	4.4	4.4	6.7	3.7	3.5	-
	Not specified	0.0	0.1	0.8	0.0	0.0	0.6	1.6	-

		2019	2020	2021	2022
	LNG Terminals				
	Number of LNG Terminals (2)				
	LNG Storage capacity (m3 LNG)				
	Underground Storage				
	Number of storage facilities	2	2	2	2
	Operational Storage Capacity (bcm)	4.4	4.4	4	4

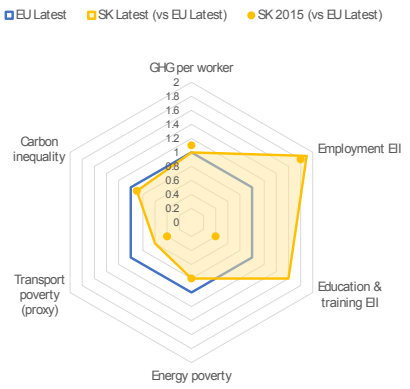
		2019	2020	2021	2022
CLEAN ENERGY	**VC investments in climate tech start-ups and scale-ups (EUR Mln) (3)**				
	as a % of total VC investments in Slovakia	n.a.	n.a.	n.a.	n.a.
	Research & Innovation spending in Energy Union R&i priorites (2)				
	Public R&I (EUR mln)	431.7%	922.5%	827.2%	n.a.
	Public R&I (% GDP)	0.0%	0.0%	0.0%	n.a.
	Private R&I (EUR mln)	25.32	n.a.	n.a.	n.a.
	Private R&I (% GDP)	0.00	n.a.	n.a.	n.a.

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

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

This Annex monitors Slovakia's progress in ensuring a fair transition towards climate neutrality and environmental sustainability, notably for workers and households in vulnerable situations. Employment in energy-intensive industries remained stable in Slovakia, which has one of the highest shares of employment in automotive manufacturing and in the steel industry in the EU. Support is needed to provide the labour force with the skills for the green transition, in line with the Council Recommendation ([56]), support the fair transition and implement REPowerEU. Slovakia's recovery and resilience plan (RRP) outlines crucial reforms and investment for a fair green transition ([57]), complementing the territorial just transition plans and actions supported by the European Social Fund Plus (ESF+).

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



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

Employment in Slovakia's sectors most affected by the green transition remains stable and the green economy is expanding, but workers in declining activities need active support. The greenhouse gas (GHG) emissions intensity of employment in Slovakia declined slightly from 14.8 to 14.2 tonnes per worker between 2015 and 2021, and is now slightly above the EU average of 13.7 tonnes (see Graph A8.1 and Table A8.1). Employment in Slovakia's energy-intensive industries (EII) represented a high and stable share of 5.7% of total employment in 2021 (in 2020: 5.6% vs 3.0% in the EU). Slovakia still has the EU's highest share of direct automotive employment in total manufacturing (16.2% of employees in manufacturing) ([58]). Yet, employment in mining and quarrying has decreased by 16.0% since 2015 (to around 7 000 workers). As regards direct employment in the EU steel industry per capita, Slovakia has the third highest share after Luxembourg and Slovenia (189 employees/100 000 people) ([59]). The job vacancy rate in construction, a key sector for the green transition, is one of the lowest in the EU (0.4 vs 4.0% in EU in 2022) ([60]). Within the RRP two major decarbonisation steps are envisaged: decommissioning the coal power plant in Nováky and the transition of the coal mining region "Horná Nitra", also supported by ESF and ESF+ (as an operation of strategic importance). In particular, in Horna Nitra region, the ESF has been funding a project on promoting employability with a budget of EUR 12 million, taken over by a similar project funded by the Just Transition Fund (JTF). Their aim is to mitigate the impact of the cessation of mining activities on employees and create the conditions for their smooth transition to new employment in other sectors in the region.

Upskilling and reskilling rates in declining and transforming sectors are stable at a relatively low level. Skills are key for smooth labour market transitions and preserving jobs in transforming sectors. In energy-intensive industries, workers' participation in education and training increased from 4.0% in 2015 to 16.2% in 2022, and is now above the EU average (10.4%). Although the adult learning rate is relatively low, a below-average share of citizens believe they do not have the necessary skills to contribute to the green transition (23%

([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 for an overview.

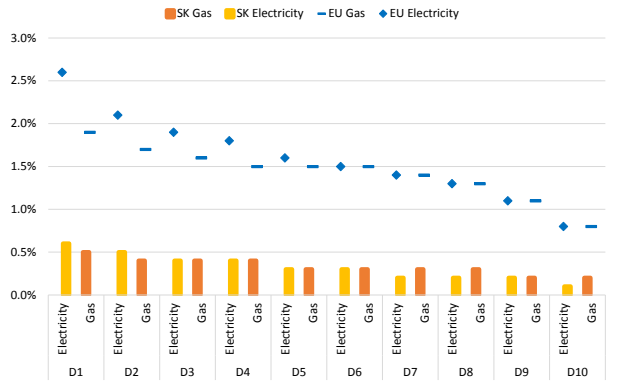
([58]) ACEA, 2020

([59]) European Steel in Figures 2022, EUROFER

([60]) Eurostat (JVS_A_RATE_R2)

in Slovakia vs. 38% in EU) ([61]) (cf. Annex 15). To address the need for skills training, specific investment is planned under the RRP and the "Slovakia" programme (encompassing JTF and ESF+/ERDF) for reskilling workers in regions affected by the transition. The Territorial Just Transition Plan (TJTP) sets the strategy for the investment of EUR 459 million, while the ESF+/ERDF funding of skills will amount to EUR 308 million (with EUR 72 million specifically on green skills and jobs and the green economy). The activities will be based on past re-skilling projects (REPAS/KOMPAS).

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



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

Energy poverty indicators remained stable overall in recent years but the spike in energy prices can be expected to worsen the situation. The share of the total population unable to keep their homes adequately warm was 5.8% in 2021 (below the EU average of 6.9% in 2021), identical to the 2015 value (after a peak at 7.8% in 2019) ([62]). In particular, 18.8% of the population at risk of poverty were affected in 2021 (EU: 16.4% in 2021), as were 4.4% of lower middle-income households (in deciles 4-5) in 2020 (EU: 8.2% in 2021). For higher income deciles, this share is at 5% or below. Before the energy price hikes, an estimated 68.3% of the total population and, at 95.3%, virtually the entire (expenditure-based) at-risk-of-poverty (AROP) population had residential expenditure on electricity, gas, and other fuels ([63]) above 10% of their household budget (markedly above the EU averages of 26.9% and 48.2%, respectively). Slovakia is one of the few countries with an official energy poverty definition ([64]). Regarding adopted measures, Slovakia has put in place a framework strategy for promoting social inclusion and combating poverty. A housing allowance is in place to cover part of the cost of housing, including energy. Nevertheless, by the Energy Poverty Index from 2019 it was listed among the ten EU Member States most behind in terms of alleviating energy poverty ([65]).

The increased energy prices in 2021-2023 are negatively affecting household budgets, in particular for low-income groups. As a result of price changes during the August 2021 to January 2023 period relative to the 18 months prior (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 5.0 percentage points (pps) for the whole population, but not at all among the (expenditure-based) AROP

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

([62]) 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.

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

([64]) According to Act No. 250/2012 Coll. on Regulation in Network Industries, energy poverty is "a condition where the average monthly household expenditure on the consumption of electricity, gas, heat for heating and for the preparation of domestic hot water constitutes a significant share of the household's average monthly income".

([65]) Energy poverty in Slovakia: Officially defined, but misrepresented in major policies, Energy Policy, Volume 168, September 2022, 113095

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

Indicator	Description	SK 2015	SK Latest	EU Latest
GHG per worker	Greenhouse gas emissions per worker - CO2 equivalent tonnes	14.8	14.2 (2021)	13.7 (2021)
Employment EII	Employment share in energy-intensive industries, including mining and quarrying (NACE B), chemicals (C20), minerals (C23), metals (C24), automotive (C29) - %	5.5	5.6 (2020)	3 (2020)
Education & training EII	Adult participation in education and training (last 4 weeks) in energy-intensive industries - %	4	16.2 (2022)	10.4 (2022)
Energy poverty	Share of the total population living in a household unable to keep its home adequately warm - %	5.8	5.8 (2021)	6.9 (2021)
Transport poverty (proxy)	Estimated share of the AROP population that spends over 6% of expenditure on fuels for personal transport - %	16.1	21.4 (2023)	37.1 (2023)
Carbon inequality	Average emissions per capita of top 10% of emitters vs bottom 50% of emitters	4.4	4.3 (2020)	5 (2020)

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

population (which started from an already very high share), while the EU-level increases were higher (16.4 pps and 19.1 pps, respectively) ([66]). Expenditure shares of low and lower-middle income groups would have increased the most, for both electricity and gas, as shown in Graph A8.2. 74% of Slovaks say they would to reduce their energy use mainly for economic reasons because of the prices ([67]). Among the (expenditure-based) AROP population, individuals living in households with budget shares for private transport fuels ([68]) above 6% would have increased by 5.3 pps same as the EU average and standing below the EU average in January 2023 (21.4% vs 37.9%) Slovakia is among the EU countries with smallest market for electric cars and lowest number of new electric car registrations in 2022 ([69]).

Access to public transport is perceived relatively positively and displays a modest urban-rural divide compared to other EU countries. Citizens perceive public transport to be relatively available (61% vs 55% in the EU), affordable (59% vs 54%) and of good quality (68% vs 60%). As regards these perceptions, the urban-rural divide is less pronounced than in most other Member States and rural areas outperform the EU average for rural areas ([70]). The average carbon footprint of the top 10% of emitters among the population in Slovakia is about 4.3 times higher than that of the bottom 50%, while the EU average is 5.0 times higher (see Graph A8.1). In Slovakia, the average levels of air pollution in 2020 stood above the EU average (14.5 vs 11.2 µg/m PM2.5), with all regions exposed to critical levels of air pollution ([71]), leading to significant health impacts, in particular on vulnerable groups, and 3 918 premature deaths annually ([72]).

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

([67]) Special Eurobarometer 527.

([68]) ECOICOP: CP0722.

([69]) https://www.eea.europa.eu/ims/new-registrations-of-electric-vehicles

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

([71]) Two times higher than the recommendations in the WHO Air Quality Guidelines (annual exposure of 5µg/m3)

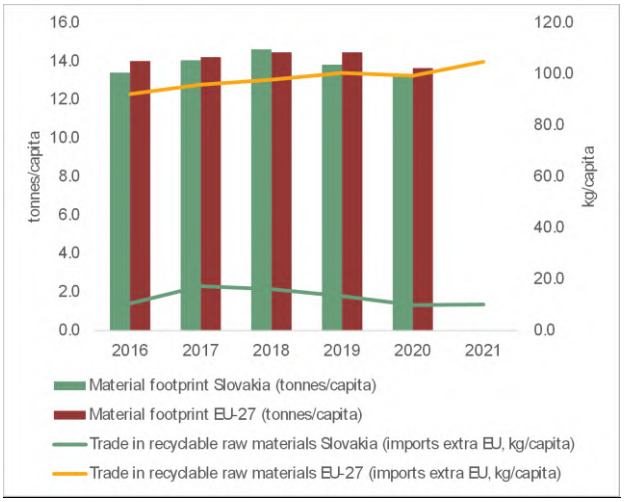
([72]) EEA- Air Quality Health Risk Assessment

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.

The pace of Slovakia's circular economy transition is insufficient to meet the EU's circular economy goals. The EU's 2020 circular economy action plan aims at doubling circular material use by 2030 vs 2020. Slovakia's use of circular material has only slightly increased from 5.3% in 2016 to 8.3% in 2021, which is well below the EU average of 11.7%. The CEAP also aims to significantly decrease the EU's material footprint. In 2020, Slovakia's material footprint (13.3 tonnes per head) was just below 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 (Annex 8).

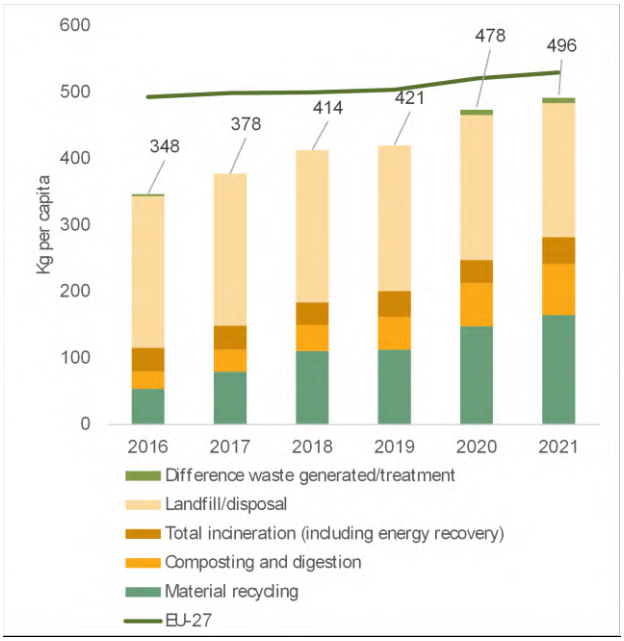
Slovakia started recently to integrate circular economy principles into its policies, but more measures are needed. The first comprehensive circular economy strategy 'Closing the loop in the Slovak Republic' was developed in 2022 in cooperation with OECD ([73]) under the Commission's Technical Support Instrument. Priority areas are food and biowaste, the construction sector, sustainable production and consumption with a focus on economic instruments. Slovakia has taken first steps towards circularity. A fee for light plastic bags was introduced in 2018. Landfill fees have gradually increased since 2019 for municipal, hazardous and other waste and construction and demolition waste in 2022. In 2021, a waste law was modified to prohibit the incineration of waste that can still be recovered or recycled including a ban on landfilling food waste from 2023. As of 2022, Slovakia was among the first EU Member States to introduce a deposit-refund system for single-use beverage packaging.

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



Source: Eurostat

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



Source: Eurostat

Slovakia's recycling performance has been growing swiftly in recent years but remains below the EU average and recycling targets. With a municipal waste recycling rate of 48.9%

([73]) OECD, 2022, Closing the loop in the Slovak Republic: A roadmap towards circularity for competitiveness, eco-innovation and sustainability, available at this link

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

AREA	2016	2017	2018	2019	2020	2021	EU-27	Latest year EU-27
Overall state of the circular economy								
Material footprint (tonnes/capita)	13.4	14.1	14.6	13.8	13.3	-	13.7	2020
YoY growth in persons employed in the circular economy (%)[1]	-1.1	1.1	0.0	0.0	-	-	2.9	2019
Water exploitation index plus (WEI+) (%)	0.3	0.3	1.3	1.2	-	-	3.6	2019
Industry								
Resource productivity (purchasing power standard (PPS) per kilogram)	1.7	1.6	1.6	1.8	1.8	1.9	2.3	2021
Circular material use rate (%)[2]	5.3	5.0	4.9	6.4	10.5	8.3	11.7	2021
Recycling rate (% of municipal waste)	23.0	29.8	36.3	38.5	45.3	48.9	49.6	2021
Built environment								
Recovery rate from construction and demolition waste (%)[3]	54.0	-	51.0	-	81.0	-	89.0	2020
Soil sealing index (base year = 2006)[4]	106.3	-	109.8	-	-	-	108.3	2018
Agri-food								
Food waste (kg per capita)[5]	-	-	-	-	83.0	-	131.0	2020
Composting and digestion (kg per capita)	26.0	33.0	39.0	49.0	65.0	77.0	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

in 2021, Slovakia has missed the EU target for 50% recycling by 2020. Slovakia is at risk of missing the EU's recycling targets for municipal and packaging waste for 2025 and is at a significant distance from the landfill reduction target for 2035. Despite a decrease in landfilling of municipal waste from 65.5% in 2016 to 40.7% ([74]) in 2021, Slovakia still has one of the highest rates in the EU (23% EU average in 2021). A significant number of irregular and substandard landfills in Slovakia are still lacking rehabilitation and definite closure and present serious risks for human health and environment ([75]).

The industrial system is increasingly circular. The economy, particularly industry, is not yet efficient at using materials to produce wealth, with a 1.9 purchasing power standard per kilogramme vs 2.3 for the EU. However, it has been steadily increasing since 2016, indicating significant potential to boost secondary raw materials' use.

The built environment system continues to exacerbate the depletion of resources despite recent improvements. The recovery rate of construction and demolition waste remains below the EU average (81% vs 89%). Progress is expected as a result of the reform adopted in 2022 to facilitate achieving the 70% recycling target for construction and demolition waste. Soil sealing progressed between 2015 and 2018 at a faster rate than the EU average. Slovakia has launched under its RRP a pilot scheme for large-scale renovation to make at least 30 000 family houses more energy-efficient, including measures to foster climate adaptation (such as installing green roofs, water retention system) and improving the recycling and prevention of construction waste. There is still scope for renovating existing buildings and for increasing the share of secondary raw materials used in construction.

The agri-food system has scope to reduce food waste. Slovakia's composting and

([74]) Note a significant data break between 2019 and 2020 due to adjustments in the statistical reporting methodology.

([75]) Waste: Commission decides to refer SLOVAKIA to Court (europa.eu)

anaerobic digestion per head has almost tripled since 2016, but remained below the EU average in 2021 at 77 kg per head vs 100 kg per head. Increasing composting and anaerobic digestion could enhance Slovakia's strategic autonomy by generating biomethane and/or producing organic fertilisers.

There remains a financing gap in the circular economy, including waste management. Additional investments will be required to address growing needs. The financing gap was estimated at EUR 91 million per year between 2014 and 2020. Over this period, investment needs were estimated to be at least EUR 409 million per year while investment baselines were EUR 318 million per year (see Annex 6).

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 Slovakia'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). Slovakia allocates 21% of its total RRP budget to digital (EUR 1.3 billion) ([76]).

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 ([77]). 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 ([78]). Digital technologies, infrastructure and tools all play a role in the fundamental transformation needed to adapt the energy system to the current structural challenges ([79]).

Slovakia is close to the EU average on digital skills, but some areas show need for improvement. The country is just above the EU average for basic digital skills. However, over 72 % of Slovaks have at least basic content creation skills which is the second highest score in Central and Eastern Europe and above the EU average of 66%. The percentage of ICT specialists has continuously grown since 2017, at a growth rate slightly above the EU average. Slovakia's National Digital Skills Strategy and Action Plan 2023-2026, adopted in December 2022, acknowledges the need to improve the digital competencies in Slovakia in order to contribute to the collective efforts to achieve the 2030 Digital Decade target of 80% of individuals aged between 16 and 74 with 'at least basic' digital skills, as well as to contribute to the 20 million ICT specialists target. The RRP is expected to contribute to boosting the level of digital skills in various parts of the population. For example, Slovakia has successfully concluded the pilot phase of the 'senior tablet ([80])' project that distributes tablets to elderly people and disadvantaged persons and trains them on how to use the devices.

Digital infrastructure and connectivity have improved, but progress is still needed to support Slovakia's digital economy. While very high capacity network (VHCN) coverage continued to grow, it remains just below the EU average (71% vs 73%). Fibre-to-the- Premise (FTTP) coverage is on the other hand 67%, above the EU average of 56%. Slovakia progressed quickly also concerning 5G coverage. 55% of the populated areas now benefit from overall 5G coverage, an important increase compared to the 14% coverage of last year but still significantly below the EU average

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

([77]) 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.

([78]) 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).

([79]) 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.

([80]) https://www.digitalniseniori.gov.sk/

of 81%. In terms of 5G coverage on the 3.4–3.8 GHz spectrum Slovakia scores slightly below the EU average of 41%. According to the DESI report, despite relatively low prices, Slovak users prefer to opt for slower broadband. It is important to ensure that end users are aware of the tangible benefits of accessing high and very high internet speeds. Slovakia is not using its RRP to increase investment in connectivity infrastructure.

40% of Slovak SMEs don't reach even the basic level of digital intensity, which is worse than the EU average, although the gap is narrowing. The use of advanced digital technologies such as cloud computing, artificial intelligence or big data by companies is below the EU average. Nearly 30% of Slovak companies are not taking any action to make progress on digital transformation ([81]) and the proportion of SMEs selling online is only at 14% (19% on EU average). As part of its RRP, Slovakia rolled out a new scheme ([82]) to support research and application of advanced digital technologies by companies, research institutions and other entities.

Slovakia is approaching the EU average on digital public services, against the background of an increase of the digitally offered public services. Moreover, Slovakia scores above the EU average with 81% of eGovernment users, Almost 4 million people (or almost 72% of the citizens) have access to an electronic identification (eID) scheme, which has been notified to the European Commission under the eIDAS Regulation. Slovakia is furthermore involved via public and private entities in one large-scale pilot projects testing the European Digital Identity Wallet in a number of everyday use cases. Slovakia's performance concerning access to eHealth records is much poorer (a score of 44 which is below the EU average of 71), suggesting that there is significant room for improvement. It should also be noted that the RRP includes significant investments in digital public services for priority life situations.

([81]) https://www.trend.sk/spravy/digitalizaciou-nezaobera-30-percent-slovenskych-firiem

([82]) https://www.mirri.gov.sk/sekcie/informatizacia/digitalna-transformacia/schema-podpory-digitalnej-transformacie/index.html

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

	Slovakia			EU	Digital Decade target by 2030 (EU)
	DESI 2021	DESI 2022	DESI 2023	DESI 2023	
Digital skills					
At least basic digital skills	**NA**	**55%**	**55%**	**54%**	**80%**
% individuals		2021	2021	2021	2030
ICT specialists ([1])	**4.2%**	**4.3%**	**4.3%**	**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	**50%**	**67%**	**71%**	**73%**	**100%**
% households	2020	2021	2022	2022	2030
Fibre to the Premises (FTTP) coverage ([2])	**49%**	**62%**	**67%**	**56%**	**-**
% households	2020	2021	2022	2022	2030
Overall 5G coverage	**0%**	**14%**	**55%**	**81%**	**100%**
% populated areas	2020	2021	2022	2022	2030
5G coverage on the 3.4-3.8 GHz spectrum band	**NA**	**NA**	**39%**	**41%**	**-**
% populated areas			2022	2022	2030
Digitalisation of businesses					
SMEs with at least a basic level of digital intensity	**NA**	**NA**	**60%**	**69%**	**90%**
% SMEs			2022	2022	2030
Big data ([3])	**6%**	**6%**	**6%**	**14%**	**75%**
% enterprises	2020	2020	2020	2020	2030
Cloud ([3])	**NA**	**31%**	**31%**	**34%**	**75%**
% enterprises		2021	2021	2021	2030
Artificial Intelligence ([3])	**NA**	**5%**	**5%**	**8%**	**75%**
% enterprises		2021	2021	2021	2030
Digitalisation of public services					
Digital public services for citizens	**NA**	**65**	**67**	**77**	**100**
Score (0 to 100)		2021	2022	2022	2030
Digital public services for businesses	**NA**	**75**	**78**	**84**	**100**
Score (0 to 100)		2021	2022	2022	2030
Access to e-health records	**NA**	**NA**	**44**	**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 Slovakia's research and innovation system, which is essential for delivering the twin green and digital transition.

Slovakia is an 'emerging innovator' and the gap between its performance and the EU average is widening. According to the 2022 edition of the European Innovation Scoreboard ([83]), its performance is improving (by 4.6 percentage points) but at a rate lower than the EU average (9.9 pps).

R&D intensity ([84]) remains low. While 2020 saw a solid year-on-year increase in R&D intensity (0.83% of GDP in 2019 against 0.91% in 2020), it remains significantly below EU average (2.26% in 2021) and below the country's peak in 2015 (1.16%). This is driven by low levels of both public expenditure on R&D (0.41% of GDP in 2021) and private expenditure on R&D (0.52%). Moreover, dissatisfactory implementation of European Structural and Investment Funds in the research and innovation (R&I) thematic area ([85]) resulted in several decommitments and hindered the flow of resources to R&I beneficiaries. Slovakia's recovery and resilience plan (RRP) addresses underinvestment within the system and puts forward reforms to ensure more efficient management and strengthening of R&I funding. Considering the large volume of R&I investment ([86]) in Slovakia's RRP, further commitments are necessary to sustain public R&D funding beyond 2026. In this sense, the new 2030 R&D expenditure targets ([87]), featuring in the new national R&I strategy, represent a good approach for the period ahead.

A weak public research system and low-quality scientific outputs constitute a major barrier to better performance for the R&I ecosystem. Scientific excellence remains weak, as evidenced by the share of scientific publications among the top 10% most cited publications. The, currently percentage is around half the EU average (4.5% in 2019 compared to the EU average of 9.8%). The low quality of the scientific base also results in a low ability to retain researchers and attract students ([88]). Slovakia's RRP aims to introduce a system of periodic scientific performance evaluations for universities, to improve the quality of their scientific performance. The RRP also features investment streams for excellent science teams and young scientists.

Science-business links are not well established and hinder the transfer of technology and knowledge. Public expenditure on R&D financed by business enterprise (national) as a percentage of total public R&D expenditure is significantly below the EU average (1.98% in 2020, in comparison to the EU average of 7.45%) and shows a worrying downward trend. More positively, the number of public-private scientific co-publications as a percentage of total publications is increasing but also remains below the EU average (6.6% in 2021 compared with the EU average of 7.1%). Private-sector commercialisation of research is held back by the lack of innovation spending and the lack of business engagement with higher education institutions ([89]). To foster science-business

([83]) 2022, European Innovation Scoreboard, Country profile: Slovakia, ec_rtd_eis-country-profile-sk.pdf (europa.eu). The EIS provides a comparative analysis of innovation performance in EU countries, including the relative strengths and weaknesses of their national innovation systems.

([84]) R&D intensity is defined as gross domestic expenditure on R&D as a percentage of GDP.

([85]) OECD (2021) 'Promoting Research and Innovation in the Slovak Republic through an effective use of European Funds'.

([86]) Total RRP volume equals 206% of public R&D expenditure in 2020.

([87]) Public expenditure on R&D from the national budget to reach 0.67% of GDP by 2030 and private expenditure on R&D to reach 1.2% of GDP.

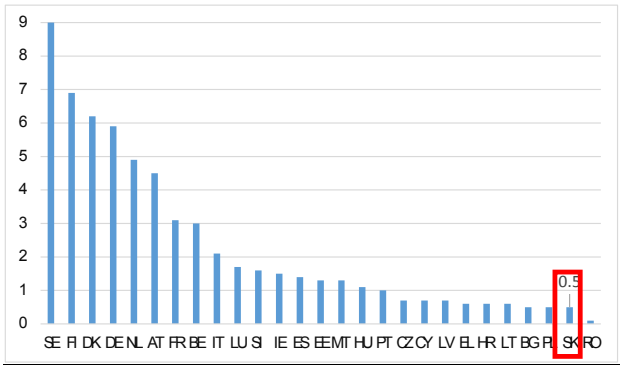
([88]) In Slovakia, the share of tertiary students enrolled abroad is the second highest in the EU. (Education at a Glance 2022: OECD Indicators).

([89]) OECD (2021) SME and Entrepreneurship Policy in the Slovak Republic

cooperation, the RRP aims to mobilise private participation in R&D though several schemes and by transforming the Slovak Academy of Sciences into a public organisation, to facilitate collaboration with private entities.

The data show mediocre results in terms of innovation outputs and business innovation performance. Slovakia performs poorly as regards the number of patent applications (in 2019, 0.5 patents were filed under the Patent Cooperation Treaty per billion GDP against the EU average of 3.3). Though the share is higher for thematic green and information and communication technology patent applications, numbers are falling in both those fields. The number of researchers employed by businesses was very low (in 2019, 1.5 per thousand active population against the EU average of 5.1), and, in 2020, small and medium-sized enterprises (SMEs') expenditure on R&D accounted for just 0.21% of GDP, compared with the EU average of 0.36%.

Graph A11.1:**Patent applications filled under PCT in 2020 (per billion GDP in PPS)**



Source: Eurostat, 2022

Although Slovakia offers generous R&D tax incentives, the take-up rate by firms is still relatively low (foregone tax revenues at 0.028% against EU average of 0.100% in 2019). While the availability of venture capital continues to increase, venture capital investment as a percentage of GDP remains below the EU average (see Table A11.1). The RRP envisages voucher support schemes: innovation vouchers to stimulate SMEs to cooperate with research organisations and digital vouchers to promote the digitalisation of services and processes for SMEs and enterprises. The resources available under the RRP will be used to set up financial instruments to support innovation. However, the RRP does not tackle ([90]) issues with the overall innovation support set-up to further enhance innovation diffusion in business.

([90]) These issues are also addresses in Programme Slovakia: 2021-2027 under Specific goal: Development/expansion of R&D capacities and advanced technologies in RIS3 domains.

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

Slovakia	2010	2015	2019	2020	2021	EU average (1)
Key indicators						
R&D intensity (GERD as % of GDP)	0.61	1.16	0.83	0.91	0.93	*2.26*
Public expenditure on R&D as % of GDP	0.35	0.83	0.37	0.42	0.41	*0.76*
Business enterprise expenditure on R&D (BERD) as % of GDP	0.26	0.32	0.45	0.49	0.52	*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	2.7	3.7	4.5	:	:	*9.8*
PCT (Patent Cooperation Treaty) patent applications per billion GDP (in PPS)	0.5	0.6	0.5	:	:	*3.3*
Academia-business cooperation						
Public-private scientific co-publications as % of total publications	5.4	5.2	6.1	6	6.6	7.1
Public expenditure on R&D financed by business enterprise (national) as % of GDP	0.028	0.036	0.008	0.008	:	*0.054*
Human capital and skills availability						
New graduates in science & engineering per thousand pop. aged 25-34	17.6	13.1	9	8.8	:	*16*
Public support for business enterprise expenditure on R&D (BERD)						
Total public sector support for BERD as % of GDP	0.031	0.035	0.045	:	:	*0.194*
R&D tax incentives: foregone revenues as % of GDP	0.00002	0.003	0.028	:	:	*0.1*
Green innovation						
Share of environment-related patents in total patent applications filed under PCT (%)	17.7	20.2	10	:	:	*13.3*
Finance for innovation and economic renewal						
Venture capital (market statistics) as % of GDP	0.001	0.008	0.011	0.017	0.025	*0.074*
Employment in fast-growing enterprises in 50% most innovative sectors	9.6	7.7	7.8	:	:	*5.5*

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

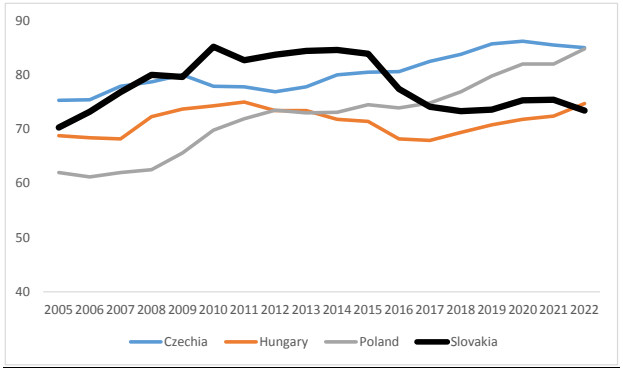
Source: Eurostat, OECD, DG JRC, Science-Metrix (Scopus database and EPO's Patent Statistical database), Invest Europe

Productivity growth remains a key challenge for the Slovak economy. Underperformance in education and innovation areas, low efficiency of public institutions and the quality of the business environment result in low labour productivity in Slovakia. In the last decade, productivity has decreased from 82% per person in PPS in 2011 to 73% in 2022 of the EU average, markedly lagging behind its direct peers (Graph A12.1).

Moreover, the impact of high energy prices and disturbances in global value chains that businesses and industry faced further negatively affect productivity growth (see also Annex 7). Productivity in different sectors varies significantly according to exposure to international markets, size of firm and foreign vs. domestic ownership of businesses. Even though overall productivity growth in industry was the 2nd highest in the EU in 2021 (14.5% in SK vs 7.1% in the EU), in 2022 it has considerably declined and reached a negative growth of 2.6%, below the EU average of 1.4%.

In addition, Slovakia has one of the highest skills shortages across a number of high and medium-skilled jobs in the EU ([91]), which significantly affects the country's economic growth.

Graph A12.1:**Labour productivity per person (in PPS and in % of the EU)**



Source: Eurostat

Slovak businesses face risks related to the current geopolitical situation, affecting their competitiveness. In the World Competitiveness ranking, Slovakia ranks 49th (out of 69 countries) in 2022, its position in the economic performance indicator deteriorating by 10 places compared to 2019 ([92]).

While still recovering from the pandemic crisis, the energy crisis has a substantial impact on the operations of businesses, especially for energy-intensive industries, such as aluminium, ferroalloy, steel and fertilisers, resulting in worker layoffs and reductions in or shutdown of production processes.

At the end of 2022 the confidence indicator in industry was the lowest since May 2020, adversely affected notably by the decrease in orders, mainly recorded in manufacturing ([93]). On the other hand, more and more industrial firms are using the threat of energy crisis as an opportunity and are starting to build their own power installations. Also, the decarbonisation scheme under the Recovery and Resilience Facility could increase energy security and further contribute to the green transition of the industrial producers with the highest emissions.

Slovak businesses are well integrated into the Single Market and in global value chains. Slovakia's trade integration in goods within the EU (63% in SK vs. the 21% EU average) and openness to imports of goods within and outside the EU (82% in SK vs. the 33% EU average) are the highest in the EU as a share of national GDP ([94]).

The Slovak economy is vulnerable to external shocks due to its dependence on industry, exports and high integration in global value chains. Slovakia has the 2nd highest share of exporting and importing firms among EU member states. The number of Slovak firms facing disruptions in the form of materials shortages increased from 23% in 2021 to 32%

([91]) Education and Training Monitor 2022 (europa.eu)

([92]) Rankings published by the World Competitiveness Center - IMD, 2022

([93]) SK Statistical Office: Business tendency surveys, Nov. 2022

([94]) Single Market Scoreboard 2021

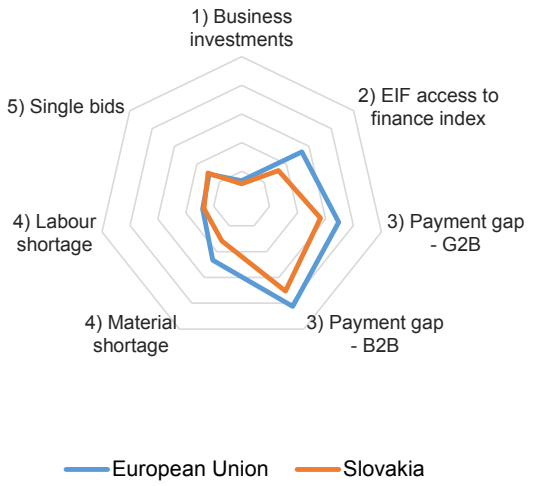
in 2022, with the most significant impact in the automotive industry.

Slovakia could further benefit from the Single Market. The Single Market Scoreboard indicates scope for further improvement in Slovakia. Professional services (such as tax advisers, architects, civil engineers, lawyers, patent agents and tourist guides) remain highly regulated ([95]). Lawyers in Slovakia are subject to incompatibility rules and multidisciplinary restrictions. This could affect the potential of this sector to innovate and roll out digital solutions and new business models. The fragmented system regulating civil engineers could hinder the free movement of professionals and the rules spreading responsibility over different categories of professionals in the same area of activity could impact the efficiency of service provision.

The adopted reform under Slovakia's recovery and resilience plan (RRP) on the recognition of professional qualifications could simplify some aspects of this for foreign professionals, to facilitate their establishment in Slovakia. However, the reform is primarily focused on the healthcare sector and is limited to certain aspects only.

Reducing regulatory barriers in professional services can promote market entry and may foster competition on quality and prices, as well as productivity increases in the regulated sectors and across industries to whom they serve as inputs ([96]).

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.

The business environment is improving, but challenges remain. A reform under the RRP to reduce administrative burden for businesses was introduced. State administration offices will systematically ensure compliance with the new measures such as 1in2out rule, ex-post evaluation of laws and regulations, and protection against unjustified Gold-Plating. Also, barriers that businesses perceive as redundant will be removed. A second anti-bureaucratic package of 198 individual measures (followed by the first one of 2020) based on stakeholder consultations was adopted in 2022 to improve the business environment and reduce the excessive regulatory burden on businesses ([97]).

On the other side, late payments continue to be a serious structural issue, especially in the health sector, with an average payment time of 232 days ([98]), seriously affecting SMEs' liquidity

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

([96]) OECD - impact of_the_2022 RRP on PMR.pdf

([97]) economy.gov.sk_kilecko2 (gov.sk)

([98]) GROW monitoring report, February 2023

and investment. This is almost four times the exceptional period of 60 days set out in the Late Payment Directive for this sensitive sector.

With one of the highest inflation rates in the EU, and producer prices having increased by almost 40% by the end of 2022 compared to the previous year ([99]), late payments degrade Slovak purchasing power, exacerbating the problem. Moreover, the multiple crises have mainly harmed Slovakia's less productive, unprofitable, and indebted firms. Slovakia reported three times more bankruptcy declarations in 2022 than the EU average (262 vs. 86), while business registrations were slightly below the EU average (120 in SK vs. 121 in the EU in 2022) ([100]).

Energy costs, skilled staff and uncertainty about the future have become the major long-term barriers to investment. The investment level in Q2 2022 compared to Q4 2019 decreased by almost 10% in Slovakia ([101]). Obstacles such as lower demand for products and services and labour market and business regulations further hampered growth and risked delaying the digital and green transitions of the economy. Further efforts would be needed to facilitate permitting procedures such as by revising the thresholds for a full Environmental Impact Assessment on renewable technologies, to accelerate the deployment of renewable energy installations.

A Eurobarometer survey ([102]) shows that 62% of surveyed investors are either fairly or very unconfident in terms of their investment being protected by law and courts in Slovakia if something goes wrong. As the main reason for their concerns, most respondents (80%) give 'unpredictable, non-transparent administrative conduct, and difficulty to challenge administrative decisions in court'.

Improving access to finance also remains critical for boosting investment. Access to finance continues to be underdeveloped in both loans and equity, which hampers investment potential in Slovakia. The loan index in 2021 was still below the EU average and remained almost on the same level as in 2013. The equity index has decreased in recent years; in 2021 it reached the lowest level since 2013 (0.05), well below the EU average (0.23).

Moreover, Slovakia's performance in the percentage indicator for rejected or refused loans, the 7th worst in the EU in 2022, continues to be weak. 17% of SMEs applying for a bank loan were rejected or refused loans in 2022. At the same time, the interest rates charged on SMEs' bank overdrafts and credit lines were the highest in the EU in 2021 (4.9% compared to the EU average of 2.5%) ([103]). Financial instruments are planned to support innovative businesses under the RRP but more needs to be done to further promote the availability of finance for entrepreneurs, especially SMEs and innovative firms (see also Annex 11).

Despite the adoption of the comprehensive RRF reform on public procurement, helping to simplify and accelerate procedures and improve control mechanisms, challenges persist. Slovakia still significantly underperforms in the use of quality-related and lifecycle cost criteria in public procurement operations. 96% of public contracts (the highest proportion in the EU in 2022) were awarded based on price alone ([104]). Also, the competition on the public procurement market has deteriorated in recent years. The percentage of public contracts awarded in procedures where there was just one bidder increased almost by 10% in the last five years (30% in 2022 compared to 21% in 2018).

On the other side, Slovakia could benefit from the planned professionalisation of public procurement based on engagement with

([99]) Eurostat: Industrial producer prices

([100]) Eurostat: Business registration and bankruptcy index

([101]) EIB Investment Survey, 2022

([102]) For more information, please see the EU Justice Scoreboard.

([103]) SAFE 2022, SAFE 2021

([104]) Single Market Scoreboard, 2022

various stakeholders beyond public procurement professionals. The efficiency of the tendering process might be further enhanced by streamlining and rationalising the national e-procurement system.

Slovakia could play an important role in addressing strategic dependencies by developing value chains in critical raw materials. It has a long-standing mining and metallurgy tradition and a good mineral potential. Slovakia is the most significant EU producer of magnesite and magnesium compounds. In 2019, it ranked 4th globally in mined production of magnesite, accounting for nearly 4% of world production. Moreover, Slovakia was the 3rd largest producer of manganese ferroalloys in the EU. In addition, it hosts a notable production of primary aluminium and talc, among other mineral and metal commodities. Intensifying the dialogue with the public on the conditions under which sustainable raw materials extraction, processing and recycling could take place would help to spread awareness and knowledge about the importance of raw materials for the green and digital transition in Slovakia and the EU.

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]	3.4	4.2	1.7	2	2.3	**3.7**
		Net public investment, level of public capital stock, net of depreciation, % GDP [1]	0.6	0.5	0.3	0.1	0.2	**0.4**
		Real labour productivity per person in industry (% yoy)[2]	7.3	10	-10.2	14.5	-2.6	**1.4**
	Cost competitive-ness	Nominal unit labour cost in industry (% yoy)[2]	1.3	-4.4	12.8	-6.7	9.4	**2.9**
RESILIENCE	Shortages	Material shortage (industry), firms facing constraints, % [3]	12	9	9	23	32	**47**
		Labour shortage using survey data (industry), firms facing constraints, % [3]	35	27	14	23	27	**28**
		Vacancy rate (business economy)[4]	1.2	1	0.7	0.7	0.9	**3.1**
	Strategic dependencies	Concentration in selected raw materials, Import concentration index based on a basket of critical raw materials [5]	0.23	0.2	0.23	0.24	0.25	**0.18**
		Installed renewables electricity capacity, % of total electricity produced [6]	41.4	41.5	40.9	42.4	n.a.	**50.9**
SINGLE MARKET	Single Market integration	EU trade integration, % [7]	68.8	67.3	62.0	66.9	73.5	**45.8**
	Restrictions	EEA Services Trade Restrictiveness Index [8]	0.04	0.04	0.04	0.04	n.a.	**0.05**
	Public procurement	Single bids, % of total contractors [9]	21	25	26	27	30	**29**
BUSINESS ENVIRONMENT - SMEs	Investment obstacles	Impact of regulation on long-term investment, % of firms reporting business regulation as major obstacle [10]	42	25.9	21.1	22.4	27.8	**29.6**
	Business demography	Bankruptcies, Index (2015=100)[11]	539.7	605.5	406.8	355.1	262.5	**86.8**
		Business registrations, Index (2015=100) [11]	139.2	143.3	135.6	143.1	120.1	**121.2**
	Late payments	Payment gap - corporates B2B, difference in days between offered and actual payment [12]	0	2	14	13	13	**13**
		Payment gap - public sector, difference in days between offered and actual payment [12]	4	3	16	10	13	**15**
		Share of SMEs experiencing late payments in past 6 months, % [13]	n.a.	54.3	50.8	45.6	55.1	**43**
	Access to finance	EIF Access to finance index - Loan, Composite: SME external financing over last 6 months, index values between 0 and 1 [14]	0.37	0.32	0.3	0.34	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]	0.06	0.07	0.07	0.05	n.a.	**0.23**

(*) Last available year

Source: (1) AMECO, (2) Eurostat: NAMA_10_LP_A21, (3) ECFIN BCS, (4) Eurostat: jvs_a_rate_r2, (5) COMEXT, (6) Eurostat: nrg_inf_epc, (7) Eurostat: BOP_C6_A, (8) OECD, (9) Single Market Scoreboard, (10) EIB survey, (11) Eurostat: sts_rb_a, (12) Intrum

(13) SAFE Survey, (14) EIF SME Access to Finance Index.

This Annex outlines the performance of Slovakia's public administration, which is essential for providing services and carrying out reforms. Overall, the effectiveness of Slovakia's public administration continues to rank below the average in the EU-27 ([105]). To address this, there are plans to reduce the administrative burden, helping citizens as well as businesses. Multi-level governance remains a challenge as Slovakia has a very fragmented system of local government, making it more difficult to implement policies and investment projects.

Policy-making and regulatory governance remain at a good level. Slovakia's scores in these areas are around the EU average or slightly above it. Slovakia has adopted the core regulatory impact assessment processes, although these could be more evenly applied across the board.

There are difficulties in ensuring sufficient administrative capacity. Importantly, political influence in staffing and appraisals remains a risk. As regards European Structural and Investment Funds (ESIF), Slovakia continues to battle with inefficient management and low absorption, leading to significant decommitments ([106]). With the deadline for the use of funds from ESIF 2014-2020 approaching, Slovakia has currently used only around 72%[3] (see also Annex 4).

Slovakia scores below the EU average on various e-government indicators, **and government transparency and oversight institutions** (Graph A13.1 and Annex 10). In the provision of open data, it scores 29th out of 35 countries, with especially low scores in the dimensions of 'portal' and 'impact' (Graph A13.1b) ([107]). Slovakia remains below average in the online provision of services. The overall e-government maturity score is 62% compared to an EU average of 73% ([108]), although with an above average score at regional and local level. The range of activities of its independent fiscal institution is also narrower than that of the average EU country, but this has expanded slightly in recent years.

The justice system faces challenges as regards its efficiency. The time to resolve administrative cases at first instance continued to increase to 679 days in 2021 (from 585 days in 2020). At the same time, the rate of resolving administrative cases at first instance decreased (to 80.1% in 2021 from 86% in 2020). The quality of the justice system is overall good, although some concerns remain regarding the integrity of the law enforcement system, linked to the discretionary power of the Prosecutor-General to annul investigations of high-level corruption cases. Some further challenges remain in the prevention of and fight against corruption. The level of digitalisation of the justice system is very advanced. Digital tools are widely used in courts, including an electronic case management system, technology for distance communication and electronic case allocation. As regards judicial independence, no *systemic* deficiencies have been reported ([109]).

([105])Worldwide Governance Indicators, 2021

([106]) https://www.mfsr.sk/files/archiv/8/MaUS_NIRP2.pdf

([107])https://data.europa.eu/en/publications/open-data-maturity

([108]) https://digital-strategy.ec.europa.eu/en/library/egovernment-benchmark-2022

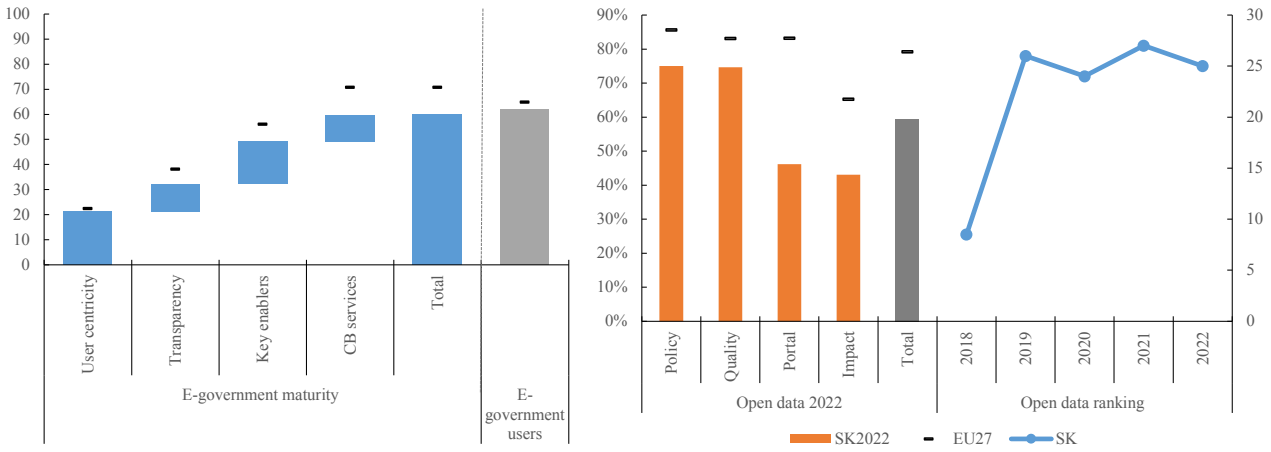
([109]) For a more detailed analysis of the performance of the justice system in Slovakia, see the 2023 EU Justice Scoreboard (forthcoming) and the country chapter for Slovakia in the 2023 Rule of Law Report (forthcoming).

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

	SK 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 (%)	56.9	61.6	69.3	67.8	62.1	n/a	64.8
2	E-government benchmark overall score ([3])	n/a	n/a	n/a	60.6	59.8	62.4	72.9
3	Open data and portal maturity index	n/a	0.7	0.3	0.5	0.5	0.6	0.8
Educational attainment level, adult learning, gender parity and ageing								
4	Share of public administration employees with tertiary education (levels 5-8, %)	36.8	38.3	42.8	45.2	52.2 (b)	51.0	52.0
5	Participation rate of public administration employees in adult learning (%)	4.4	6.7	6.9	3.2	6.1 (b)	22.2 (b)	16.9
6	Gender parity in senior civil service positions ([4])	3.4	7.0	5.6	5.6	0.4	6.0	11.0
7	Ratio of 25-49 to 50-64 year olds in NACE sector O	2.0	2.3	2.2	2.0	2.0 (b)	2.4	1.5
Public financial management								
8	Medium term budgetary framework index	0.8	0.8	0.8	0.8	0.8	n/a	0.7
9	Strength of fiscal rules index	1.4	1.4	1.4	1.4	1.4	n/a	1.5
Evidence-based policy making								
10	Regulatory governance	1.97	n/a	n/a	n/a	1.98	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 A13.1:**Slovakia. a) E-government maturity and e-government users, b) Open government data maturity indicator: 2022 scores (% of the total maximum score) (lhs); country ranking, overall score (rhs)**



(1) a) 2022 data for the e-government maturity indicator and 2021 data for the e-government users indicator, b) right hand side chart: low values denote a good performance
Source: a) E-government benchmark report and Eurostat, b) Open Data Maturity | data.europa.eu

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 Slovakia'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 Slovakia**

Policy area	Headline indicator	
Equal opportunities and access to the labour market	Early leavers from education and training (% of population aged 18-24, 2022)	7.4
	Share of individuals who have basic or above basic overall digital skills (% of population aged 16-74, 2021)	55.18
	Youth NEET rate (% of population aged 15-29, 2022)	12.3
	Gender employment gap (percentage points, 2022)	8.1
	Income quintile ratio (S80/S20) (2020)	3
Dynamic labour markets and fair working conditions	Employment rate (% of population aged 20-64, 2022)	76.7
	Unemployment rate (% of active population aged 15-74, 2022)	6.1
	Long term unemployment (% of active population aged 15-74, 2022)	4.1
	GDHI per capita growth (2008=100, 2021)	126.85
Social protection and inclusion	At risk of poverty or social exclusion (in %) (2020)	13.8
	At risk of poverty or social exclusion for children (in %) (2020)	18.4
	Impact of social transfers (other than pensions) on poverty reduction (% reduction of AROP) (2020)	40.0
	Disability employment gap (ratio) (2020)	23.6
	Housing cost overburden (% of population) (2020)	3.2
	Children aged less than 3 years in formal childcare (% of under 3-years-olds) (2020)	4.8
	Self-reported unmet need for medical care (% of population 16+) (2020)	3.2

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

Update of 27 April 2023. Members States are classified on the Social Scoreboard according to a statistical methodology agreed with the EMCO and SPC Committees. It looks jointly at levels and changes of the indicators in comparison with the respective EU averages and classifies Member States in seven categories. For methodological details, please consult the Joint Employment Report 2023. Due to changes in the definition of the individuals' level of digital skills in 2021, exceptionally only levels are used in the assessment of this indicator; NEET: neither in employment nor in education and training; GDHI: gross disposable household income. The Social protection and inclusion section and the income quintile share ratio indicator are based on the 2020 data, as the 2021 statistical update became available after the cut-off date.

Source: Eurostat

The Slovak labour market recovered in 2021 and 2022, but many challenges persist, particularly long-term unemployment. The employment rate recovered from the COVID-19 crisis in line with economic activity ([110]). It reached 76.7% in2022, above the EU average of 74.6% and the 2030 national target (76.5%). While the unemployment rate at 6.1% in 2022 was slightly below the EU average (6.2%), long-term unemployment is still a challenge: the share of long-term unemployed people out of the total number of jobseekers in the same quarter was 66.7% (EU: 37.7%). In addition, there are big regional disparities between the west of the country and the eastern and 'catching-up' regions ([111]) (Košický, Prešovský and Bánskobystrický), where unemployment rates are much higher. Active labour market policies in Slovakia suffer from a lack of administrative capacity, especially at local level, and they do not sufficiently respond to the needs of the most vulnerable groups. The European Social Fund Plus (ESF+) is set to finance activities tackling long-term employment with tailor-made support to disadvantaged jobseekers, with a budget of EUR 641 million.

The insufficient capacity of early childhood education and care remains a major challenge and contributes to the persisting gender pay gap. Slovakia ranks at the bottom of the Gender Equality Index 2022 (56 out of 100 points). The gender employment gap increased to 8.1percentage points in 2022 from 7.3 percentage points in 2020. The gender pay gap (15.8%), although narrowing since 2019, is still above the EU average (13%) ([112]). The relatively low labour market participation of women with young children is also an issue.

([110]) GDP growth in 2021 and 2022 was 3% and 1.8% respectively.

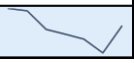
([111]) Slovakia Catching-up Region Initiative (CuRI).

([112]) Report on the social situation of the Slovak population for 2021 (Ministry of Labour, Social Affairs and Family).

This is caused by the limited availability of early childhood education and care facilities (enrolment rate for children aged less than 3 years is only 7%) ([113]) and a low offer of flexible work arrangements.

Skills mismatches, low participation in adult learning and a relatively high rate of young people not in education, employment or training (NEET) are aggravating labour market conditions. The proportion of young people NEET was 14% in 2021 (EU: 13.1%) and fell to 11.6% in Q4-2022 ([114]). Successful European Social Fund projects in this area will be followed by ESF+ funding under a specific Youth Guarantee priority to support reaching the national targets. Among OECD countries, Slovakia has one of the highest skills mismatches rate (35%) in the EU-ISCED 3-8 ([115]) and is largely affected by waves of automation. Slovakia should make more efforts in reskilling/upskilling and adult learning. To achieve the national target for participation in adult learning over the past 12 months of 50%, targeted action is needed ([116]). Furthermore, the participation in adult learning over the past 4 weeks is significantly lower than the EU average (4.8% vs 10.8% in 2021) ([117]).

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

Indicators	Latest data	Trend (2015-2022)	National target by 2030	EU target by 2030
Employment (%)	76.7 (2022)		77	78
Adult learning[1] (%)	42.6 (2016)		50	60
Poverty reduction[2] (thousands)	+47 (2021)		-70	-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.

Slovakia performs well on the share of people at risk of poverty or social exclusion (AROPE) but large regional disparities remain. Despite an increase in 2021, Slovakia has one of the lowest AROPE rates in the EU ([118]) (15.6%). Yet, there are large regional disparities, with the east of the country experiencing deeper levels of poverty and social exclusion. In 2020, AROPE rates were 5% in Bratislava, 10% in Western Slovakia and above 20% in Eastern Slovakia. Tackling these differences is crucial to achieving the 2030 EU headline target on poverty reduction (70 000 fewer people AROPE compared to 2019). Minimum income support is provided by the 'assistance in material need' ([119]) scheme, which faces challenges, including in terms of its adequacy ([120]).

The risk of the social situation deteriorating is exacerbated by high inflation and a lack of affordable housing. The annual inflation rate in December 2022 reached 15.4% (Euro

([113]) Communication of the European Commission on the European Care Strategy, COM(2022) 440 final.

([114]) Youth unemployment and NEET – Employment Institute (iz.sk).

([115]) Education and Training Monitor 2022 (International Standard Classification of Education 3-8: upper secondary to PhD education).

([116]) Participation in learning within the last 12 months.

([117]) Report on the social situation of the Slovak population for 2021 (Ministry of Labour, Social Affairs and Family).

([118]) Share of people at risk of poverty or social exclusion, Eurostat, ILC_PEPS01N.

([119]) Pomoc v hmotnej núdzi

([120]) Exploratory study: filling in the knowledge gaps and identifying strengths and challenges in the effectiveness of the EU Member States' minimum income schemes (2021-2022), APPLICA/ICF.

area average was 9.2 %). Despite highlighting social and rental housing as one of the government's priorities, Slovakia has so far failed to significantly invest in this area. In December 2021, the European Systemic Risk Board warned Slovakia about medium-term vulnerabilities in the country's residential real estate sector ([121]). The housing situation also hampers integrating the 80 000 displaced people from Ukraine staying in Slovakia. Women, children, older people and persons with disabilities make up most of the displaced people residing in Slovakia, and this presents a challenge for social inclusion and the education system.

The situation of the Roma population remains alarming in terms of poverty, employment, education, social exclusion, and access to basic services. Slovakia has one of the largest Roma population in the EU. Approximately 200 000 people live in excluded areas, with no access to drinking water from the public water supply and essential services ([122]). A major challenge is the low-absorption level of European Regional Development Fund funding for the MRC ([123]). According to the latest Roma Survey 2021 by the EU Agency for Fundamental Rights, the situation of Roma NEETs is among the worst across the countries observed and has been deteriorating since 2016. The same survey shows that Slovakia has the highest figure in the EU for segregation of Roma children in education, which has been deteriorating since 2016. In its Partnership Agreement, Slovakia committed to invest EUR 900 million in MRC areas.

([121]) 2022/C 122/07.

([122]) Atlas of Roma Communities, Ministry of Interior, 2019.

([123]) In the 2014-2020 programming period, only some EUR 50 million has so far been spent (less than 1% of the total ERDF allocation.

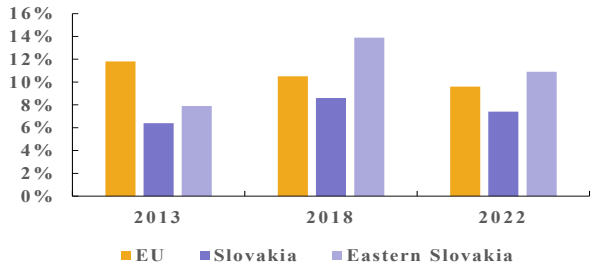
This Annex outlines the main challenges for Slovakia's education and training system in light of the EU-level targets of the European Education Area strategic framework and other contextual indicators, based on the analysis from the 2022 Education and Training Monitor.

Low quality and inclusiveness of education continue to be long-standing challenges. The proportion of young people with low basic skills in reading, mathematics and science - as measured by the PISA test ([124]) – is significantly higher than the EU average. Student socio-economic background greatly affects their performance. The proportion of pupils with special educational needs placed in fully separate educational settings in Slovakia is the highest among the 23 EU countries surveyed (5.63% vs 1.55% in EU-23) ([125]). This trend affects in particular Roma children due to misdiagnosis. In 2020, 17% of pupils from the marginalised Roma communities aged 6 to 15 attended a special school or a special needs class ([126]). Slovakia is preparing a curricular reform at primary and lower secondary level, and legislation on inclusive education; however, stakeholders have voiced concerns regarding the poor consultation process.

Participation in early childhood education and care (ECEC) above age 3 remains one of the lowest in the EU (78.1% vs EU 93% in 2020). Furthermore, only 33% of Roma children above age 3 attended ECEC (27% in 2016) ([127]). Compulsory pre-primary education for 5-year-olds was introduced in September 2021, and legal entitlement to ECEC for 4-year-olds is planned for 2024 and for 3-year-olds in 2025. Sustainable public financing, and high quality and inclusiveness of ECEC are key for inclusive growth.

Early school leaving is below the EU average, but affects mainly the Roma community ([128]). The share of early leavers from education and training decreased further in 2022 to 7.4% (EU: 9.6%), but remained above the level from a decade ago (6.4% in 2013). Despite a notable drop in 2022, the rate remains the highest in eastern Slovakia (10.9%), with its prevalence of the Roma population and with consequences for their job prospects and social inclusion (see Annex 14). The proportion of Roma aged 20-24 who completed at least upper secondary education decreased to 28% in 2021 from 38% in 2016 ([129]). Furthermore, the proportion of Roma children aged 6-15 attending schools where 'all or most schoolmates are Roma' has increased to 65% (2020) from 60% in 2016 ([130]).

Graph A15.1:**Early leavers from education and training by region in Slovakia in 2013, 2018 and 2022 (%)**



(1) Eastern Slovakia is a region in Slovakia at NUTS2 level.
Source: Eurostat

The quality and attractiveness of the teaching profession are limited and teacher shortages are on the rise. Continuing professional development opportunities are limited and schools have low budgets for in-service training. Significant proportions of students do not choose the teaching profession due to low salaries (58%), low social

([124]) OECD Programme for International Student Assessment.

([125]) *The European Agency Statistics on Inclusive Education: 2018 Dataset Cross-Country Report*. https://www.european-agency.org/resources/publications/european-agency-statistics-inclusive-education-2018-dataset-cross-country

([126]) EU SILC_MRK survey 2020.

([127]) FRA Roma Survey 2021. *Roma in 10 European countries*. https://fra.europa.eu/sites/default/files/fra_uploads/fra-2022-roma-survey-2021-main-results_en.pdf

([128]) The estimated share of Roma in Slovakia is 9.1% (CoE, 2011)

([129]) Ibid.

([130]) EU SILC_MRK 2020.

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

				2015		2022	
Indicator			Target	Slovakia	EU27	Slovakia	EU27
[1]Participation in early childhood education (age 3+)			96%	72.2%	91.9%	78.1% 2020	93.0% 2020
[2]Low achieving 15-year-olds in:		Reading	< 15%	32.1%	20.0%	31.4% 2018	22.5% 2018
		Mathematics	< 15%	27.7%	22.3%	25.1% 2018	22.9% 2018
		Science	< 15%	30.7%	21.1%	29.3% 2018	22.3% 2018
Early leavers from education and training (age 18-24)	[3]Total		< 9 %	6.9%	11.0%	7.4%	9.6%
	[3] By gender	Men		6.9%	12.5%	7.5%	11.1%
		Women		6.8%	9.4%	7.3%	8.0%
	[4] By degree of urbanisation	Cities		2.8% u	9.6%	: u	8.6%
		Rural areas		10.1%	12.2%	8.4%	10.0%
	[5] By country of birth	Native		6.9%	10.0%	7.4%	8.3%
		EU-born		: u	20.7%	: u	20.3%
		Non EU-born		: u	23.4%	: u	22.1%
[6]Equity indicator (percentage points)				:	:	30.9 2018	19.3 2018
[7]Exposure of VET graduates to work based learning	Total		≥ 60% (2025)	:	:	56.5%	60.1%
Tertiary educational attainment (age 25-34)	[8]Total		45%	31.3%	36.5%	39.1%	42.0%
	[8] By gender	Men		23.5%	31.2%	27.9%	36.5%
		Women		39.6%	41.8%	50.7%	47.6%
	[9] By degree of urbanisation	Cities		50.2%	46.2%	59.8%	52.2%
		Rural areas		23.8%	26.9%	29.4%	30.2%
	[10] By country of birth	Native		31.2%	37.7%	39.1%	43.0%
		EU-born		: u	32.7%	: u	39.5%
		Non EU-born		: u	27.0%	: u	35.7%
[11]Share of school teachers (ISCED 1-3) who are 50 years or over				37.2%	38.3%	40.3% 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.

recognition (31%) and high stress (26%) ([131]). Lower secondary teachers in Slovakia earn 23.4% less than other tertiary-educated employees ([132]). The recently published teacher forecasting model shows that by 2025, Slovakia may lack almost 8 600 teachers ([133]), mainly in cities and the Bratislava region. The biggest demand is for qualified teachers of languages, mathematics, physics, and information technology, elementary and vocational education and training teachers ([134]). In 2023, Slovakia implements two salary increases: by 10% from January and by 12% from September. Slovakia is considering regional top-up contributions to the salaries in regions with higher costs of living ([135]).

Participation in higher education continues to grow, but the gender gap is among the widest in the EU. Between 2013 and 2022, the tertiary educational attainment rate grew by 9.4 pps. However, the gender gap in favour of women has also widened; at 22.8 pps, it was in 2022 among the highest in the EU. The proportion of graduates in science, technology, engineering and mathematics in 2021 was below the EU average (21.86% v 26%).

The reforms and investment supported with EU funds aim to help address some of the

([131]) Perignáthová, M., (2019). Atraktivita učiteľského *povolania*. https://www.minedu.sk/data/att/15376.pdf.

([132]) OECD, 2022. Education at a Glance - Slovakia.

([133]) Balberčáková, M. et al., (2023). *Prognóza počtu žiakov a učiteľov podľa okresov do roku 2030.* https://www.minedu.sk/data/att/25814.pdf

([134]) Profesia Portal, (2022). *Profesia zmapovala, koľko sa v školstve reálne zarába a či je o miesta učiteľov záujem*. https://firma.profesia.sk/profesia-zmapovala-kolko-sa-v-skolstve-realne-zaraba-ci-je-o-miesta-ucitelov-zaujem/

([135]) Balberčáková, M. et al., (2022). *Možnosti regionálneho odmeňovania pedagogických a odborných zamestnancov v školstve.* https://www.minedu.sk/data/att/25036.pdf

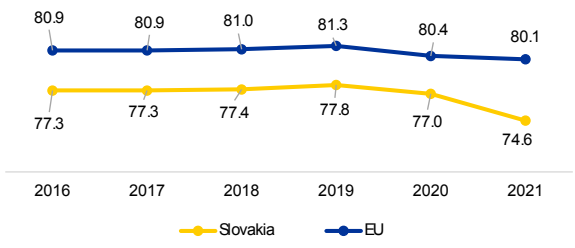
key challenges. Under the recovery and resilience plan, Slovakia started to develop reforms and investments focused on expanding ECEC, modernising school education, reducing early school leaving, improving inclusiveness, and the quality of teacher education. In higher education, reforms are being implemented to improve quality, internationalisation and governance. The programme 'Slovakia (2021-2027)' includes further measures to improve the quality and inclusiveness of education, with a focus on key competences, digitalisation, well-being, and the desegregation of the Roma community. For example, EUR 355 million are allocated for education support to disadvantaged people, notably Roma. Efficient implementation of these measures will be crucial to bring the necessary results. In 2022/23, over 10500 displaced children from Ukraine were integrated in schools, however around 60% are outside the schooling system ([136]).

([136])http://bit.ly/3WsntL3

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 Slovakia.

Slovakia's life expectancy at birth is among the lowest in the EU, and it continued to decline significantly in 2021. Between 2019 and 2020, life expectancy decreased in line with the EU average. In 2021, however, Slovakia suffered one of the largest year-on-year drops in life expectancy of all EU countries, with a reduction of more than 2 years, compared to a decline of approximately 4 months across the EU (Graph A16.1). This large decline closely reflects the much higher COVID-19 mortality in 2021, which increased almost fourfold compared to 2020 ([137]) -. In 2020, the leading causes of death were diseases of the circulatory system ("cardiovascular diseases") followed by cancer. Cancer mortality is one of the highest in the EU, with colorectal and lung cancer being the most frequent causes of cancer death.

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



Source: Eurostat

Except for medical goods, health spending in Slovakia remains significantly lower than the EU average. Against the backdrop of a 1% decline in nominal GDP between 2019 and 2020, Slovakia's health expenditure climbed by nearly 2%, making up 7.23% of GDP. Nonetheless, this is the sixth-lowest share in the EU (EU average: 10.9%). In per-capita terms, Slovakia spent EUR 1 480 (in purchasing power standards) on health in 2020, which is less than half the EU average and a slight decrease in real terms (-0.4%) from 2019. The only area where Slovakia's level of health spending is comparable to the EU average is medical goods (mainly pharmaceuticals) (EUR 471 vs EUR 596 per capita in the EU overall). However, these absorb a share of Slovakia's total health spending that is markedly above the EU average (31.8% vs 18.2%).

Spending on prevention remains among the lowest in the EU. Between 2019 and 2020, the share of spending on prevention in Slovakia's total health expenditure increased from 0.8% to just above 1%. Despite this minor increase, Slovakia remains the EU country that allocates the smallest share of its total health budget to prevention. Across the EU, spending on prevention increased by 26% on average, driven by increased spending on disease detection, surveillance, control and response programmes as part of the public health response to COVID-19. Low spending levels in Slovakia hence raise questions on the preparedness of the health system for possible future public health crises. In per-capita terms, Slovakia spent EUR 15.25 on prevention in 2020, which is only about half of what other EU countries with comparable levels of health spending per capita spent on prevention. Public spending on health is projected to increase by 2.5 percentage points of GDP by 2070, raising significant fiscal sustainability concerns (see Annex 21 and Graph A16.2).

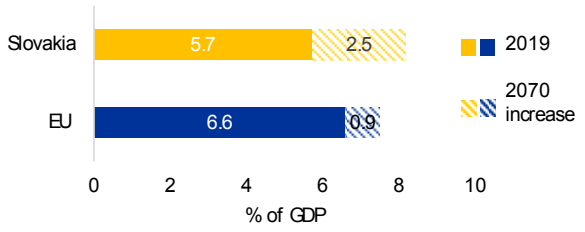
([137]) Based on data provided directly by Member States to ECDC under the European Surveillance System (data current as of 13 April 2023).

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)	173.7	165.3	163.5	168.8	NA	91.7 (2020)
Cancer mortality per 100 000 population	311.4	310.6	293.3	301.8	NA	242.2 (2020)
Current expenditure on health, % GDP	6.8	6.7	7.0	7.2	NA	10.9 (2020)
Public share of health expenditure, % of current health expenditure	79.9	80.1	79.8	80.3	NA	81.2 (2020)
Spending on prevention, % of current health expenditure	1.0	0.8	0.8	1.0	NA	3.4 (2020)
Acute care beds per 100 000 population	491	481	485	481	NA	387.4 (2019)
Doctors per 1 000 population *	3.4	3.5	3.6	3.7	NA	3.9 (2020)
Nurses per 1 000 population *	5.7	5.7	5.7	5.8	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) **	18.5	20.2	18.0	13.2	14.5	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

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



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

Slovakia has a shortage of nurses. Slovakia has a slightly lower density of doctors and a substantially lower density of nurses than the EU average. Relatively low salaries compared to neighbouring countries – especially for nurses, combined with poor working conditions and limited career prospects, explain their relatively low numbers. While the number of doctors has slowly increased over the last decades the density of nurses has been on a long-term downward trend, levelling off in recent years. However, a similar reversal was not observed in the number of nursing graduates Eurostat reports, which continued to decline in 2020 to nearly half the level it was in 2014. To improve the retention of health graduates and personnel, Slovakia has taken measures to reduce the salary gap with neighbouring countries for clinical staff working in hospitals, and has pledged to redesign certain aspects of medical training programmes to make these more appealing.

The age profile of primary care physicians raises concerns about future shortages. Among Slovak physicians, shortages of general practitioners (GPs) and paediatricians are especially severe and disproportionately concentrated in rural areas ([138]). Their insufficient number impinges on the efficiency of the overall health system, as overburdened primary care physicians are unable to act as effective gatekeepers to specialist care and minimise avoidable referrals. The age composition of GPs and paediatricians aggravates concerns about their supply in the near future: in July 2022, 41% of GPs and 48% of paediatricians were aged 63 or above, with a large proportion of them likely to retire in the coming few years ([139]). Under its recovery and resilience plan (RRP), Slovakia pledged to implement a number of important reforms and investments to improve the functioning of primary care and support the set-up of a large

([138])OECD/European Observatory on Health Systems and Policies (2017), Slovak Republic: Country Health Profile 2017, State of Health in the EU, OECD Publishing, Paris/European Observatory on Health Systems and Policies, Brussels. https://www.euro.who.int/__data/assets/pdf_file/0009/355995/Health-Profile-Slovak-Rep-Eng.pdf

([139])Ministry of Health of the Slovak Republic (2022). Retrieved on 12 December 2022, from: https://www.health.gov.sk/Clanok?v-ktorych-okresoch-budu-moct-vseobecni-lekari-a-pediatri-poziadat-o-nenavratnu-financnu-podporu-na-zriadenie-ambulancie.

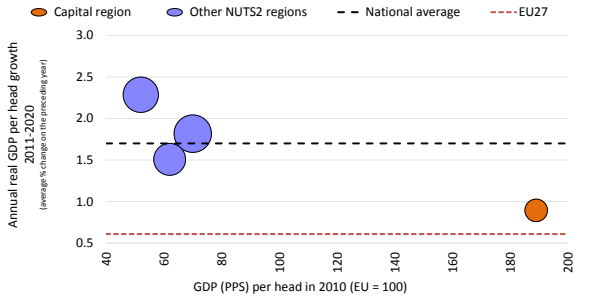
number of outpatient clinics in underserved areas.

Slovakia allocated 20% of the resources under its RRP to health investments. Slovakia is one of the countries that allocated the largest relative share of funds under their RRP to investments in health. An ambitious set of reforms and investments worth more than EUR 1.25 billion will be implemented to strengthen the physical and digital infrastructure of the Slovak healthcare system and improve its quality, accessibility and efficiency.

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

Regional disparities have diminished, but large gaps persist between the capital region and the rest of the country. The gap between Bratislava and the other three regions increased during the period of rapid growth in 2001-2010. Convergence with the EU average stalled at first and was then reversed in 2011-2020. Bratislava recorded a much lower average growth rate than the other regions in the latter decade (see Graph A17.1) and this led to a slight reduction in the gap between the capital and the rest of the country. In the capital region of Bratislava, GDP per capita in purchasing power standards grew steadily from 116% of the EU average in 2000 to 195% in 2013 but then fell back again in relative terms to 149% in 2021. GDP per capita in other regions grew until 2015 and slightly decreased afterwards, reaching 63% of the EU average in Western Slovakia in 2021, 57% in Central Slovakia, and 51% in Eastern Slovakia.

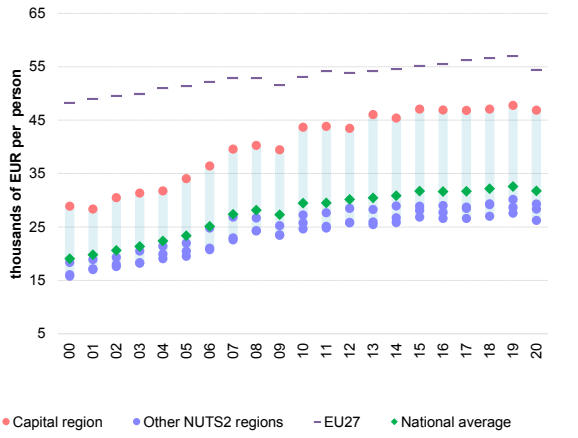
Graph A17.1:**GDP per capita (2010) and GDP growth (2011-2020) - Slovakia**



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

The capital region is more productive and innovative than the other regions. Labour productivity in Slovakia, measured as gross value added per worker in purchasing power standards, was 73% of the EU average in 2020. Bratislava (108%) scored much higher than the three regions of Western, Central and Eastern Slovakia (68%, 60% and 65% respectively). Regional disparities remained rather stable in 2011-2020 (Graph A17.2). Real annual productivity growth rates varied from 0.18% in the central region to 1.42% in Eastern Slovakia in 2011-2020. At the NUTS3 level, the regions of Trnava in Western Slovakia and Košice in Eastern Slovakia, stand out as the most productive ones. R&D expenditure in the capital region, at 1.4% of GDP, was twice that in the other regions but still much lower than the EU average of 2.3%. The Bratislava region is only a moderate innovator, while the other three regions are classified as emerging innovators (the lowest category) on the regional innovation scoreboard 2021 (see Annex 11).

Graph A17.2:**Labour productivity (real GVA per worker) developments, 2000-2020**



Source: EUROSTAT, DG REGIO elaboration

All Slovak regions except Bratislava rank below the EU average on competitiveness. The regional competitiveness index for the capital region was 113.6 in 2022 (the EU average is set at 100). Further to the east, the overall index declined to 84.8 in Western Slovakia, 80.4 in Central Slovakia and 72.4 in Eastern Slovakia. The Bratislava region performed much better than the others on every component of the index. The only exception was the quality of institutions, for which the rather negligible differences

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

NUTS region name	GDP per head (purchasing power standard/PPS)	Productivity (gross value added (PPS) per person employed)	R&D expenditure	CO2 emissions from fossil fuels per head	Unemployment rate	People at-risk-of-poverty or social exclusion	Population aged 30-34 with high educational attainment	Early school leavers
	EU27 = 100, 2020	EU27 = 100, 2020	% of GDP, 2019	tCO2 equivalent, 2021	% of active population, 2021	% of population, 2020	% of population aged 30-34, 2021	% of population aged 18-24, 2021
European Union	100.0	100.0	2.3	8.0	7.0	21.6	41.6	9.7
Slovakia	70.1	73.3	0.8	8.7	6.8	13.8	40.2	7.8
Bratislava region	161.6	108.2	1.4	10.7	2.6	5.9	61.5	
Western Slovakia	64.7	67.8	0.6	8.1	4.7	9.5	32.9	
Central Slovakia	55.7	60.5	0.7	6.1	7.4	18.0	33.5	7.5
Eastern Slovakia	50.0	65.2	0.5	10.7	10.9	18.4	43.8	14.4

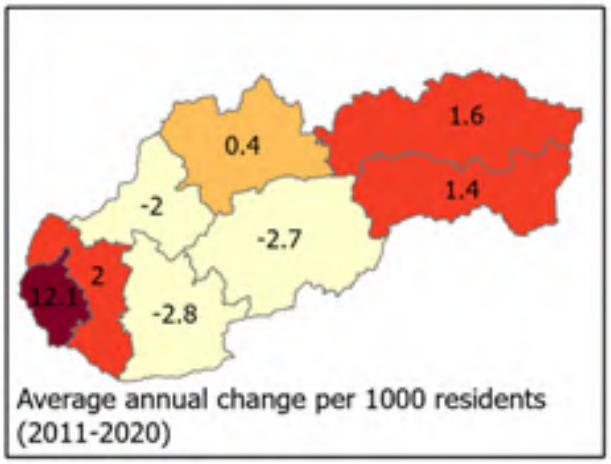
Source: Eurostat, EDGAR database

reflected a high degree of administrative centralisation.

Slovakia reduced greenhouse gas emissions by 38% since 1990 until 2021. In 2021, emissions per capita varied from 6.1 tCO_2 equivalent per person in Central Slovakia to 10.7 tCO_2 equivalent per person in the Bratislava capital region. The average carbon footprint in the EU was 8 tCO_2 equivalent per capita.

Better job opportunities attract workforce to the Bratislava region. The employment rate in Bratislava (83.4%) was much higher than the EU average (73.1%) in 2021, but declined as one went further east (77.3%, 73.9% and 68.5% in Western, Central and Eastern Slovakia respectively). Conversely, Bratislava's unemployment rate of 2.6% was lower than the EU average of 7.0% and the rates for Western, Central and Eastern Slovakia (4.7%, 7.5% and 10.9% respectively). 54% of employment in Bratislava was in knowledge-intensive services, but the corresponding figure for the other regions varied between 30% and 38%. A similar pattern emerges for employment in high-technology sectors (12.5% in the capital region and less than 5% in the other regions in 2021). The capital region experienced high population growth (Map A17.1), mainly due to net migration, in 2011-2020. The population increases in Easter Slovakia reflect higher fertility rates, which have more than compensated for the mildly negative migration balance of the region.

Map A17.1: **Population changes in Slovakia between 2011 and 2020**

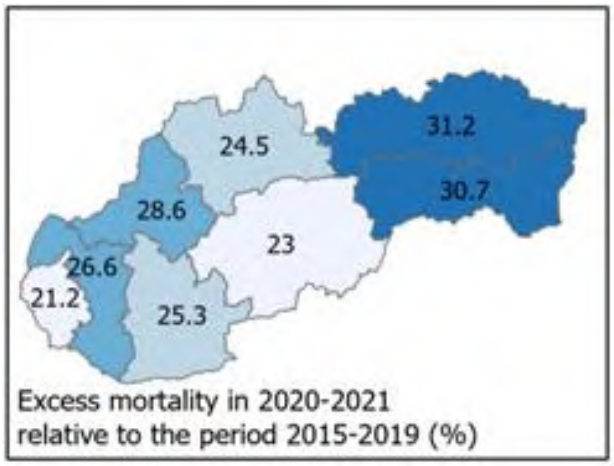


The east of the country is relatively more affected by poverty and social exclusion. The share of people at risk of poverty or social exclusion (AROPE) is lower that the EU average in all regions, but in Central and Eastern Slovakia it is double that in Western Slovakia and the gap with Bratislava is even bigger. Eastern Slovakia has the highest share of early school leavers (almost double the national average), which may reflect the high concentration of Roma population in the region and the challenges of their integration into mainstream education. By contrast, the share of young people with tertiary education is higher in Eastern Slovakia than in Central and Western Slovakia, which may reflect the presence of large foreign enterprises and technology clusters, particularly around the regional capital city Košice.

COVID-19 caused substantial excess mortality in 2020 and 2021. Compared with

2015-2019, mortality increased by 21-31% (Map A17.2). In Eastern Slovakia, in particular, excess mortality was high compared to other EU regions. Slovakia's unemployment rate increased from 5.8% in 2019 to 6.7% in 2020 due to the pandemic. It increased slightly further to 6.8% in 2021, but this masked some divergence between the regions: while unemployment in the capital almost returned to the pre-pandemic level, it stagnated in Western Slovakia and continued to rise in Central and Eastern Slovakia.

Map A17.2: **Excess mortality in Slovakia during the COVID-19 pandemic**

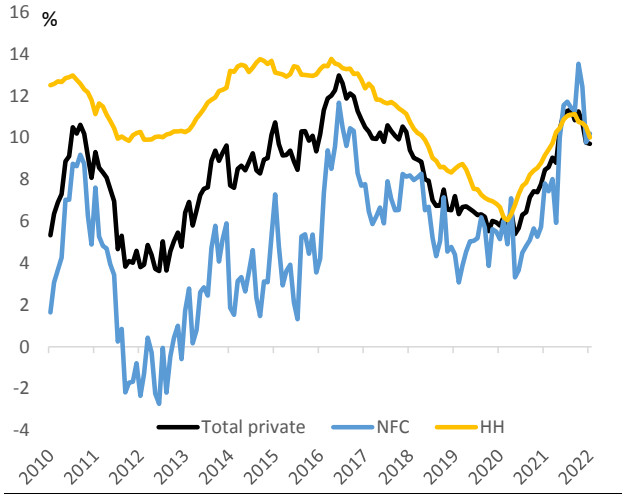


Slovakia's banking sector is highly concentrated and predominantly foreign owned. Total banking-sector assets were equivalent to 105.8% of GDP in Q3-2022. The banking sector is highly concentrated and predominately foreign owned (foreign-owned banks account for around 87% of total banking-sector assets). The five largest banks in the system hold 79.3% of total banking-sector assets. The market funding ratio has declined further in recent years and stood at a relatively low 24.5% in 2021 (EU average: 50.8%) as bank loans are the most significant form of financing. Stock market capitalisation remains very low at 2% of GDP (EU average: 85.5%).

The Slovakian banking sector remains resilient. It is highly profitable and well capitalised. Banking-sector profitability remained high in Q2-2022, with a return on equity of 8.8% (EU average: 6.1%). This was largely due to the increasing growth in net interest income due to the increase in interest rates. The cost-to-income ratio declined to 51.5 % in Q3-2022 from 53.7% in 2021. The banking capital-adequacy ratio was 18.9% in Q3-2022 (EU average: 18.6%), signalling the robustness of the banking sector. Slovak banks remain well capitalised, with a common equity tier 1 ratio of 16.5% in Q3-2022 (EU average: 15.3%). There is a significant amount of liquidity in the banking system, as the liquidity coverage ratio was at 152.3% in Q3-2022. To further strengthen the resilience of credit institutions, the country's central bank, the National Bank of Slovakia (NBS), announced in June 2022 an increase in the countercyclical capital buffer rate applicable to the risk exposure of local banks from 1% to 1.5% as of 1 August 2023 ([140]).

Slovakian banks are continuing to reduce their non-performing loans (NPLs). The NPL ratio decreased further to 1.8% in Q3-2022, the lowest level since 2016 (EU average: 1.8%) despite the gradual unwind of pandemic-support measures. Similarly, the coverage ratio of NPLs remained high at 70.2% in Q3-2022, which reflects banks' ability to absorb future losses. Asset quality has improved for both loans to corporates and loans to households. However, the economic slowdown and current financial conditions (higher energy prices, rising inflation, higher interest rates, and growing uncertainty) could pose risks – primarily for the debt-repayment capacity of borrowers.

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



Source: ECB.

Lending activity strengthened in 2021 and increased even further by the end of 2022. Lending to non-financial corporations increased by 10.2% year-on-year, while lending to households increased by 10.O% year-on-year. Inflation and higher interest rates are expected to have a greater impact on non-financial corporations than on households due to the higher increases in wholesale prices faced by industry. According to the NBS, although only a relatively small share of firms are energy intensive, it often accounts for a greater share of banks' corporate loans.

Household debt continued to rise but is expected to fall in the coming months. According to Eurostat, household debt rose

([140]) https://nbs.sk/en/financial-stability/fs-instruments/ccyb/.

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

	2017	2018	2019	2020	2021	2022	EU	Median
Total assets of the banking sector (% of GDP)	91.7	91.2	91.6	100.1	108.2	105.8	276.8	207.9
Share (total assets) of the five largest banks (%)	74.5	75.6	75.7	76.8	79.3	-	-	68.7
Share (total assets) of domestic credit institutions (%)[1]	15.6	15.1	14.9	14.2	13.5	13.0	-	60.2
NFC credit growth (year-on-year % change)	7.8	8.2	4.4	5.1	7.8	10.2	-	9.1
HH credit growth (year-on-year % change)	12.4	10.7	8.5	6.7	9.2	10.0	-	5.4
Financial soundness indicators:[1]								
- non-performing loans (% of total loans)	3.7	3.2	2.9	2.5	2.0	1.8	1.8	1.8
- capital adequacy ratio (%)	18.6	17.8	18.0	19.3	19.4	18.9	18.6	19.8
- return on equity (%)[2]	9.3	9.3	8.3	5.3	8.4	8.8	6.1	6.6
Cost-to-income ratio (%)[1]	57.8	56.4	58.0	59.7	53.7	51.5	60.6	51.8
Loan-to-deposit ratio (%)[1]	96.2	98.5	99.1	95.4	89.6	95.8	88.6	78.0
Central bank liquidity as % of liabilities	1.7	1.7	0.7	5.0	11.1	6.9	-	2.9
Private sector debt (% of GDP)	89.8	90.5	91.0	94.5	95.0	-	-	120.7
Long-term interest rate spread versus Bund (basis points)	59.9	48.9	50.0	47.3	29.3	93.3	-	93.3
Market funding ratio (%)	29.8	28.8	28.0	25.0	24.5	-	50.8	40.0
Green bonds issued to all bonds (%)	-	-	-	0.0	0.7	1.4	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.

from 42.5% of GDP in 2019 to 47% of GDP in 2021 ([141]). Rising interest rates and economic uncertainty are expected to dampen demand for mortgages, thus mitigating the risks associated with rising indebtedness. Rising interest rates and economic uncertainty are also likely to end the recent pattern of sharp growth in property prices. The NBS partially adjusted the total debt-to-income limit for mortgage loans held by people in retirement. The new rules came into force in January 2023 and aim to prevent retired people from having excessively large mortgages.

Following price growth throughout 2021, the housing market saw continued price gains in the first quarter of 2022. House-price growth has accelerated since the beginning of 2019, and this rapid pace continued until the summer of 2022, when year-on-year growth in house prices reached almost 30%. According to the NBS, this growth was mainly caused by strong demand for housing, due to accumulated savings during the pandemic, low interest rates on mortgage loans, and the expectation of further increases in real-estate prices ([142]). The housing market began to change course in Q3-2022 due to rising housing prices, higher interest rates, and the reduced credit capacity of households. The total number of purchase transactions for real estate began to decline in recent months.

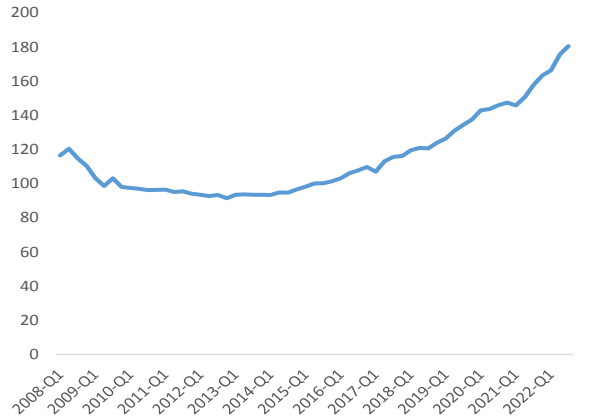
In December 2021, the European Systemic Risk Board ([143]) issued a warning to Slovakia about medium-term vulnerabilities in the residential real-estate market being a potential risk to the country's financial stability. The ESRB considered the main vulnerabilities to be: (i) the increasing risk of house-price overvaluation; (ii) the high rate of house-price growth; and (iii) rising household indebtedness.

([141]) https://ec.europa.eu/eurostat/databrowser/view/tipspd22/default/table?lang=en.

([142]) https://nbs.sk/en/publications/financial-stability-report/financial-stability-report-november-2022/.

([143]) https://www.esrb.europa.eu/news/pr/date/2022/html/esrb.pr220211~9393d5e991.en.html.

Graph A18.2:**Housing prices**



(1) 2015=100.
Source: Eurostat.

The insurance sector is rather small. The total assets of all insurers are equivalent to 4.9% of GDP in Q2-2022. The level of sector capitalisation in terms of the SCR ratio was 207.2% in Q2-2022. According to NBS, in Q1-2022 the profitability of the insurance sector increased by 14.0% year-on-year due to extraordinary effects (e.g. higher dividends from subsidiaries, sales of buildings). Following EIOPA's investigation of a breach of Union law by the Slovak insurance supervisory authority (NBS) and the hereto related recommendations, the European Commission adopted in September 2022, a formal opinion requiring the NBS to fully comply with the EU prudential regime for insurance and reinsurance undertakings in the EU (Solvency II).

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

Slovakia's tax revenues are relatively low in relation to its GDP. The tax mix can be made more efficient and more supportive of inclusive and sustainable growth. Table A19.1 shows that Slovakia's tax revenues as a percentage of GDP (34.7% in 2022) were considerably below the EU aggregate (40.6% in 2021), even though they were about 8 percentage points (pps) higher than in 2010. The ratio of revenues from labour taxes to total tax revenues (53.8% in 2021) was above the EU aggregate (51.4% in 2021), as was the share of consumption taxes in total tax revenues (32.7% in 2021; EU: 27.5%). Environmental taxes were above the EU aggregate in 2021, as a share of both GDP and total taxation (see Graph A19.1), but this was due to energy tax revenues based on a large tax base, whereas transport and resource and pollution taxes generated below-average revenues.

More use could be made of property and environmental taxation. To promote greener transport, Slovakia has recently reduced the registration tax for low-emission cars. The registration tax ranges from EUR 33 to over EUR 3 000. Revenues from property taxes remain low as a percentage of both GDP and total tax revenue (see Graph A19.1). This is also the case for revenues from recurrent property taxes, which are among the taxes least detrimental to growth and which remain well below the EU aggregate. As in the case of environmental taxation, property taxation also indicates that more use can be made of tax bases.

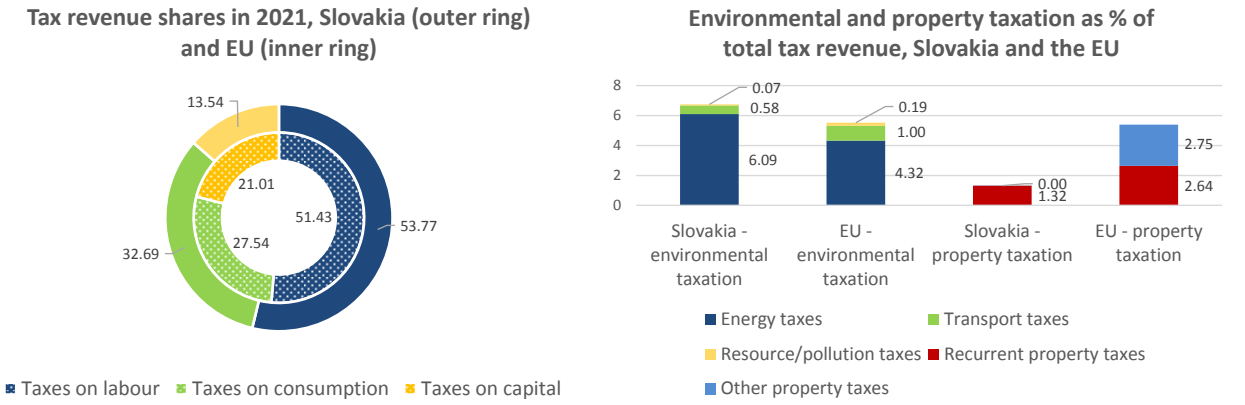
Strengthening the taxation system could help in light of high long-term fiscal sustainability risks. Slovakia faces high fiscal sustainability risks due to a combination of an ageing population, a fiscally unsustainable pension system and a fiscal policy framework

Table A19.1: **Taxation indicators**

		Slovakia					EU-27				
		2010	2019	2020	2021	2022	2010	2019	2020	2021	2022
Tax structure	Total taxes (including compulsory actual social contributions) (% of GDP)	27.8	34.4	34.6	35.2	34.7	37.9	39.9	40.0	40.6	
	Labour taxes (as % of GDP)	14.4	18.5	18.9	19.3		20.0	20.7	21.3	20.9	
	Consumption taxes (as % of GDP)	9.8	11.5	11.4	11.7		10.8	11.1	10.7	11.2	
	Capital taxes (as % of GDP)	3.6	4.3	4.3	4.9		7.1	8.1	8.0	8.5	
	Total property taxes (as % of GDP)	0.4	0.4	0.5	0.5		1.9	2.2	2.2	2.2	
	Recurrent taxes on immovable property (as % of GDP)	0.4	0.4	0.5	0.5		1.1	1.2	1.2	1.1	
	Environmental taxes as % of GDP	2.1	2.5	2.5	2.4		2.4	2.4	2.2	2.2	
Progressivity & fairness	Tax wedge at 50% of average wage (Single person) (*)	31.8	37.3	36.4	36.9	37.3	33.9	32.3	31.9	32.1	31.7
	Tax wedge at 100% of average wage (Single person) (*)	38.1	41.9	41.3	41.5	41.6	41.0	40.1	39.9	39.7	39.7
	Corporate income tax - effective average tax rates (1) (*)		19.3	19.3	19.3			19.5	19.4	19.1	
	Difference in Gini coefficient before and after taxes and cash social transfers (pensions excluded from social transfers) (2) (*)	5.6	5.0	6.3			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 %) (*)		22.1	22.8				31.6	40.7		
	VAT Gap (% of VAT total tax liability, VTTL)		15.0	13.9				11.0	9.1		

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

Graph A19.1:**Tax revenues from different tax types, % of total revenue**

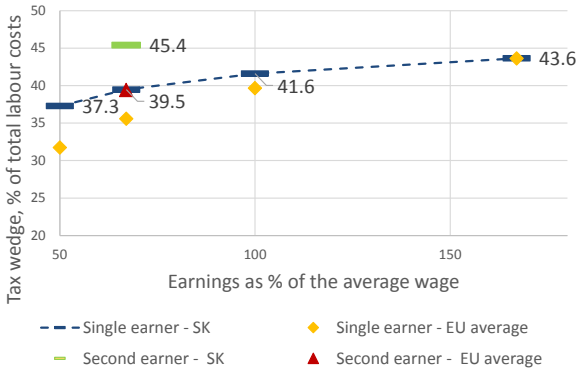


Source: European Commission

that does not sufficiently incentivise fiscal sustainability. In relation to fiscal sustainability challenges, there is room to make greater use of tax types that are currently underused, such as environmental and property taxes. However, given the background of high inflation, rising food and energy costs, the government has introduced permanent increases for family benefits (higher child allowances and tax breaks). At the national level, one-off payments for pensioners and energy subsidies for firms have been introduced. At the local level, property taxation has been slightly increased. At the end of 2022, the parliament also approved several amendments linked to taxation (e.g. taxation of excess profits, VAT reductions for certain venues, abolition of concession fees, and higher insurance levies).

Labour taxation is less progressive than the EU average due to a relatively high tax wedge for lower income levels. Graph A19.2 shows that the labour tax wedge for Slovakia in 2022 was above the EU average for single people at 50% of the income level of the average wage, and close to the EU average at higher levels of income. Second earners at a wage level of 67% of the average wage, whose spouses earn the average wage, were subject to a tax wedge above the EU average.

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



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

Digitalisation of tax administration could be further developed in order to reduce tax arrears and compliance costs. The VAT gap (the gap between revenues actually collected and the theoretical tax liability) in Slovakia continued its downward trend, falling from 15% in 2019 to 13.9% in 2020, but is still above the EU-wide gap of 9.1%. This increase in compliance was accompanied by a sudden drop in the bankruptcy rate, which fell by nearly 33% in 2020. The measures underlying this drop include postponed deadlines for filing VAT and income tax returns, and wage subsidies to employers aimed at maintaining pre-pandemic employment. Although not mandatory, real-time electronic reporting of data to the tax administration could also improve tax compliance. Slovakia is among the Member States that have provided estimates of their corporate income tax (CIT) gap or have taken steps to do so. Slovakia has also reduced the threshold for the reduced CIT rate for micro-taxpayers (i.e. taxpayers with an annual taxable revenue below EUR 49 790). In relation to tax efficiency in Slovakia in 2019, the time spent filing tax returns has decreased for CIT but has increased for personal income taxation (PIT).

ANNEX 20: TABLE WITH ECONOMIC AND FINANCIAL INDICATORS

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)	7.8	2.1	2.8	-3.3	4.9	1.7	1.7	2.1
Potential growth (y-o-y)	5.8	3.7	2.2	1.4	1.7	1.9	2.5	2.1
Private consumption (y-o-y)	6.5	1.2	2.7	-1.1	2.6	5.5	0.6	0.8
Public consumption (y-o-y)	2.1	1.9	2.6	-0.6	4.2	-4.3	2.9	1.3
Gross fixed capital formation (y-o-y)	9.9	-1.5	3.8	-10.9	3.5	5.9	9.0	3.7
Exports of goods and services (y-o-y)	17.7	4.1	4.4	-6.3	10.9	2.3	3.2	6.1
Imports of goods and services (y-o-y)	16.5	1.6	4.9	-8.1	12.1	4.0	3.9	5.2
Contribution to GDP growth:								
Domestic demand (y-o-y)	6.4	0.6	2.8	-3.1	3.0	3.4	2.8	1.5
Inventories (y-o-y)	0.6	-0.6	0.4	-1.9	2.6	-0.1	-0.1	0.0
Net exports (y-o-y)	0.7	2.0	-0.3	1.6	-0.8	-1.6	-0.9	0.6
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	0.4	0.7	-0.1	-0.7	-0.3	0.2	0.4	0.0
Capital accumulation (y-o-y)	1.2	1.0	1.1	0.5	0.5	0.6	1.0	1.0
Total factor productivity (y-o-y)	4.2	2.1	1.2	1.6	1.5	1.1	1.0	1.1
Output gap	1.7	-0.1	-0.3	-2.8	0.3	0.0	-0.7	-0.7
Unemployment rate	14.8	12.6	9.8	6.7	6.8	6.1	5.8	5.4
GDP deflator (y-o-y)	3.1	1.0	0.8	2.4	2.4	7.5	9.8	5.7
Harmonised index of consumer prices (HICP, y-o-y)	4.1	2.7	1.0	2.0	2.8	12.1	10.9	5.7
HICP excluding energy and unprocessed food (y-o-y)	3.0	2.5	1.3	2.4	3.4	10.4	10.9	3.1
Nominal compensation per employee (y-o-y)	8.4	3.8	4.0	3.9	6.9	6.0	9.7	7.4
Labour productivity (real, hours worked, y-o-y)	4.9	1.8	2.2	6.0	4.7	-2.5	0.8	1.5
Unit labour costs (ULC, whole economy, y-o-y)	1.9	2.0	2.7	5.4	1.3	6.2	8.4	5.3
Real unit labour costs (y-o-y)	-1.1	1.0	1.9	3.0	-1.0	-1.3	-1.3	-0.3
Real effective exchange rate (ULC, y-o-y)	5.8	2.2	1.3	1.2	1.0	2.2	1.6	1.3
Real effective exchange rate (HICP, y-o-y)	7.0	2.6	0.2	2.1	0.0	2.1	.	.
Net savings rate of households (net saving as percentage of net disposable income)	0.6	1.7	2.6	5.5	4.2	-2.6	.	.
Private credit flow, consolidated (% of GDP)	7.7	6.0	5.7	2.8	4.4	8.1	.	.
Private sector debt, consolidated (% of GDP)	48.5	66.5	84.7	94.7	92.2	91.8	.	.
of which household debt, consolidated (% of GDP)	13.1	24.6	37.3	46.5	47.0	47.1	.	.
of which non-financial corporate debt, consolidated (% of GDP)	35.4	42.0	47.5	48.2	45.2	44.6	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (1)	1.5	3.4	3.4	2.1	1.7	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	-2.6	3.6	1.4	3.2	0.8	-4.2	1.8	0.4
Corporations, gross operating surplus (% of GDP)	30.9	30.8	29.4	25.3	25.7	24.1	26.9	26.4
Households, net lending (+) or net borrowing (-) (% of GDP)	-0.1	0.7	1.1	2.9	2.2	-1.7	-2.4	-0.8
Deflated house price index (y-o-y)	.	-3.6	4.1	7.2	3.0	1.3	.	.
Residential investment (% of GDP)	3.0	2.9	3.0	3.8	4.0	4.3	.	.
Current account balance (% of GDP), balance of payments	-7.2	-3.6	-1.3	0.6	-2.5	-8.2	-7.0	-5.6
Trade balance (% of GDP), balance of payments	-2.8	-0.2	2.0	2.1	0.0	-5.7	.	.
Terms of trade of goods and services (y-o-y)	-0.7	-1.2	-0.3	-0.4	-0.9	-3.9	1.2	0.6
Capital account balance (% of GDP)	0.2	1.3	1.3	0.8	1.3	1.2	.	.
Net international investment position (% of GDP)	-47.2	-61.4	-65.5	-64.7	-59.9	-61.0	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) (2)	0.3	-9.9	-14.0	-14.8	-14.4	-18.2	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) (2)	43.4	57.1	79.0	102.2	120.2	91.1	.	.
Export performance vs. advanced countries (% change over 5 years)	83.9	16.4	3.7	8.0	1.5	.	.	.
Export market share, goods and services (y-o-y)	7.7	-2.2	0.7	3.3	-4.2	-1.5	0.5	2.2
Net FDI flows (% of GDP)	-5.7	-2.0	-0.9	2.6	0.3	-2.1	.	.
General government balance (% of GDP)	-2.7	-5.4	-2.1	-5.4	-5.4	-2.0	-6.1	-4.8
Structural budget balance (% of GDP)	.	.	-2.0	-4.3	-5.5	-2.0	-5.8	-4.5
General government gross debt (% of GDP)	34.6	40.1	51.6	58.9	61.0	57.8	58.3	58.7

(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 Slovakia 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's 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). ([144]) Gross financing needs are expected to remain at around 7% of GDP in the short term (i.e. over 2023-2024), declining compared with the recent peak in 2020 (Table A21.1). Financial markets' perceptions of sovereign risk remain overall positive, as confirmed by the ratings of the main agencies.

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

The DSA for Slovakia shows that, under the baseline, the government debt ratio is projected to increase over the medium term reaching close to 85% of GDP in 2033. (Table A21.1 and Graph 1) ([145]) ([146]) The assumed structural primary balance (a deficit of 3.3% of GDP) contributes to these developments. It appears low compared with past fiscal performance, indicating that the country has room for corrective action. At the same time, the baseline projections up to 2033 benefit from a favourable (although diminishing) snowball effect, notably thanks to the impact of Next Generation EU, with real GDP growth at around 1.6% over 2025-2033. Government gross financing needs are expected to increase over the projection period, reaching 11.5% of GDP in 2033, above the level forecast for 2024 (Table A21.1).

The baseline projections are stress tested against four alternative scenarios to assess the impact of changes in key assumptions (Graph 1). For Slovakia, reverting to historical fiscal trajectories under the 'historical structural primary balance (SPB)' scenario would lead to a significantly lower government debt ratio. If the SPB gradually converged to a deficit of 2.2% of GDP (its historical 15-year average), the projected debt-to-GDP ratio would be around 8 pps. lower compared to the baseline in 2033. A permanent worsening of the macro-financial conditions, as reflected under the 'adverse interest-growth rate differential' scenario (i.e., 1 pp. higher than the baseline) would result in a persistently higher government debt-to-GDP ratio, by around 5 pps. of GDP by 2033, as compared with the baseline. A temporary worsening of financial conditions, as reflected in the 'financial stress' scenario' (i.e. temporarily increase of interest rates by 1 pp.), would lead to a broadly similar debt-to-GDP ratio by 2033 compared with the baseline. The 'lower structural primary balance (SPB)' scenario (i.e., SPB level permanently reduced by half of the cumulative forecast change), would also lead to a significantly higher government debt-to-GDP ratio by 2033 (by around +9 pps. of GDP) compared with the baseline, with debt increasing beyond 90% of GDP.

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

([145]) The assumptions underlying the Commission's 'no-fiscal policy change' baseline notably comprise: (i) a structural primary deficit, before ageing costs, of 3.3% 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 1.6%); (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).

([146]) 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.

Additionally, stochastic debt projections indicate high risk (Graph 2) ([147]) These stochastic simulations point to a 68% probability of the debt ratio in 2027 being greater than in 2022, entailing high risk given the initial moderate debt level. In addition, such shocks point to significant 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 high overall. ([148])

The S2 sustainability gap indicator (at 11.3 pps. of GDP) points to high risk, suggesting that Slovakia would need a substantial improvement in its structural primary balance to ensure debt stabilisation over the long term. This result is mostly underpinned by the projected increase of ageing costs, particularly pension spending (4.0 pps. of GDP) as well as health care and long-term care expenditure (joint contribution of 3.2 pps. of GDP), as well as an unfavourable initial budgetary position (3.8 pps. of GDP) (Table A21.1). The reform measures included in the RRP remain essential to contribute improving the fiscal sustainability of the pension system. However, as a number of investments and reforms in the RRP contribute to supporting the efficiency of the Slovak health and long-term care systems, it will be important to carefully monitor their implementation.

Combined with debt vulnerabilities, as highlighted by the S1 indicator, overall long-term risks are assessed as high. The S1 sustainability gap indicator signals that a substantial consolidation effort of 8.5 pps. of GDP would be needed to reduce debt to 60% of GDP by 2070. This result is mainly driven by ageing costs (5.3 pps. of GDP) and an unfavourable initial budgetary position (3.2 pps. of GDP) (Table A21.1).

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, Slovakia's negative net international investment position, the share of short-term government debt held by non-residents, and to contingent liability risks stemming from the private sector, including via the possible materialisation of COVID-19 crisis related state guarantees. On the other-hand, risk-mitigating factors include the lengthening of debt maturity in recent years and relatively stable financing sources (with a diversified and large investor base). 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.

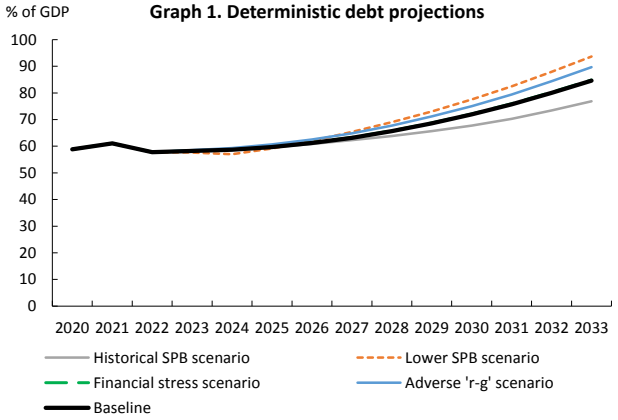
([147]) These projections show the impact on debt of 2000 different shocks affecting the government's primary balance, economic growth, interest rates and exchange rates. The cone covers 80% of all simulated debt paths, therefore excluding tail events

([148]) The S2 fiscal sustainability gap indicator measures the permanent fiscal effort (SPB adjustment) in 2024 that would be required to stabilise public debt over the long term. It is complemented by the S1 fiscal sustainability gap indicator, which measures the permanent fiscal effort required in 2024 to bring the debt-to-GDP ratio to 60% in the long term (by 2070). For both the S1 and S2 indicators, the risk assessment depends on the amount of fiscal consolidation needed: 'high risk' if the required effort exceeds 6 pps. of GDP, 'medium risk' if it lies between 2 pps. and 6 pps. of GDP, and 'low risk' if the effort is negative or below 2 pps. of GDP. The overall long-term risk classification brings together the risk categories derived from S1 and S2. S1 may notch up the risk category derived from S2 when it signals a higher risk than S2. See the 2022 Debt Sustainability Monitor for further details.

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

Table 1. Baseline debt projections	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio (% of GDP)	**58.9**	**61.0**	**57.8**	**58.3**	**58.7**	**59.7**	**61.3**	**63.2**	**65.7**	**68.6**	**71.9**	**75.7**	**80.1**	**84.7**
Changes in the ratio	10.9	2.2	-3.2	0.5	0.4	1.0	1.5	1.9	2.5	2.9	3.3	3.8	4.3	4.6
of which														
Primary deficit	4.2	4.3	1.0	5.0	3.6	3.7	3.8	4.0	4.2	4.4	4.6	4.9	5.1	5.3
Snowball effect	1.7	-2.9	-4.2	-5.0	-3.1	-2.7	-2.3	-2.1	-1.7	-1.5	-1.3	-1.0	-0.7	-0.7
Stock-flow adjustments	5.0	0.8	-0.1	0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross financing needs (% of GDP)	14.2	7.8	3.6	8.1	6.5	6.9	7.3	7.7	8.3	8.8	9.5	10.1	10.8	11.5

Graph 1. Deterministic debt projections



Graph 2. Stochastic debt projections 2023-2027

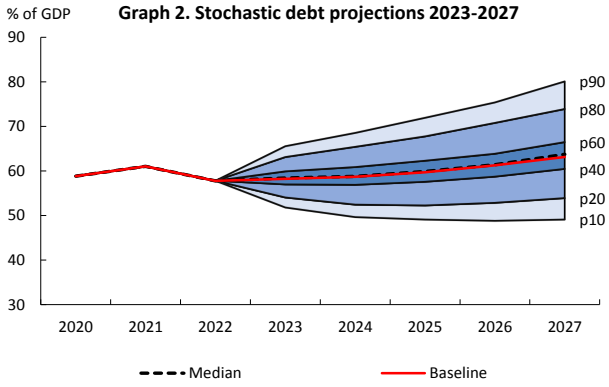


Table 2. Breakdown of the S1 and S2 sustainability gap indicators

		S1	**S2**
Overall index (pps. of GDP)		**8.5**	**11.3**
of which			
Initial budgetary position		3.2	3.8
Debt requirement		0.0	
Ageing costs		5.3	7.6
of which	*Pensions*	2.9	4.0
	Health care	1.2	1.6
	Long-term care	0.9	1.6
	Others	0.3	0.4

Source: Commission services.

Table A21.2: **Heat map of fiscal sustainaibility risks - Slovakia**

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	**HIGH**	Overall	**MEDIUM**	**HIGH**	**HIGH**	**MEDIUM**	**MEDIUM**	**HIGH**	**HIGH**	**HIGH**	**HIGH**
		Debt level (2033), % GDP	84.7	76.9	93.7	89.6	84.9				
		Debt peak year	2033	2033	2033	2033	2033				
		Fiscal consolidation space	63%	49%	79%	63%	63%				
		Probability of debt ratio exceeding in 2027 its 2022 level						68%			
		Difference between 90th and 10th percentiles (pps. GDP)						31.0			

(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 Slovakia ([149]). Slovakia 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.

Slovakia is facing vulnerabilities related to deteriorating price competitiveness, its external balance, house prices and private debt. Inflation in Slovakia has grown rapidly in recent years, driven by the rise in energy prices. The pass-through to other components of inflation could remain more entrenched. The growth of unit labor costs is in line with the long-term trend of wages catching up with the EU average. The NIIIP is consistently negative but stable since 2009 at around -60% to -70%. The dynamics of the current account were mainly determined by the movements of the trade balance. The growth of housing prices accelerated in the recent years but slowed down in the second half of 2022. Favourable economic development, low real interest rates, and easily available liquidity motivated households to take mortgages for property purchases. House prices appear to be overvalued. The growth in house prices is closely linked to household debt that increased substantially over the last years but slowed in the second half of 2022 on the back of increasing interest rates.

Going forward, most of the identified vulnerabilities could ease, but risks and uncertainties remain elevated. Unit labour cost growth is projected to moderate to 5.5% in 2023. Inflation is expected to decline below 11% in 2023 but still remains at 5.7% in 2024 as the governmental measures mitigating energy prices are being phased out. Tight monetary conditions and less easy access to credit are expected to dampen the demand for loans, and this decrease the housing prices growth. Growth in housing prices has already slowed down in the second half of 2022 and is forecast to turn negative in 2023 due to slower demand for mortgages driven by higher costs of borrowing and deteriorated purchasing power of households. The current account deficit is expected to narrow but remain substantial, at -7.0% in 2023. The recovery of export destinations and easing in supply chain bottlenecks should support exports which are expected to grow in real terms at over 3% in 2023 and 6% in 2024 while energy prices decrease should make imports cheaper.

Slovakia's policy setup in respect with the identified vulnerabilities can be considered as broadly appropriate, but addressing some remaining policy needs can contribute to the reduction of macroeconomic vulnerabilities. Reforms and investments in several areas within the recovery and resilience plan (RRP) have the potential to further increase the competitiveness of the Slovak business sector and exports but elevated inflation represent a risk. In addition, the plan envisages policies to reduce dependence on energy imports, which also contribute to improving the current account balance. Some measures have been recently taken to mitigate housing market risks. The macroprudential policy have been recently tightened and could be viewed as appropriate. The administrative burden while obtaining building permits will be addressed by the recently approved Construction Act and Act on Land Planning. The announced system of state supported rental housing could improve the insufficient supply of housing. Changes in the system of property taxation could dampen the strong demand for housing properties and. The strengthening of tax compliance could

([149]) European Commission (2023), In-Depth Review for Slovakia, Commission staff working document (COM(2023) 643 final), in accordance with Article 5 of Regulation (EU) No 1176/2011 on the prevention and correction of macroeconomic imbalances.

contribute to the reduction of the gap between housing demand and supply.

Based on considere Semester (COM(202 not experi

Table A22.1

	Gravity of the challenge	Evolution and prospects	Policy response
	Unsustainable trends, vulnerabilities and associated risks		
Private debt	The household debt-to-GDP ratio has increased by over 20 pps over the last decade to 48%, which is still below the prudential threshold (50%), but well above the fundamental benchmark (29%). Approximately 25% of households have a mortgage, which is an increase of 5 pp since 2017, and most of these are higher-income, younger households. The demand for loans has been strong in the recent years despite of tightening macroprudential conditions. In 2022, household credit flows accelerated to 4.2% of GDP, which is the second highest value in the EU and more than twice exceeding the benchmark for credit flows of 1.9% of GDP.	The pandemic did not weaken household demand for loans due to government support measures. In the first half of 2022, the demand for new loans more than doubled compared to the previous year. As a result, the volume of approved loans reached all-time highs. However, in the second half of 2022 the demand for loans significantly eased as mortgage rates increased. Property sales slowed and the number of available advertised properties started to increase. The rising cost of living contributed in September 2022 to the weakest annual increase in loans to households since 2013, with demand for new loans falling the most.	In response to the rapid growth of household debt, since 2018 the NBS has introduced a set of borrower-based measures since 2018, including limits on the loan-to-value (LTV), debt-to-income (DTI), and debt service-to-income (DSTI) ratio. Even if the measures did not dampen the demand for loans, they helped to increase the resilience of the financial system. In 2022, the NBS tightened DTI limit further for people, whose loan repayment could exceed retirement age as recommendated by the ESRB. There is a potential room for tackling the vulnerabilities arising from topping-up of existing mortgages. As inflation began to rise sharply in the euro area in 2022, the ECB responded by tightening monetary policy. Average interest rates on new mortgages in Slovakia increased from 1% to 3% over a year, which shall limit further increase of mortgage debt as the main component of private debt.
Housing market	After a sharp decline by as much as 25% during the global financial crisis, property prices in Slovakia increased in nominal terms by 90% between 2012 and 2022, while disposable income increased by 57% over that period. Over half of this increase in house prices took place over the last three years. They grew by 21.3% in 2022, which is high growth rate by historical standards compared to other EU countries. Housing prices appear to be overvalued in recent years, which reduces housing affordability in Slovakia. Housing supply is insufficient and has been lagging behind the strong demand in recent years. The rental market does not function well and is hardly an alternative to the housing purchase.	After the outbreak of the pandemic, housing prices accelerated even more due to an extremely eased monetary policy accompanied by supportive government measures and an additional demand for housing due to changes in working patterns. The growth in housing prices peaked in the first half of 2022, due to expectation of a rise in interest rates. With rising interest rates, lending slowed down in the second half of 2022. Consequently, housing prices decreased by 1.9% q-o-q in the fourth quarter of 2022, even though they still grew by 15% annually. In the next 2 years, inflation in the euro area is expected to remain elevated, which will cause monetary policy to remain tight. Worse access to credit together with a reduction in household purchasing power should dampen the demand for housing going forward. The construction sector is expected to recover after the lifting of bottlenecks in supply chains, while the new construction law should support supply by reducing the administrative burden.	In 2018, the NBS introduced a new set of macroprudential measures. Although the restriction of credit supply did not translate into a decrease in demand for housing, the resilience of the financial system improved. The lending conditions for people, whose loan repayment should exceed retirement age were tightened in 2022. The record length of dealing with building permits should be addressed by new construction law approved in 2022, entering into force from April 2024. The System of the State supported rental housing adopted in 2022 is supposed to improve the insufficient availability of rental housing. However, progress in the construction of new apartments has been limited so far. Shift from the area-based property taxation to the market-based system could improve the fairness, bring revenues to public finances, and dampen the strong demand for housing properties.
External position	Before the pandemic crisis, Slovakia had been recording moderate current account deficits, which have widenend since then. After an improvement to 0.6% in 2020, the balance declined to -2.5% of GDP in 2021 and to -8.2% in 2022. This is significantly below the level explained by economic fundamentals, as well as below the levels required to stabilise the NIIP over the medium term, or to reach the NIIP prudential benchmark. The NIIP has been broadly stable over the last decade, but at significant negative levels. It recorded 63% of GDP in 2022. The NIIP excluding non-defaultable instruments has been much more favourable, as foreign direct investment account for a large share of liabilities.	The decline in the current account balance after 2020 was one of the sharpest among the EU countries. The current account dynamics were mainly determined by the worsening of the trade balance, mainly the balance of trade in energy goods. The current account deficit is expected to decrease from 8.2% in 2022 to 7.0% in 2023 and to 5.6% in 2024 due to lower energy prices, subsiding supply-chain bottlenecks and a better economic outlook for the export destinations. The NIIP is expected to remain broadly stable, reflecting the large stable stock of foreign direct investment.	Further policy progress to reduce the energy dependency and intensity of the economy is needed. Policies under REPowerEU and RRP envisaged to reduce dependency on energy imports over the medium term, which are also conducive to improving the current account balance, need to be implemented. The government should remove administrative barriers to the expansion of renewable sources of energy, improve the regulative framework and expand grid capacity. The temporary government intervention in the energy market should expire after 2024 to decrease government lending.
Competitiveness	The average annual growth of unit labour costs in Slovakia was 4.6% over the years 2015-2022, compared to an EA average of 1.9%. Slovakia consistently outpaced inflation in the EU and the EA over the period 2018-2021 and reached 12.1% in 2022 which was one of the highert rates in the euro area, contributing also to headline REER appreciation. The asymmetric impact of supply-chain bottlenecks and the energy price shock contributed to lower Slovak exports and a loss in market share.	Slovak inflation is expected to remain among the highest in the EA due to strong price growth at the beginning of 2023 and the expected growth in retail energy prices in 2024 after the government interventions are withdrawn. High inflation and a tight labour market are expected to keep pressure on wages contributing to a higher growth of ULC. However most of the factors limiting Slovak exports should subside by the end of 2023, resulting in a strong growth of exports.	Slovakia's economy could benefit from the implementation of the government's national strategy for research and innovation, which aims to simplify burdensome regulation and to improve the labour force by attracting and retaining educated young people. Slovakia could promote the automobile industry by further improving local conditions for investment and innovation.

Source: European Commission