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on the economic, social, employment, structural and budgetary policies of Slovakia

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European Commission

Slovakia

2024 Country Report

#EURO at 25



ECONOMIC AND EMPLOYMENT SNAPSHOT

Growth prospects are improving, while competitiveness challenges remain

Economic growth in Slovakia moderated in 2023, but prospects for 2024 are improving ([1]). Slovakia experienced a slowdown in GDP growth to 1.6% in 2023 in light of persistently high inflationary pressure and stagnating global demand, although there were fewer supply chain disruptions. According to the Commission's Winter Economic Forecast, real GDP growth is projected to be 2.2% in 2024 and 2.9% in 2025. This is mainly supported by growth in private consumption and by further investments in the automotive sector, which will also lead to an acceleration in exports. Inflation started to moderate in 2023 but remains high, as the pass-through from energy and food prices to other goods and services continues. In 2024, inflation is projected to continue declining, but will remain high. The labour market is expected to remain very tight on the back of ongoing robust labour demand, a declining population and low labour mobility. Against this background, further wage increases are forecast, with the nominal compensation of employees expected to grow by 7.8% in 2024. Slovakia's current account balance remains vulnerable to fluctuations in the economic performance of its main trade partners.

Slovakia continues to experience vulnerabilities related to cost competitiveness, external balances, the housing market and household debt. An in-depth review was undertaken as part of the macroeconomic imbalance procedure earlier this year. It found that in recent years, inflation in Slovakia has exceeded the euro area average, posing a risk to its competitive position ([2]). In 2022, the external balance experienced a sharp decline due to the rise in energy prices. While the current account experienced a significant drop to -7.3% of GDP, improvements have been underway since mid-2022. Additionally, Slovakia witnessed exceptional growth in house prices until the end of 2022, triggered by sustained economic and wage growth and low interest rates. Over the years, the latter have also contributed to strong mortgage growth, which has driven the high increase in household debt.

Slovakia's competitiveness challenges are likely to persist given its economic model that hampers productivity. After joining the EU, Slovakia initially benefited from comparatively lower labour costs than many of its EU peers, along with strong integration into global supply chains. This foundation helped make it resilient and able to absorb the deterioration in price competitiveness, mainly caused by the energy price shock and labour cost increases. However, the productivity gains have been localised within the industrial sector, primarily the automotive industry with its prevalence of large foreign-owned companies, and have not extended to other sectors with a high share of small and medium-sized enterprises (SMEs). The production structure, whereby most investment decisions in the automotive industry depend on large multinational corporations, makes the economy vulnerable. This risks further widening the productivity gap with SMEs. This economic model hampers the economy's flexibility to shift resources and production both among sectors and geographic regions (see Annex 17). Reallocating resources

([1]) The cut-off date for the data used to prepare the 27 Country Reports was 15 May 2024.

([2]) European Commission (2024), In-Depth Review for Slovakia, Commission staff working document (SWD(2024) 84 final)

can help ensure the revival of productivity growth, improve competitiveness, alleviate regional disparities in economic development, and address the green and digital transition.

Slovakia faces other competitiveness challenges, notably in leveraging the opportunities presented by the green and digital transition. Coupled with a high level of energy consumption in its industry, the country's progression towards a greener economy is being slowed down by inadequate funding for energy-saving measures, renewable resources and sustainable economic practices. In this sense, investments to help achieve carbon neutrality and sustainable clean technology are still needed. Public investment in research and innovation in Slovakia is relatively modest, at 0.98% of GDP in 2022, one of the lowest compared to the EU average of 2.22% of GDP (see Annex 11). Moreover, there is a significant gap between the skills currently available in the workforce and the demand for green and digital skills that will be needed for future jobs. This mismatch is exacerbated by the insufficient availability and uptake of upskilling and reskilling opportunities at present. Furthermore, the implementation of investments is also held back by the insufficient quality of public administration and public procurement.

Public finances have deteriorated, while challenges with long-term sustainability persist

After the decrease in the budget deficit in 2022, public finances have deteriorated significantly as a result of rising expenditure. The general government deficit increased from 1.7% of GDP in 2022 to 4.9% in 2023. In 2023, the inflationary spike led to an increase in public spending, from 42.4% of GDP in 2022 to 47.9% of GDP in 2023. This was driven mostly by new spending measures, which drove up the deficit ([3]). By contrast, despite the inflation spike, revenues only rose from 40.7% of GDP in 2022 to 43.0% in 2023. The government budget deficit is expected to increase to 5.9% of GDP in 2024, driven by the extension of measures to mitigate the impact of high energy prices and the introduction of new spending measures. In 2025, the government budget deficit is expected to remain high at 5.4% of GDP, as most of the spending measures are of a permanent nature.

The general government debt is set to increase over the forecast period. While the government debt-to-GDP ratio decreased to 56.40% in 2023 due to strong growth in nominal GDP, the high forecast deficits will put it back on an upward trajectory, up to 58.5% in 2024 and 59.9% in 2025.

The ageing population poses challenges to the long-term sustainability of public finances. The fiscal sustainability risks remain high in the medium and long term, driven in particular by rising ageing costs and an unfavourable initial budgetary position (see Annex 21). The demographic developments constitute a significant fiscal challenge as they lead to higher spending on pensions and, albeit to a lesser extent, also on healthcare and long-term care costs. According to the Commission's 2024 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 more than double from 2022 to 2060 as life expectancy increases. Pension spending is estimated to increase from 8.5% of GDP in 2022 to 11.3% in 2070, marking a significant improvement compared to the 2021 Ageing Report projections. However, the projected change is still well above the EU average (0.4 percentage points change between 2022 and 2070). This notable improvement is due to the reintroduction of the link between life expectancy and the retirement age in 2022 (effective as of 2031).

([3]) The greatest expenditure increasing measures include support related to high energy prices, an increase in child allowances and tax bonus, a wage increase in public sector, and a one-time 13th pension payment (social benefit).

Box 1: **Slovakia's competitiveness in brief**

The competitiveness of Slovakia has further deteriorated. Its position in the World Competitiveness Ranking worsened compared to 2022, and the country ranks second last in the EU in terms of innovation. Slovakia is relatively well integrated into global value chains and has a well-developed industrial base. The Slovak recovery and resilience plan tackles several challenges related to improving its business environment, for instance by reducing the regulatory burden, developing a better research and innovation ecosystem, and deploying renewable energy sources.

However, competitiveness challenges remain:

- **lack of diversification in industrial and economic sectors**, limiting the economic potential and contributing to the divide between large multinationals and SMEs;
- **insufficient quality of public administration and public procurement,** holding back the implementation of investment projects and the absorption capacity of EU funds;
- **lack of digitalisation, innovation and skills development**, compounded by large regional, social and economic disparities, undermining productivity and the potential to advance the green and digital transition.

However, several challenges persist in the Slovak pension system. Recently adopted measures relate to a permanent increase of the thirteenth pension payment and a decrease in pension contributions in the second pillar. Some compensatory measures have been additionally put in place, tightening the access to the recently adopted early retirement scheme via a stricter pension reduction rate ('malus' – set at the unified level of 0.5%) and the gradual linking of the required contributory period (currently 40 years) to life expectancy.

Low labour productivity and lack of equal opportunities undermine growth potential

Slovakia's labour productivity is not converging to that of technologically more advanced Member States. Labour productivity growth has been largely absent in recent years and is at risk of being structurally behind that of regional peers (see Annex 12). This trend is unlikely to reverse without measures improving the education and training system in terms of general education (for children and young people) and by increasing the share of adults in education or training. The latter objective could also be achieved by using active labour market policies aimed at incentivising upskilling and reskilling. Moreover, the ongoing green and digital transition calls for qualified staff in specific areas to increase the digital intensity of Slovak businesses and strengthen the position of relevant economic sectors. This relates especially to the manufacturing of green technologies, for instance in the domain of e-mobility and the battery industry (see Annex 12). The urgency to step up efforts in equipping workers with relevant skills is visible in the widely reported difficulties by businesses in recruiting qualified staff (see Annex 14).

The lack of equal opportunities negatively affects the labour market and productivity. The Social Scoreboard, which covers key social indicators as part of the European Pillar of Social Rights and the 2030 targets on employment, skills and poverty reduction, shows that two-thirds of jobseekers are long-term unemployed, while many women and marginalised Roma communities are not active in the labour market (see Annex 14). The Social Scoreboard also shows that the enrolment rate of children under the age of 3 in early childhood education and care is the

lowest in the EU. In addition, the deterioration in the performance of 15-year-old students in the OECD's Programme for International Student Assessment (PISA) 2022 shows that young people lack a minimum level of proficiency in basic skills (mathematics, reading and science) (see Annex 15). Moreover, the segregation of Roma in education shows that Slovakia is struggling with social inclusion. Generally, there are many regional disparities in employment opportunities, the availability of basic services, adequate housing and access to healthcare, as outlined in Annexes 14, 16 and 17. These weaknesses have a strong impact on education and labour market outcomes as well as productivity.

Box 2

UN Sustainable Development Goals (SDGs)

Slovakia is making progress in all SDGs related to competitiveness and productivity (SDGs 4, 8, 9). However, it needs to step up efforts to close the gap with the EU average on all of them. In SDG 9 related to innovation, industry and sustainable infrastructure, Slovakia is below the EU average, mostly due to low R&D and innovation expenditure and a low share of environmental goods and services. Sustainable economic growth is below the EU average even after strong convergence in recent years, with real GDP per capita significantly lower than the EU average in 2023. Most employment indicators for Slovakia are around the EU average except for the long-term unemployment rate, which is above the EU average despite increased labour market tightness (see Annex 1).

Out of the 17 indicators, 10 SDGs remain below the EU average. Besides those highlighted above, these relate to affordable and clean energy (SDG 7), climate-related SDGs (SDGs 12 and 13), fairness (SDGs 3 and 5) and microeconomic stability, specifically justice and partnerships (SDGs 16 and 17). In contrast, Slovakia performs well on indicators related to environmental sustainability (SDGs 2, 6, 11, 15), in particular on the share of buses and trains in total passenger transport. It also performs better than the EU average on poverty indicators (SDG 1).

IMPLEMENTATION OF KEY REFORMS AND INVESTMENTS USING EU INSTRUMENTS

Funding from the Recovery and Resilience Facility (RRF) and cohesion policy is mutually reinforcing Slovakia's efforts to boost its competitiveness and foster sustainable growth. In addition to the EUR 6.4 billion of RRF funding described in Annex 3, cohesion policy provides Slovakia with EUR 12.6 billion for the 2021-2027 period. Support from these two instruments combined represents close to 15.47% of the country's 2023 GDP, compared to the EU average of 5.38% of GDP (see Annex 4).

Under its recovery and resilience plan (RRP), Slovakia has launched important policy measures that are expected to improve the country's competitiveness. In particular, the RRP envisages major reforms in the areas of renewable energy sources, education, healthcare, research and innovation (R&I), public procurement and e-government solutions. Slovakia also undertook substantial investments in industry decarbonisation, energy renovation of buildings, innovation potential of small and medium-sized enterprises (SMEs), education and training, digitalisation, and research.

The implementation of Slovakia's recovery and resilience plan is underway, however timely completion will require increased efforts. Slovakia has submitted four payment requests, corresponding to 72 milestones and targets in the plan, of which three completed and resulting in an overall disbursement, net of pre-financing, of EUR 1.77 billion on 28 December 2023 (see Annex 3). The size and complexity of the plan, and challenges linked to absorption capacity, call for accelerating investments and addressing emerging delays while increasing the effectiveness and efficiency of administrative capacities to ensure that reforms and investments can be completed on time. Low effectiveness and lack of administrative capacity at various levels of government, as well as other obstacles linked, for instance, to public procurement rules and lengthy permitting procedures are hampering the successful implementation of the RRP, especially for large investment projects.

Cohesion policy funding helps tackle Slovakia's growth and competitiveness challenges and reduce the country's territorial and social disparities. Under the 2014-2020 cohesion policy programming period, support focused on the areas of network infrastructure, quality employment, the low-carbon economy, environment protection, R&I and the competitiveness of SMEs. For the 2021-2027 programming period, support aims to accelerate the green transition and reduce energy dependence on Russia, boosting the digital transition, economic competitiveness, the R&I ecosystem, improving social and educational outcomes, and developing a smart transport network.

Reforming the education system to improve social resilience and competitiveness

As part of the RRP, Slovakia implemented reforms and investments to promote the quality and inclusiveness of its education system. The country introduced a legal entitlement to a place in pre-primary education for all children aged 4 (as of 2024) and 3 (as of 2025). The reform is complemented by investments in new kindergartens (from the age of 3), both under the RRP and cohesion policy funds, with the latter focusing on less developed regions. Financial support has been provided from both RRP and cohesion policy funds to early childhood and education care programmes,

including some targeted at marginalised Roma communities. Financing from cohesion policy funds is also available for schools to cover the costs of school support teams. These play an important role in the RRP reform of counselling and prevention centres. This ensures that support is provided to all pupils experiencing obstacles in their learning. The RRP reform also broadened the legal concept of special educational needs to include all pupils.

In 2023, a pilot phase was launched to implement the new curricula in primary and lower secondary education in 39 schools across Slovakia. The reform creates new learning content organised into three multiannual cycles for primary and lower secondary school programmes. The new curriculum aims to provide pupils with key competencies for the future. The reform includes the establishment of a network for regional support centres, which is currently financed under the RRP, and will be supported by cohesion policy funds after the end of the RRF.

Boosting competitiveness through a stronger innovation ecosystem

As part of the RRP, Slovakia introduced a number of reforms to improve higher education and research outcomes. The introduction of a system of performance contracts for higher education institutions in Slovakia aims to support the diversification and profiling of higher education institutions as well as the share of profession-based bachelor programmes. Cohesion policy funds complement the creation or innovation of university study programmes, including the profession-based ones. Additionally, following the introduction of a system of periodic scientific evaluations, all public higher education institutions are taking part in the periodic evaluation of scientific research. Cohesion policy funds will also continue the successful RRP subsidy grant scheme for excellent students.

Slovakia has made some progress in research and innovation (R&I) and digitalisation, following ambitious reforms and investments driven by the RRP. It approved the National Strategy for Research, Development and Innovation as well as its accompanying action plan. This provides a comprehensive framework covering all aspects of a coordinated national R&I policy, including any related public funding, by 2030. As part of the RRP requirements, the national strategy takes into account, among other things, the lessons learnt from cohesion policy. Slovakia also adopted its action plan for digital transformation and implemented a number of investments to support the transition to a digital economy.

In addition, Slovakia launched 22 grant calls under the RRP to boost R&I. These calls aim to support the participation of Slovak researchers and companies in Horizon Europe, the funding programme promoting cooperation between the private sector, academia and R&I organisations. They also support top researchers as well as projects that address the challenges of the green and digital transition. Some of the calls were preceded by similar schemes previously available under cohesion policy funding (such as innovation vouchers), and some calls will be followed by further cohesion policy funding.

Unlocking investments for the green transition

Slovakia has rolled out several measures under the RRP that help advance the green transition, but challenges remain in implementing them. The plan reached a share of 47.7% in climate-related investments following the inclusion of the REPowerEU chapter in 2023. This is crucial for moving away from a carbon-intensive and highly industrialised economy towards one that is greener and more sustainable. The RRP includes support to renewables, energy savings in housing, sustainable transport, decarbonisation of industry as well as measures geared towards climate adaptation.

Under the RRP, Slovakia has included reforms in the area of renewable energy sources (RES). RRP reforms have already helped modernise the electricity market and improve the framework conditions for the roll-out of renewable investments. In 2021, the technical capacity to connect additional RES to the electricity grid was made available by overcoming regulatory obstacles. Calls for RRF-supported renewable investments are well advanced, increasing the capacities of new renewable sources, repowering existing renewable installations and improving the flexibility of the electricity grid. However, the government's current plans still fall short in terms of achieving the 2030 energy and climate targets. Cohesion policy funds support energy efficiency measures (e.g. in the building sector or by companies) and measures to support the deployment of RES (e.g. the support of energy communities).

While the RRP and cohesion policy funds contribute to the deployment of RES, greater ambition would unlock their full potential and boost innovation, employment and overall productivity. The RES share remains among the lowest in the EU (at 17.4% of gross final energy consumption, compared to 21.8% for the EU) ([4]). In 2022, the installed capacity of RES did not increase, in contrast with the nearly 10% increase at EU level. Despite important reforms already implemented under the RRP, timely execution of additional permitting, and administrative and grid connection reforms under the REPowerEU chapter are essential for a more substantial roll-out of renewable investments in Slovakia. Accelerated deployment of renewable installation capacity with improved access to the grid would also help strengthen the country's energy autonomy.

The decarbonisation of Slovakia's industrialised economy and the deep renovation of single-family houses are also supported by EU funding. The RRP backs the industry's efforts to cut net greenhouse gas emissions via a EUR 357 million decarbonisation scheme, aiming for a reduction of at least 1.2 Mt of CO_2 equivalent. This aids the green transition of Slovakia's large, carbon-intensive industrial sector, improving its competitiveness. The Modernisation Fund provides extensive support to decarbonising Slovakia's large district heating sector. Moreover, the financial schemes for the renovation of housing have been merged into a single funded vehicle as part of the RRP. Financial support is granted on condition that energy performance certificates are delivered, proving that at least 30% of primary energy is saved at the end of the renovation project. While the housing renovations benefit from RRP support, they could also benefit from cohesion policy support for measures related to RES.

In 2023, Slovakia adopted sweeping reforms to protect natural areas and water management under the RRP. The reforms lay the legal groundwork for speeding up zoning in national parks and changing the functioning of protected areas, as well as revitalising watercourses. They are complemented by investments under both the RRP and cohesion policy funds. However, the government has indicated that it intends to revise the amended laws and strategic documents, which risks running afoul of the already adopted RRP reform. The RRP investment linked to this is facing major delays, and implementation needs to be stepped up.

([4]) EU Energy in Figures (2023, p. 126).

Box 3:

Combined action for more impactful EU funds

To boost economic growth and maximise the impact of EU funding, Slovakia's RRP includes reforms that support investments under other EU instruments. These create important synergies and complementarities between the various funds. For example, Slovakia is combining RRP reforms with investments funded from both the RRF and cohesion policy in school infrastructure (including accessibility of schools), equipment (including digital) and 'support teams' for pupils with special educational needs. The RRP reforms aim, for instance, to improve educational outcomes of students, especially those from disadvantaged backgrounds, including via improved access to pre-school education, modernisation of the primary education curriculum or the prevention and elimination of segregation of Roma children in education. There are synergies with several projects funded by the European Social Fund Plus, notably on desegregation in education. Furthermore, an RRP reform to end coal-based electricity production at the Nováky plant is closely linked with a project funded by the Just Transition Fund to reskill miners and workers in the Upper Nitra region.

FURTHER PRIORITIES AHEAD

Slovakia faces additional challenges related to elevated house prices, the quality and effectiveness of law-making, the business environment, digitalisation, education and climate adaptation. Tackling these challenges will help increase Slovakia's long-term competitiveness and make its economy resilient. It will also help make further progress in achieving the Sustainable Development Goals (SDGs).

It is important that the challenges identified are addressed both at national and regional level to reduce regional disparities and improve the administrative and absorption capacity in a balanced way across the country.

Improving the sustainability of public finances

An ambitious and credible spending path will be important to ensure fiscal sustainability. Slovakia's public finances are facing serious challenges related to high levels of public deficit and increasing government debt. The strong growth in public spending has been outpacing the growth in public revenues in recent years. Moreover, most of the spending measures increasing social benefits are of a permanent nature. The significant deterioration of public finances in Slovakia has already been reflected in the country's risk premium, as yields on 10-year government bonds have become, at some point, the highest in the eurozone. Without credible consolidating measures, the deficits will deteriorate further, resulting in the accumulation of government debt. Measures to reduce the deficit and stabilise the debt level below a threshold of 60% of GDP could combine investments and reforms promoting sustainable economic growth. Incorporating spending reviews within the budgetary framework could help reduce ineffective spending. Additionally, measures addressing the relatively high tax wedge for lower income earners would improve participation in the labour market, in a context where labour taxation is less progressive in Slovakia compared to the EU average. At the same time, measures narrowing the tax, social contributions and non-tax compulsory payments gap between employed and self-employed could reduce the high share of undeclared work and dependent self-employment, which are detrimental to working conditions and government's tax and social security revenues (see Annex 14). These measures would also contribute to promoting fiscal sustainability and fairness.

The state of Slovakia's public finances is further aggravated by an ageing population. Demographic trends are expected to significantly increase government spending on pensions. While the recently adopted pension reform under the recovery and resilience plan (RRP) has substantially improved the sustainability of public finances, pension costs remain a significant component (i.e. well above the EU average) of age-related spendings. In addition, recently adopted measures relate to a permanent increase of the thirteenth pension payment and a reduction in contributions to the second (private) pension pillar pose additional challenges to the sustainability of the Slovak pension system, although some compensatory measures have been put in place tightening the access to the early retirement scheme via a stricter pension reduction rate ('malus') and the gradual linking of the required contributory period to life expectancy.

To address fiscal challenges, efforts could be made to strengthen the independent fiscal institution, among other things by stepping up policy dialogue with the

government and interactions with the parliament. The Slovak Council for Budget Responsibility has a broad mandate and has recently improved access to information but does not yet carry out *ex post* assessments of forecasts.

Improving the integrity and independence of the justice system and anti-corruption framework

Recent legislative developments have led to serious concerns about the independence and integrity of the law enforcement system in Slovakia, in particular the criminal justice system and anti-corruption framework. Beyond the risk of affecting the implementation of the RRP and cohesion policy investments, these developments can become a serious obstacle for Slovakia's competitiveness and economy as they threaten to hamper its business and regulatory environment. The combination of the reform of criminal law (currently under scrutiny of the Constitutional Court), the dismantling of the Special Prosecutor's Office, the expected amendments to the whistleblower protection framework, the competence act, and an amendment to the public procurement framework raise serious concerns about the effectiveness of the fight against corruption, including the deterrence and effective investigation and prosecution of high-level corruption and fraud. The situation is compounded, among other things, by the dismissal of several members of the Judicial Council before the end of their term and a lack of safeguards to ensure its independence, as well as the envisaged reorganisation of the police force specialised in tackling corruption (NAKA).

Despite a recent reform of the judicial map under the RRP, the efficiency of the justice system faces challenges, especially in administrative cases. Overall, the justice system has a good level of digitalisation, especially for civil, commercial and administrative cases, but challenges remain, especially in lengthy administrative cases. The country has one of the highest incidences of delayed decisions in the EU.

Improving the performance of public administration, the business environment and boosting digitalisation and innovation

Improving the performance of Slovakia's public administration and removing investment bottlenecks is essential for strengthening competitiveness and enabling the diversification of Slovakia's economy. The highly fragmented governance system and inefficient coordination across the various levels of government make it difficult to implement policies and investment projects (see Annex 13) and hamper Slovakia's capacity to facilitate the green and digital transition. Besides addressing territorial fragmentation across regional and local governments, Slovakia also needs to improve the provision of quality public services at local level and strengthen the financial independence and management capacity of local and regional governments. Despite recent reforms in the assessment, selection and budgeting of public investment, the stages of monitoring and *ex post* assessment of projects remain weak. Furthermore, administrative capacity continues to be a challenge at all levels. Evidence-based policy also need to be improved, including by limiting the continued use of fast-track legislative procedures, especially for major reforms. This results in an unpredictable regulatory environment and low quality of legislation.

The persistent administrative and regulatory burden, together with weaknesses in public procurement procedures, severely hamper Slovakia's competitiveness. While the RRP contains several measures to reduce the regulatory and administrative burden for businesses, the instability and ambiguity of regulations still constitutes the second most prominent barrier

to running a business in Slovakia ([5]). In particular, professional services face high regulatory barriers, which hampers competition on quality and prices. Additionally, avoiding delays in the implementation of the Once-Only Technical System of the Single Digital Gateway could help reduce the administrative burden for businesses that want to navigate the single market. For public procurement procedures, which the RRP seeks to digitalise and simplify, challenges likewise persist. Specifically, there is a lack of adequate competition in public procurement, as the percentage of public contracts awarded in procedures with one single bidder amounted to 33% in 2023. As a result, public procurement is not sufficiently and strategically used to advance on important policy objectives (such as environmental, social and innovation objectives), stifling progress towards the green and digital transition. Ensuring transparency in public procurement will be key to promoting good governance, boosting public trust and improving the effectiveness and efficiency of government spending.

Reducing the share of late payments and improving access to finance would benefit the business environment. The share of small and medium-sized enterprises (SMEs) experiencing late payments in the past 6 months is 56%, against an EU average of 49% (see Annex 12). Late payments, which are particularly severe in the public health sector, hamper the competitiveness and resilience of SMEs. At the same time, improving access to finance in terms of both loans and equity for entrepreneurs, especially SMEs, remains a challenge. In 2022, Slovakia's performance in the equity index reached the lowest level in the EU (see Annex 12).

E-government solutions and digitalisation of processes, including of tax administration, can be further developed. Slovakia ranks below the EU average for the maturity of open data and digital public services, despite several reforms and investments under the RRP to improve the country's performance in e-governance. Implementing measures proposed in the Action Plan for Digital Transformation will be important. Local governments struggle to fully implement e-government regulations to improve the quality of service provision, especially as many people have limited internet connections or none at all. Additionally, improvements in the digitalisation of tax administration, especially in electronic invoicing and pre-filled tax returns, could help reduce the value added tax compliance gap, which remains above the EU average (see Annex 19).

Expanding the development and diffusion of innovative technologies and solutions across the economy, in particular to SMEs, is of crucial importance for diversifying the economy and improving the competitiveness of Slovak businesses. Many SMEs have trouble accessing technology to improve their operating processes. Although some steps have been taken to improve the situation, there is scope for further efforts to equip the workforce and the workplace with the skills and tools to use new solutions. On top of RRP investment to support business innovation, additional focus is needed on promoting digital literacy and the implementation of lifelong learning programmes in digital skills. The very low performance in basic digital skills (see Annex 15) also impacts the rate at which businesses can modernise their production processes and service provision.

Slovakia's research and innovation performance ranks below the EU average in several indicators. The country is deemed an 'emerging innovator', performing at 65.6% of the EU average (see Annex 11). The RRP contains important measures to improve Slovakia's performance in this area, but there is scope for further efforts. In particular, implementation of the ambitious National Research Development and Innovation Strategy 2030 is crucial for a more coordinated approach to R&I policy and funding in Slovakia. The country also needs to strengthen cooperation between the private sector and public research institutions and boost private R&I investment, including via

([5]) Opinions of SMEs on the quality of the business environment in Slovakia, Slovak Business Agency, 2023.

more innovative schemes such as financial instruments, and directed towards companies in all stages of the innovation cycle. Further (fiscal and other) incentives are also warranted to support cross-border and international partnerships, attracting foreign talent and specialised firms.

Promoting better and more equal access to education, social inclusion and efficient healthcare

Slovakia would benefit from increased efforts in early childhood education and care (ECEC) and skills to improve the conditions for economic growth. Relatively high shares of young students in Slovakia lack a minimum level of proficiency in mathematics, reading and science while pupils' socio-economic background strongly determines their basic skills attainment. This leaves Slovakia among the worst performers on the OECD's Programme for International Student Assessment (PISA) 2022 survey (see Annex 15). Improving the teaching of basic skills in high-quality education and training programmes for teaching professionals, and addressing staff shortages, will be important to increase the share of children with basic skills. Moreover, beyond the RRP and cohesion policy efforts focused on children from age 3 to 6 in ECEC, increasing the enrolment rate of children under the age of 3 will be essential. Only 1% of children under the age of 3 participated in formal childcare in 2023 (see Annex 14), which is the lowest enrolment rate in the EU (average 35.9%). Increasing the enrolment in ECEC not only boosts the number of parents, in particular women, working or looking for a job, but also better prepares children for learning skills later in life and reduces early school leaving. Increasing the capacity of affordable and high-quality nurseries for children and strengthening incentives for parents to use ECEC, such as the financial allowances and parental leave days, are key to increasing enrolment in ECEC.

Increasing the share of the population participating in education and training is essential for making Slovakia's economy more competitive. Along with improving general education and labour market outcomes, the upskilling and reskilling of the population needs to accelerate in order to re-establish labour productivity growth at a time where automation and low-carbon technologies are taking up an ever-larger share in the production mix (see Annex 12). There is scope for more effective and flexible active labour market policies to engage the entire population, including young people, women and marginalised Roma communities. For example, the use of part-time employment currently stands at only 2,9% ([6]). Targeted measures are therefore important for reducing the long-term unemployment rate, which is one of the highest in the EU (see Annex 14).

Social inclusion remains a challenge, especially for marginalised Roma communities, and holds back education and labour market integration. Beyond the measures taken under the RRP, the segregation of Roma in education remains a key challenge, linked in particular to the disproportionate placement of Roma in special schools and dedicated classes. Support to local and regional governments can help boost the capacity of relevant policymakers to increase their engagement in addressing segregation in all levels of education. As outlined in Annexes 14 and 17, regional disparities continue to play a prominent role in Slovakia's social and economic challenges and persist especially between the eastern and western parts of the country. This is expressed in a broad range of challenges, including the availability of employment opportunities, basic services and adequate housing, as well as differences in educational outcomes and the prevalence of poverty, which are all worse in Eastern Slovakia. Moreover, the marginalised Roma population is disproportionately affected by these disparities.

There is scope for enhancing the efficiency of healthcare spending, improving accessibility of medical

([6]) OECD Economic Surveys: Slovak Republic 2024 (page 39).

services and addressing staff shortages. Efforts to improve outpatient care, long-term care, disease prevention and the availability of medical devices are lagging. Life expectancy remains among the lowest in the EU (see Annex 16), while healthcare spending per capita significantly trails the EU average. The limited efforts in disease prevention put the system's readiness for future health crises at risk. Despite salary increases, staff shortages continue to negatively affect the accessibility of the healthcare system, particularly for mental health services.

Monitoring house price developments and reforming property taxation

While house prices rapidly increased between 2012 and 2022, they have since declined on the back of rising interest rates. In 2022 alone, house prices soared by more than 13% compared to the previous year on the back of strong growth in nominal wages and economic growth together with low interest rates, which contributed to increasing housing demand. As a result of rising interest rates, the growth in house prices has slowed since mid-2023 across all regions and in all segments of the housing market. While the decrease in house prices has improved housing affordability, the Slovak housing market remains overvalued. The vulnerabilities in the housing market, as already mentioned above, are described in the in-depth review published in March 2024.

The insufficient supply of housing, which remained weak in 2023, contributed to a rapid increase in house prices. The sluggish supply is the result of long and inefficient procedures in public administration. On average, it takes around 300 days for building permits to be issued in Slovakia. This places the country among the EU countries with the lengthiest approval processes for construction projects. Compared to 2022, residential investment as a share of GDP and the number of building permits declined by 14% and 19% respectively in 2023. However, the supply is expected to rebound in the near future in view of the housing currently under construction.

Slovakia's property taxation system is not conducive to mitigating housing demand and incentivising rentals. In Slovakia, public revenues from property taxation are relatively low compared to other EU countries (0.4% of GDP vs 2.1% in the EU in 2022). Moreover, Slovakia uses an area-based property taxation system instead of one based on the market value of the property. This is common in some central and eastern European countries (e.g. Czechia, Poland), but exceptional among other OECD countries. Property taxation systems in other countries often allow for characteristics such as type, quality or age of the home to be factored in. This increases fairness, generates more revenue for the state and helps dampen the growth in property prices. Reducing the time needed to obtain construction permits and reducing the administrative burden through the Construction Act and Act on Land-Use Planning could also help dampen the growth in property prices.

Household debt, which had been growing steadily until the end of 2022, has now moderated. Household debt had been rising on the back of low interest rates and favourable macroeconomic developments. However, monetary policy tightening to curb inflation since mid-2022 has resulted in higher mortgage rates in Slovakia. These increased from 0.9% in Q4-2021 to 4.5% in Q3-2023. This has substantially weakened demand for mortgages, affecting the housing market as well. Nevertheless, the increase in repayments for households appears manageable, as only 1% of mortgage holders are expected to face large increases in repayments.

Enhancing competitiveness through investments in energy autonomy, decarbonisation and resource efficiency

There is ample scope for intensifying Slovakia's innovation efforts in the fields

of clean technology, climate neutrality and security of the energy supply through a comprehensive approach. The country's large industrial sector presents an opportunity to exploit the potential of the green transition both for job creation and innovation. However, Slovakia remains among the worst-performing EU countries in the overall Competitive Sustainability Index. Public investments in energy research and innovation stood at only 0.08% of GDP in 2021. As a result, Slovakia continues to rely heavily on imports of clean energy technologies.

Greater energy autonomy would improve the competitiveness and resilience of the Slovak economy. While Slovakia has made progress in reducing its reliance on Russian gas since the outset of the war in Ukraine ([7]), it still represented 69% of its total gas supply in 2023 (see Annex 7). With natural gas accounting for a quarter of Slovakia's energy mix, forward-looking measures are needed to move away from natural gas in the next decade, with a particular focus on district heating and industrial sectors. Slovakia has boosted domestic electricity production, with over 60% now sourced from nuclear power. This figure is set to rise once the Mochovce-4 plant connects to the grid in 2025, but the country still faces major challenges in diversifying its nuclear fuel supply, which is still entirely imported from Russia.

Targeted action and public investment would help drive the decarbonisation of heating sources that are reliant on natural gas. There are approximately 800 000 individual gas boilers installed in Slovakia (one gas boiler for every nine inhabitants). 35% of the population is connected to district heating systems, which rely mostly on coal and natural gas. In combination with subsidised natural gas prices for households, incentives to switch to decarbonised heating sources are low. Also the uptake of energy communities remains limited.

Containing the ongoing rise in transport-related greenhouse gas and pollutant emissions warrants further action. The share of transport taxation as well as the resource and pollution charges in total tax revenues are very low (see Annex 19). Despite taxation incentives adopted in 2023, the current tax regime does not sufficiently encourage a switch to sustainable road transport. Slovakia's Electromobility Action Plan and Hydrogen Action Plan, adopted in 2023, are steps in the right direction but need to be coupled with rapid and effective implementation of the measures proposed. These include tax incentives, favourable legislative conditions, funding schemes for zero-emission vehicles and infrastructure, and technical measures to ease the construction and operation of such infrastructure. Moreover, the implementation of ongoing RRP investments in charging stations and hydrogen refuelling needs to be stepped up.

Slovakia's management of land and ageing forests appears insufficient. Net carbon removals in the land use sector are declining, requiring additional carbon removals of -504 kt CO_2eq ([8]) to meet Slovakia's 2030 land use, land use change and forestry target. This trend may also cut bioenergy production, impacting Slovakia's energy system ([9]). Increasing the capacity of carbon removals and the resilience of Slovak forests requires better protection of biodiversity (in particular through protected areas), investing in nature-based solutions that support forests and water retention capacities, planting multispecies and mutigenerational forests, and putting in place sustainable landscape management.

Further policy action could boost the transition towards a circular economy. Even though the circular material use rate increased between 2017 and 2022 (see Annex 9), Slovakia is still not on track to achieve its 2025 municipal waste and packaging waste

([7]) Slovakia reduced its gas demand between August 2022 and November 2023 by 23% compared to the average over the past 5 years. December 2023 data for Slovakia is missing.

([8]) Net carbon removals on top of the average for 2016-18. This value is indicative and will be updated in 2025 in line with Regulation (EU) 2023/839.

([9]) Biomass represents 78% of Slovakia's renewable energy mix. State of the Energy Union Report 2023.

Box 4:

The mid-term review of cohesion policy funds for Slovakia

The mid-term review of cohesion policy funds is an opportunity to assess cohesion policy programmes and tackle emerging needs and challenges in EU Member States and their regions. Member States are reviewing each programme, taking into account, among other things, the challenges identified in the European Semester, including in the 2024 country-specific recommendations. This review forms the basis for a proposal by the Member State for the definitive allocation of 15% of the EU funding included in each programme.

Slovakia has made progress in the implementation of its cohesion policy programme and the European Pillar of Social Rights, but challenges remain as outlined in this report, including Annexes 14 and 17. In particular, important regional disparities in economic and social development persist between the capital region and the other regions. Against this background, it remains important to continue to implement the planned priorities, with particular attention to: (i) strengthening the administrative capacity of local, regional and national authorities, and improving partnership and ownership, including by stronger involvement of civil society organisations; (ii) strengthening the social and economic inclusion of marginalised Roma communities by improving their living conditions, ensuring access to high-quality non-segregated education and training, and supporting their integration into the labour market, (iii) improving drinking water and waste water infrastructure, strengthening the circular economy and waste management; (iv) boosting energy efficiency in public and residential buildings, development of renewable energy sources and decarbonisation; (v) strengthening active labour market policies to combat long-term unemployment, and expanding reskilling and adult learning schemes; (vi) providing quality and affordable early childhood education and care for children under 3 years and supporting greater gender equality at work and in society.

The potential to increase funding for the sustainable use of natural resources to make up for the backlog of investments from the previous programming period merits specific consideration in preparation for the mid-term review. Slovakia could benefit from the opportunities provided by the Strategic Technologies for Europe Platform (STEP) ([11]) initiative in the areas of digital technologies and deep tech innovation, clean and resource-efficient technologies, and biotechnologies to support the transformation of industry.

targets and is at risk of missing several material-specific targets. On top of that, the country is also far from reaching the 2035 landfilling of municipal waste target ([10]). Slovakia would benefit from improved resource waste management to curb landfilling and increase the use of circular materials, in particular, in industry and construction. The transition of Slovak industry towards circularity is only at an initial stage. Slovakia would benefit from promoting the implementation of circular business models and incentivising eco-innovation through investments in R&D.

([10]) Report from the Commission to the European Parliament the Council, the European Economic and Social Committee and the Committee of the Regions identifying Member States at risk of not meeting the 2025 preparing for re-use and recycling target for municipal waste, the 2025 recycling target for packaging waste and the 2035 municipal waste landfilling reduction target.

([11]) Regulation (EU) 2024/795

KEY FINDINGS

With its wide policy scope and substantial financial envelope, Slovakia's recovery and resilience plan (RRP) includes measures to address a series of structural challenges in synergy with other EU funds, including cohesion policy funds, by:

- **Implementing measures to advance the green transition,** including reforms in the areas of renewable energy sources, decarbonisation of the Slovak economy, protection of natural areas and water management, transition to sustainable mobility, and deep renovation of single-family homes;
- **Introducing reforms in the domain of research and innovation** (R&I), coordinating national R&I policy, including any related public funding by 2030, launching grant calls to boost the R&I ecosystems;
- **Improving the right to and availability of early childhood education and care** (especially for 3- to 5-year-olds), increasing the quality, inclusiveness and digitalisation of schools, supporting pupils with special educational needs and from disadvantaged backgrounds, supporting the inclusion of Roma pupils in the education system, and improving the quality of higher education and research outcomes;
- **Improving the resilience of the healthcare system** by optimising the hospital network, investing in long-term care and modernising the provision of psychological care.

The implementation of Slovakia's recovery and resilience plan is facing increasing challenges. Renewed efforts are key for a successful implementation of all the measures of Slovakia's recovery and resilience plan by August 2026.

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

- **Reforming taxation related to the labour market, transport and property**, integrating spending reviews in the budgetary process to reduce inefficient spending, and increasing the housing supply to improve the housing market and dampen household debt;
- **Strengthening the effectiveness, independence and integrity** of the judicial and anti-corruption system, including through adequate safeguards for the investigation and prosecution of high-level corruption cases;
- **Improving the performance and digitalisation of public administration**, addressing the persistent regulatory burden, boosting transparency and competition in public procurement, reducing the share of late payments, expanding the development of technologies for the private sector, and strengthening the tax compliance and the digitalisation of tax administration;
- **Improving basic skills teaching** and tackling the low uptake of early childhood education and care for children under the age of 3, including for disadvantaged groups, increasing participation in adult education and training, stepping up the social inclusion of marginalised Roma communities, and improving and better targeting active labour market policies;
- **Implementing reforms to step up the decarbonisation of district heating sources** and the innovation capacity of

clean technologies, and to contain the rise in transport-related greenhouse gas emissions;

- **Improving land management** and introducing measures to boost the transition to a circular economy.

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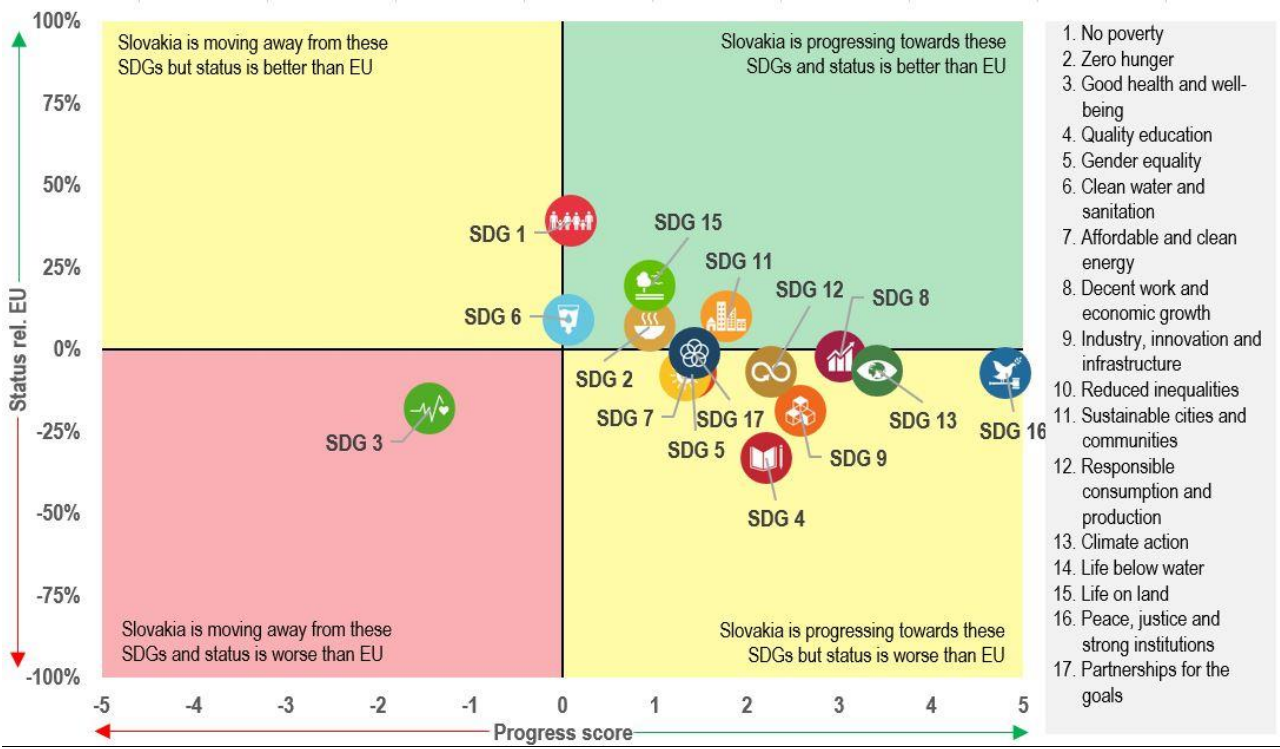
ANNEX 1: SUSTAINABLE DEVELOPMENT GOALS

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 well on indicators related to *environmental sustainability* (SDGs 2, 6, 11, 15) but it needs to catch up with the EU average on SDGs 7, 9, 12 and 13. It performs well on sustainable transport, with public transport accounting for 16.3% of total transport, well above the EU average of 13.7%. Slovakia has reduced its severe housing deprivation rate to 3.2%, compared to the EU rate of 4.3%. Slovakia is however underperforming on indices pertaining to affordable and clean energy (SDG 7). While Slovakia's capacity for generating energy from renewable source has increased, from 11.5% of gross final energy consumption in 2017 to 17.5% in 2022, this share is still below the EU average of 23%. Over the same period, energy productivity improved only slightly, from EUR 4.6 per kgoe to EUR 5.4 per kgoe, compared to the average EU improvement from EUR 7.9 per kgoe to EUR 9.3 per kgoe). Slovakia's dependency on imported energy as part of its overall energy mix increased from 62.5% in 2017 to 69.6% in 2022, which was above the EU average of 62.5%. Slovakia performs well on the share of municipal waste that is recycled; the country increased the percentage recycled from 29.8% in 2017 to 49.5% in 2022, above the EU average of 48.6%.

Slovakia is making progress on its net greenhouse

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



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). 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 25 April 2024. Data refer mainly to the period 2017-2022 or 2018-2023. Data on SDGs may vary across the report and its annexes due to different cut-off dates.

gas emissions, which have decreased from 6.9 tonnes per capita in 2017 to 5.5 in 2022, performing better than the 2022 EU average of 7.3 tonnes per capita. Investments and reforms in the recovery and resilience plan (sections on renewables, industry decarbonisation, energy efficiency, waste disposal and R&D) will boost Slovakia's performance on environmental SDGs.

Slovakia performs well on one SDG related to *fairness* (SDG 1) but needs to catch up with the EU average on most of the others (SDGs 4, 5, 7, 8) and is moving away from SDG 3 on good health and well-being. Slovakia performs better than the EU average on poverty-related indicators (SDG 1), thanks chiefly to the low dispersion of wages in the country. Although still lagging behind the EU average, Slovakia is progressing on some quality education indicators (SDG 4), such as participation in early childhood education (rising from 73.4% in 2016 to 77.4% in 2021) but the rate was still below the EU average of 92.5% in 2021. The high percentage of low achieving 15-year-olds in mathematics (33.2% compared to the EU average 29.5%) is a cause for concern. On SDG 5 (Gender equality), Slovakia is improving on the ratio of senior management positions held by women; the percentage of female board members increased from 24.1% in 2018 to 25% in 2023, though that figure is still significantly below the EU average of 33.8%. On SDG 7, Slovakia's ability to provide affordable energy has declined; the percentage of people unable to adequately heat their homes rose from 4.3% in 2017 to 7.1% in 2022. However, this is still below the EU average of 9.3% in 2022. The recovery and resilience plan (RRP) includes measures to improve pupils' skills and to make 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 qualifications required of teaching staff (Components 6, 7, 8).

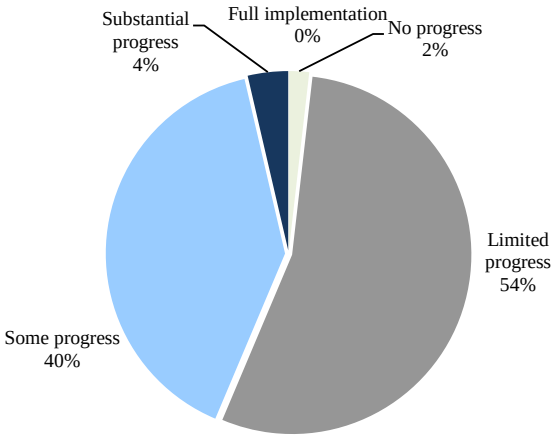
Slovakia is improving on SDG indicators related to *productivity* (SDGs 4, and 9), although it needs to catch up with the EU average. At 0.98% of GDP in 2022, R&D expenditure is significantly below the EU average of 2.24% (SDG 9). This stifles innovation and prevents Slovakia from boosting its productivity by employing more technological solutions such as artificial intelligence, digitalisation, automation, cloud systems and other scientific and hi-tech breakthroughs. Only 10 patent applications (per million inhabitants) were submitted in 2023 compared to the EU average of 153. The share of population aged 25-34 completing tertiary education, a crucial ingredient for raising the proficiency, competitiveness, and technological aptitude of the Slovak population, has been steadily increasing, reaching 39.8% in 2023, and has almost caught up with the EU average of 43.1%. Nevertheless, the proportion of adults participating in learning is still below the EU average and the gap widened. In 2023, 10.5% of the Slovak adult population had attended an education course in the previous 4 weeks, compared to the EU average of 12.7% (SDG 4). The share of households with an internet connection of at least 100-Mbps increased from 41.2% in 2017 to 71.3% in 2022 (just below the EU average of 73.4%). Investment in digital infrastructure and educational reforms outlined in the RRP 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 16 490 in 2023. However, that figure was below the EU average of EUR 28 940 in 2023 and the gap is closing at a slower pace recently. The investment share of GDP slightly increased from 20.9% in 2018 to 22.0% in 2023, trailing behind the EU average of 22.7%. The employment rate has been rising steadily, reaching 77.5% of the population aged 20-64 in 2023, and outpacing the EU average of 75.3%. The long-term unemployment rate has decreased (to 3.8% in 2023), above the EU median of 2.1%. Measures presented in the RRP 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 2019-2023 country-specific recommendations (CSRs) ([12]) addressed to Slovakia as part of the European Semester. These recommendations concern a wide range of policy areas that are related to 14 of the 17 Sustainable Development Goals (SDGs) (see Annexes 1 and 3). The assessment considers the policy action taken by Slovakia to date ([13]) and the commitments in its recovery and resilience plan (RRP) ([14]). At this stage of RRP implementation, 44% of the CSRs focusing on structural issues from 2019-2023 have recorded at least 'some progress', while 54% recorded 'limited progress' and 2% 'no progress' (see Graph A2.1). As the RRP is implemented further, considerable progress in addressing structural CSRs is expected in the coming years.

Graph A2.1: **Slovakia's progress on the 2019-2023 CSRs (2024 European Semester)**



Source: European Commission.

([12]) 2023 CSRs: EUR-Lex - 32023H0901(25) - EN - EUR-Lex (europa.eu)

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)

([13]) 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).

([14]) Member States were asked to effectively address in their RRPs all or a significant subset of the relevant country-specific recommendations issued by the Council. 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 have not yet been 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 2019-2023 CSRs**

Slovakia	Assessment in May 2024*	RRP coverage of CSRs until 2026**	Revelant SDGs
2019 CSR 1	**Limited 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.	Limited 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	**Some 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,	Some Progress	Relevant RRP measures implemented in 2021 and 2022 and planned as of 2023, 2025 and 2026.	SDG 10, 11
digital infrastructure,	Some 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	**Limited Progress**		
Continue to improve the effectiveness of the justice system, focussing on strengthening its independence, including on judicial appointments.	Limited 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	**Limited 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.	Some Progress		SDG 8, 9
Close digital infrastructure gaps.	Some 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,	Some 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.	Limited Progress	Relevant RRP measures implemented in 2022 and planned as of 2023 and 2024.	SDG 16
2021 CSR 1	**Not relevant anymore**		
In 2022, maintain a supportive fiscal stance, including the impulse provided by the Recovery and Resilience Facility, and preserve nationally financed investment.	Not relevant anymore	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.	Not relevant anymore	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.	Not relevant anymore	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.	Not relevant anymore	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.	Limited 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.	Limited Progress		SDG 8, 10, 12
Continue to strengthen tax compliance, including by further digitalising tax administration.	Limited Progress		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	**Some progress**		
Reduce overall reliance on fossil fuels and diversify imports of fossil fuels.	Some 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
2023 CSR 1	**Limited Progress**		
Wind down the emergency energy support measures in force, using the related savings to reduce the government deficit, as soon as possible in 2023 and 2024. Should renewed energy price increases necessitate new or continued support measures, ensure that these are targeted at protecting vulnerable households and firms, fiscally affordable, and preserve incentives for energy savings.	Some Progress	Not applicable	SDG 8, 16
Ensure prudent fiscal policy, in particular by limiting the nominal increase in nationally financed net primary expenditure in 2024 to not more than 5.7%.	Some Progress	Relevant RRP measures planned for 2024.	SDG 8, 16
Preserve nationally financed public investment and ensure the effective absorption of RRF grants and other EU funds, in particular to foster the green and digital transitions.	Limited Progress	Not applicable	SDG 8, 16
For the period beyond 2024, continue to pursue a medium-term fiscal strategy of gradual and sustainable consolidation, combined with investments and reforms conducive to higher sustainable growth, to achieve a prudent medium-term fiscal position.	Limited Progress	Not applicable	SDG 8, 16
Make the tax mix more efficient and more supportive of inclusive and sustainable growth, including by leveraging the potential of environmental and property taxation.	Limited progress		SDG 8, 10, 12
Continue to strengthen tax compliance, including by further digitalising the tax administration.	Limited Progress		SDG 8, 9, 16
Reduce the risks related to household debt by supporting housing supply and the expansion of the rental market.	Limited Progress		SDG 8
2023 CSR 2			
Maintain the momentum in the steady implementation of the recovery and resilience plan and, following the recent submission of the addendum, including the REPowerEU chapter, rapidly start the implementation of the related measures. Proceed with the speedy implementation of cohesion policy programmes, in close complementarity and synergy with the recovery and resilience plan.	RRP implementation is monitored through the assessment of RRP payment requests and analysis of the bi-annual reporting on the achievement of the milestones and targets, to be reflected in the country reports. Progress with the cohesion policy is monitored in the context of the Cohesion Policy of the European Union.		
2023 CSR 3	**Limited progress**		
Reduce the economy's reliance on fossil fuels, in particular natural gas in industry and heating, and diversify imports of fossil fuels.	Some Progress	Relevant RRP measures being implemented as of 2022, 2023 and planned as of 2025, 2026.	SDG 7, 9, 13
Accelerate the deployment of renewables, particularly for wind, solar, geothermal and renewable gases, in line with relevant sustainability criteria.	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2024, 2026.	SDG 7, 9, 13
Simplify permitting and administrative procedures for deploying renewables, including by establishing 'one-stop shops' and 'go-to' areas.	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2024, 2025.	SDG 7, 8, 9, 13,
Modernise the electricity network and make the procedures for connecting renewables to the grid more efficient and less burdensome.	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2024, 2026.	SDG 7, 8, 9, 13
Accelerate and incentivise deep renovations of public and private buildings,	Some Progress	Relevant RRP measures being implemented as of 2022, 2023 and planned as of 2026.	SDG 7
address energy poverty through housing renovations for low-income households,	Limited Progress	Relevant RRP measure planned as of 2026.	SDG 1, 2, 7, 10
and step up policy efforts aimed at the provision and acquisition of skills and competences needed for the green transition.	Limited Progress	Relevant RRP measures planned as of 2024 and 2026.	SDG 4

Note:

* See footnote ([14])

** 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 submitted and positively assessed by the European Commission.

Source: European Commission.

This Annex provides a snapshot of Slovakia's implementation of its recovery and resilience plan (RRP), past the mid-way point of the Recovery and Resilience Facility's (RRF) lifetime. The RRF has proven central to the EU's recovery from the COVID-19 pandemic, helping speed up the twin green and digital transition, while adapting to geopolitical and economic developments, and strengthening resilience against future shocks. The RRF is also helping implement the UN Sustainable Development Goals and address the country-specific recommendations (see Annex 2).

The RRP paves the way for disbursing up to EUR 6.4 billion in grants under the RRF over the 2021-2026 period, representing 5.2% of Slovakia's GDP ([15]). As of mid-May 2024, EUR 2.67 billion in grants have been disbursed to Slovakia under the RRF.

Slovakia still has EUR 3.7 billion available in grants from the RRF. This will be disbursed upon assessment of future fulfilment of the remaining 165 milestones and targets ([16]) included in the Council Implementing Decision ([17]) (CID), ahead of the 2026 deadline established for the RRF.

Slovakia's progress in implementing its plan is recorded in the Recovery and Resilience Scoreboard ([18]). The scoreboard gives an overview of the progress made in implementing the RRF as a whole. Graph A3.1 shows the current state of play as reflected in the scoreboard.

Slovakia's RRP includes a REPowerEU chapter to phase out its dependency on Russian fossil fuels, diversify its energy supplies and produce more clean energy in the coming years. To kick-start the REPowerEU chapter's implementation, EUR 80.5 million were disbursed as pre-financing on 13 December 2023 This helped launch relevant reforms like the modernisation and digitalisation of the electricity networks.

The plan has a strong focus on the green transition, dedicating 47.71% of the available funds to measures that support climate objectives and 20.50% of its total allocation to support the digital transition. It also retains a strong social dimension with social protection measures, especially related to poor education outcomes and skills of pupils and low enrolment rate of children in pre-school facilities.

Table A3.1: **Key facts of the Slovakian RRP**

Initial plan CID adoption date	13 July 2021
Scope	Revised plan with REPowerEU chapter
Last major revision	14 July 2023
Total allocation	EUR 6.408 billion in grants (5.2% of 2023 GDP)
Investments and reforms	64 investments and 70 reforms
Total number of milestones and targets	222
Fulfilled milestones and targets	57 (25.7% of total)

Source: RRF Scoreboard

With three payment requests completed, Slovakia's implementation of its RRP is underway. However, timely completion requires increased efforts. The Commission gave a positive assessment of Slovakia's first and second payment requests, taking into account the opinion of the Economic and Financial Committee. This led to EUR 398.7 million being disbursed in financial support on 29 July 2022 and EUR 708.8 million on 22 March 2023 ([19]). The related 30 milestones and targets covered reforms and investments such as equipping and digitalising the police force or reorganising the judicial map, and others in the areas of digital transformation, healthcare and public administration.

The most recent payment request, which was positively assessed by the Commission on 24

([15]) GDP information is based on 2023 data. Source: https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/index.html?lang=en

([16]) 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.

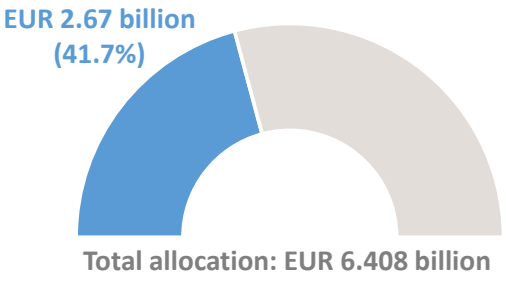
([17]) https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:ST_10156_2021_ADD_1

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

([19]) When requested payments are disbursed, the pre-financing is cleared proportionally. The net amounts are quoted here.

November 2023, has led to the disbursement of EUR 662.3 million on 28 December 2023. The disbursement reflected the positive assessment of 27 milestones and targets covering, among others, the preparation of a strategy to guide the economy's digital transition, the launch of new calls to enhance the cooperation between academic researchers and private companies, and the improvement of the accessibility and quality of the education system, including pre-primary schools. With the third payment request, the overall disbursement to Slovakia under the RRF, net of pre-financing, amounts to EUR 1.77 billion.

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



Note: This graph displays the amount of grants, including pre-financing, 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

As of 15 May 2024, Slovakia is working towards its fourth payment request. Table A3.2 highlights some relevant measures achieved so far, and some that will be implemented before 2026 to keep making Slovakia's economy greener, more digital, inclusive, and resilient.

Table A3.2: **Measures in Slovakia's RRP**

Reforms and investments implemented
• Adaptation of the electricity legal framework • Reform of primary care provision for adults, children and youth • Reform of governance, evaluation and support in science, research and innovation
Upcoming reforms and investments
• Investment in energy efficiency renovations for buildings • Construction and reconstruction of hospitals • Reduction of the administrative burden on entrepreneurs

Source: FENIX

EU funding instruments provide considerable resources for recovery and growth to the EU Member States. In addition to the EUR 6.4 billion of Recovery and Resilience Facility (RRF) funding described in Annex 3, EU cohesion policy funds ([20]) provide EUR 12.6 billion to Slovakia for the 2021-2027 period ([21]). Support from these two instruments combined represents around 15.47% of the country's 2023 GDP, compared to the EU average of 5.38% of GDP ([22]). Cohesion policy supports regional development, economic, social and territorial convergence and competitiveness through long-term investment in line with EU priorities and with national and regional strategies.

During the 2014-2020 programming period, cohesion policy funds boosted Slovakia's competitiveness, with tangible achievements notably in entrepreneurship, energy efficiency, transport and provision of social services. By the end of the eligibility period in December 2023, cohesion policy funds ([23]) had made EUR 14.3 billion available to Slovakia ([24]), of which EUR 8.9 billion has been disbursed since March 2020, when the COVID-19 pandemic began ([25]). Cohesion policy funds provided support to over 22 000 businesses, including 5 000 start-ups. The funding leveraged EUR 250 million of private investment in innovation or research and development projects. The capacity of renewable energy production increased by 400 MW. Other achievements include 673 km of new or reconstructed roads and 30 km of upgraded railways, improved health services for 600 000 people, as well as renovated schools and kindergartens for 175 000 children and pupils. Cohesion policy also helped finance accommodation and other basic services for almost 100 000 refugees from Ukraine. During the same period, the European Social Fund (ESF) financed many public administration reform projects and was able to provide life-long learning opportunities to 37 000 adults and support to 127 000 young people. Activities under the European Regional Development Fund (ERDF) and ESF were strengthened by REACT-EU and FAST-CARE schemes.

In the current programming period (2021-2027), cohesion policy will provide a further boost to Slovakia's competitiveness, to the green transition and to social cohesion, improving the living and working conditions of Slovakia's people. In 2021-2027, the ERDF and Cohesion Fund (CF) will boost research and innovation, digitalisation, and energy efficiency. SMEs lie at the heart of ERDF support to companies, and financial instruments will be widely deployed to improve their access to finance. Over 16 000 households will improve the energy performance of their dwellings and 20 000 will get a high-capacity internet connection. These measures will help people to better overcome the challenges of the green and digital transitions. The Just Transition Fund (JTF) will facilitate the green transition and foster job creation in three regions with coal mining and emission-intensive industries (Trenčín, Košice and Banská Bystrica). The JTF will support 130 businesses, train over 5 000 workers and build or renovate education facilities for 12 600 students. The European Social Fund Plus (ESF+) has been rolled out at a good pace. The ESF+ funding priorities (altogether EUR 2.7 billion in total eligible costs) include providing tailored-made assistance to those who are long-term unemployed (targeting 167 000 people) and inclusive social, education and support services to 57 000 Roma people. The ERDF and ESF+ will jointly invest EUR 900 million to improve the living conditions and socio-economic inclusion for Roma people. With this work, cohesion policy substantially contributes to achieving the UN Sustainable Development Goals (SDGs) in Slovakia, in particular SDG 9 (Industry, innovation, infrastructure), SDG 8 (Decent work and economic growth) and SDG 7 (Affordable and clean energy).

([20]) In 2021-2027, cohesion policy funds include the Cohesion Fund, the European Regional Development Fund, the European Social Fund Plus and the Just Transition Fund.

([21]) European territorial cooperation (ETC) programmes are excluded from the figure. In 2021-2027, the total investment, including national financing, amounts to EUR 16.1 billion.

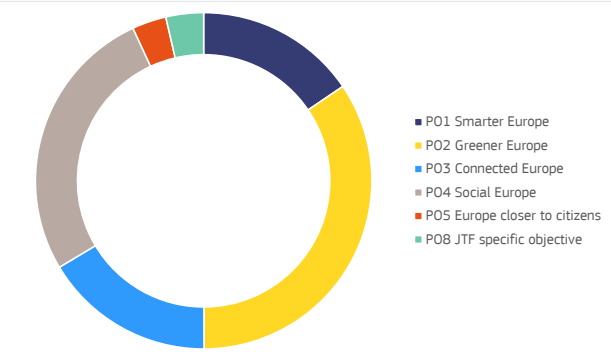
([22]) RRF funding includes both grants and loans, where applicable. The EU average is calculated for cohesion policy funds excluding ETC programmes. GDP figures are based on Eurostat data for 2022.

([23]) In 2014-2020, cohesion policy funds included the Cohesion Fund, the European Regional Development Fund, the European Social Fund and the Youth Employment Initiative. REACT-EU allocations are included but ETC programmes are excluded.

([24]) In 2014-2020, the total investment, including national financing, amounted to EUR 17.6 billion.

([25]) Cut-off date: 14 May 2024.

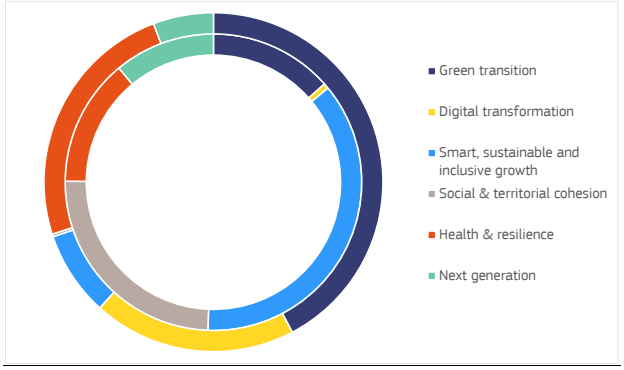
Graph A4.1: **Distribution of cohesion policy funding across policy objectives in Slovakia**



Source: European Commission

Through combined action, cohesion policy and the recovery and resilience plan (RRP) have a mutually reinforcing impact in Slovakia. To promote the use of renewable energy, cohesion policy investments are expected to help develop smart energy systems, grids and storage. At a local level, integrating renewables into distribution grids will improve planning around supply and demand. This complements the reforms and investments provided through the RRP for renewable energies and the grid. Under the RRP, the updated legal framework enables new renewables to be connected to the grid. Investments in renewables will help Slovakia achieve the 2030 climate targets. In addition, in transport, the Slovak RRP contains an investment plan for railway infrastructure projects in order to increase the efficiency of the construction process for railway infrastructure. This investment plan will be complemented with cohesion policy investments in the modernisation of the main railway lines included in the trans-European transport network, including electrification where appropriate as well as upgrades to safety, control, and signalling equipment. In education, the RRP curricular reform aims to improve skills and competences of pupils and better support equality and inclusiveness in Slovakia's education system, while providing flexibility to develop curricula at school level. To complement this, the ESF+ seeks to strengthen pupils' literacy. The contribution of cohesion policy and RRP funding by policy objectives is illustrated by Graphs A4.1 and A4.2.

Graph A4.2: **Distribution of RRF funding by pillar in Slovakia**



(1) Each RRP measure helps achieve the aims of two of the six policy pillars of the RRF. The primary contribution is shown in the outer circle while the secondary contribution is shown in the inner circle. Each contribution represents 100% of the RRF funds. Therefore, the total contribution to all pillars displayed on this chart amounts to 200% of the RRF funds allocated to Slovakia.

Source: European Commission

The Technical Support Instrument (TSI) helps Slovakia invest in its public administration and create a better enabling environment for EU and national investment. The TSI has funded projects in Slovakia to design and implement growth-enhancing reforms since 2016. The support provided in 2023 included action to: simplify and accelerate the roll out of cohesion policy; implement a comprehensive healthcare reform; and digitalise insolvency proceedings. The TSI also helps Slovakia to increase its overall capacity to implement specific reforms and investments included in its RRP, such as preparing a State aid scheme to promote decarbonisation and introducing multi-annual expenditure ceilings.

Slovakia also receives funding from several other EU instruments, including those listed in Table A4.1.

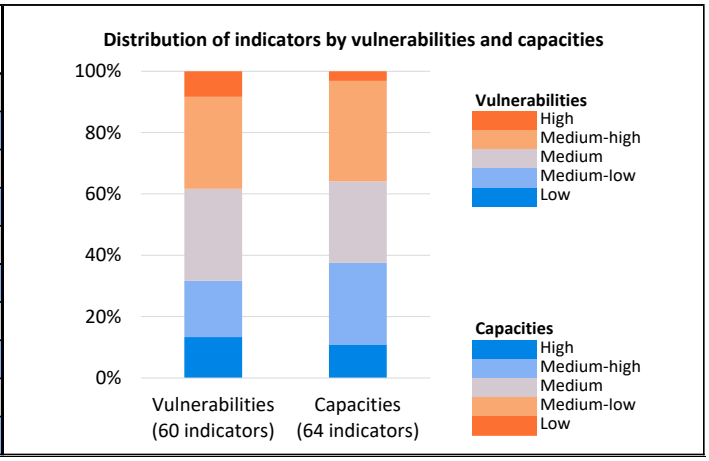
Table A4.1: **Support from EU instruments in Slovakia**

EU grants			
	Amount 2014-2020 (EUR million)		Amount 2021-2027 (EUR million)
Cohesion policy	14 288.4		12 593.7
RRF grants (1)	-		6 408.5
Public sector loan facility (grant component) (2)	-		34.8
Common agricultural policy (3)	5 500.0		3 380.0
EMFF/EMFAF (4)	7.7		15.2
Connecting Europe Facility (5)	711.7		253.7
Horizon 2020 / Horizon Europe (6)	136.6		82.3
LIFE programme (7)	49.6		44.3
EU guarantees			
	EU Guarantee (EUR million)		Volume of operations (EUR million)
European Fund for Strategic Investment 2015-2020 (8)	202.3		562.7
InvestEU 2021-2027 (9)	27.7		39.0
EU loans			
	Period	Total amount available (EUR million)	Disbursed amount (EUR million)
SURE (10)	2020-2022	630.9	630.9

(1) RRF implementation period is 2021-2026.
(2) The public sector loan facility's programming period is 2021-2025 and the amount reflects the national share in its grant component reserved until the end of the period.
(3) Common agricultural policy programming periods are 2014-2022 and 2023-2027.
(4) EMFF – European Maritime and Fisheries Fund, EMFAF – European Maritime, Fisheries and Aquaculture Fund.
(5) Data on the Connecting Europe Facility covers transport and energy and has a cut-off date of 15 May 2024.
(6) Data on Horizon Europe (2021-2027) has a cut-off date of 13 May 2024.
(7) 2021-2027 data on the LIFE programme has a cut-off date of 15 May 2024.
(8) The amount of the EU guarantee signed under the EFSI Infrastructure and Innovation Window was derived based on the signed amount of the operations and the average internal multiplier, as reported by the EIB (cut-off date is 31 December 2023).
(9) The amount of the EU guarantee and of the volume of operations signed under InvestEU includes the EU compartment as well as the Member State compartments (cut-off date is 31 December 2023).
(10) SURE - European instrument for temporary support to mitigate unemployment risks in an emergency.
Source: European Commission

Table A5.1: **Resilience indices across dimensions for Slovakia and the EU-27**

Dimension		SK 2023 RDB	SK 2024 RDB	EU-27 2024 RDB
Overall resilience	Vulnerabilities			
	Capacities			
Social and economic	Vulnerabilities			
	Capacities			
Green	Vulnerabilities			
	Capacities			
Digital	Vulnerabilities			
	Capacities			
Geopolitical	Vulnerabilities			
	Capacities			



(1) The synthetic indices aggregate the relative resilience situation of countries across all considered indicators. For an indicator, each country's relative situation in the latest available year is compared with the collection of values of that indicator for all Member States and all years in the reference period.

Source: Resilience Dashboards - version spring 2024, data up to 2022

This Annex uses the Commission's resilience dashboards (RDB) ([26]) to show Slovakia's relative resilience capacities and vulnerabilities ([27]) that may be of relevance for societal, economic, digital and green transformations, and for dealing with future shocks and geopolitical challenges. ([28])

According to the RDB's set of resilience indicators, Slovakia has medium overall vulnerabilities and capacities, both of which have remained stable with respect to last year. While overall vulnerabilities in Slovakia are in line with the EU average, its overall capacities are below the EU average. The distribution of indicators across different resilience categories reflects this, with 30% of vulnerability indicators in the medium-low or low category, and under 40% of capacity indicators in the medium-high or high category.

In the social and economic dimension, Slovakia's vulnerabilities and capacities are stable compared to last year's RDB. The country continues to have high vulnerabilities, such as the high regional dispersion of household income, high employment in energy-intensive sectors, and high employment in manufacturing with a high risk of automation, with the latter two pointing to potential concerns about Slovakia's preparedness for the green and digital transition. Slovakia would also do well to improve several particularly low capacities, such as its household saving rate, the proportion of children under 3 in formal childcare, and its average Programme for International Student Assessment (PISA) scores. On the bright side, its employment rate has increased.

With its medium-low vulnerabilities in the green dimension, Slovakia performs above the EU average but it remains below the EU average on its capacities. It has improved the harmonised risk indicator 1 for pesticides since the 2023 RDB, and has a low consumption footprint per capita. Among its green capacities, it has improved its circular material use rate, but CO_2 absorption by forests has decreased. Slovakia is among the leaders in e-waste recycling, but the country is lagging behind in terms of environmental patents per capita.

([26]) Https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en. Resilience is defined as the ability not only to withstand and cope with challenges but also to undergo transitions, in a sustainable, fair, and democratic manner. 2020 Strategic Foresight Report: *Charting the course towards a more resilient Europe* (COM(2020) 493).

([27]) 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, while capacities refer to enablers or abilities to cope with crises and structural changes and to manage transitions.

([28]) 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.

Slovakia's vulnerabilities and capacities in the digital dimension have remained stable overall. There has been an improvement in capacities, such as judicial system e-tools and businesses seeking information and communication technology (ICT) specialists.

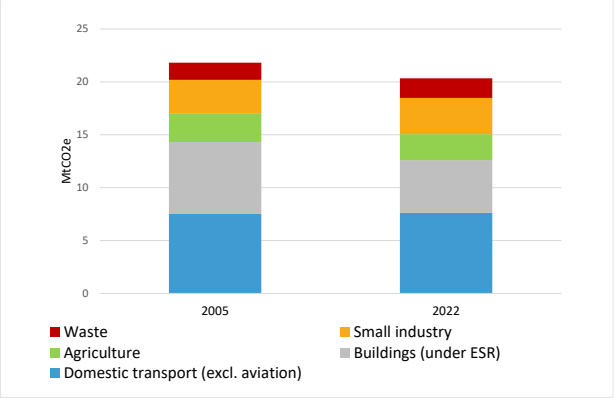
In the geopolitical dimension, Slovakia's capacities have remained stable with respect to last year but its vulnerabilities are now at medium-high. On the capacity side, intra-EU trade in energy and recyclable raw materials, and the proportion of non-EU citizens in employment have improved, and Slovakia remains among the EU's top performers in backward participation in global value chains and intra-EU trade openness. However, its proportion of non-EU citizens in employment and net migration remain among the lowest in the EU. On the vulnerability side, there has been a significant narrowing of the gap in employment between EU and non-EU nationals, but Slovakia's net international investment position has deteriorated slightly.

Slovakia has made progress in the green transition, with more action needed on specifying the funding framework for the climate and energy transition and the policies needed to attain the 2030 effort sharing target, on addressing potential hazards from climate risks, on the circular economy, and other areas. This Annex provides a snapshot of climate, energy, and environment aspects of the transition in Slovakia ([29]).

Slovakia's draft updated national energy and climate plan (NECP) does not provide updated information on the investment needed to achieve its 2030 climate and energy targets as compared to the 2019 plan. The draft updated NECP only provides partial information on the investment needed to implement the policies and measures. It outlines the main national and EU sources of funding, but without attributing them to specific policies and measures or investment needs. Furthermore, the contribution of the Recovery and RRF is not fully reflected ([30]).

With the policies and measures currently planned, Slovakia is likely to fall short of its 2030 effort sharing target ([31]). In 2022, Slovakia's greenhouse gas emissions from its effort sharing sectors are expected to be 12.1% below 2005 levels. Current policies are projected to reduce Slovakia's effort sharing emissions by 12.9% from 2005 levels by 2030. This leaves a gap of almost 10 percentage points below Slovakia's effort sharing target to achieve a 22.7% reduction ([32]). This highlights the importance of planning and implementing more ambitious climate action. The draft updated NECP reiterates Slovakia's commitment to achieve climate neutrality by 2050.

Graph A6.1: **Greenhouse gas emissions from the effort sharing sectors in Mt CO2eq, 2005-2022**



Source: European Environment Agency

There is scope for increasing Slovakia's target for renewable energy and energy efficiency in its final updated NECP ([33]). Slovakia's renewable energy contribution set in its draft updated NECP, 23% by 2030, is significantly below the required contribution of 35%. Its energy efficiency contributions of 15.7 Mtoe in primary energy consumption and 10.27 Mtoe in final energy consumption for 2030 set in the draft updated NECP are also less ambitious than those

([29]) This Annex is complemented by Annex 7 on energy transition and competitiveness, Annex 8 on the fair transition to climate neutrality, Annex 9 on resource efficiency, circularity, and productivity, and relevant topics in other annexes to this country report.

([30]) See the Commission's (2023) assessment of the draft national energy and climate plan of Slovakia..

([31]) The national greenhouse gas emission reduction target is laid down in Regulation (EU) 2023/857 (the Effort Sharing Regulation). The aim is to align action in the sectors concerned with the objective to reach the EU-level economy-wide target of greenhouse gas reductions of at least 55% compared to 1990 levels. The target also applies to the sectors outside the current EU Emissions Trading System, notably buildings (heating and cooling), road transport, agriculture, waste, and small industry (known as the effort sharing sectors).

([32]) The effort sharing emissions for 2022 are based on approximated inventory data. The final data will be established in 2027 after a comprehensive review. Slovakia's draft updated NECP does not provide updated projections for the effort sharing sectors. The information on such projections is based on the data that had to be reported by 15 March 2023 under Article 18 of Regulation 2018/1999 (the Governance Regulation), in relation to the value for the 2005 base year as specified in Commission Implementing Decision (EU) 2020/2126 of 16 December 2020. For details, see the Commission's assessment of Slovakia's draft NECP.

([33]) The EU target set out in the revised Renewable Energy Directive is to have 42.5% of gross final energy consumption coming from renewable energy sources by 2030, with the aspiration to reach 45%. The formula in Annex I to Directive (EU) 2023/1791 sets the indicative national contribution for Slovakia at 13.6 Mtoe for primary energy consumption. The Commission communicated a corrected national contribution of 8.70 Mtoe in final energy consumption for 2030 in accordance with Article 4(5) of the Energy Efficiency Directive to increase the contribution towards the Union's binding energy efficiency target. See the Commission Recommendation of 18.12.2023 to Slovakia.

required by the Energy Efficiency Directive. Moreover, the 2030 targets are lower than Slovakia's 2020 energy efficiency targets (reductions of 4.26% and 1.25% for primary and final energy consumption respectively).

Slovakia still has progress to make on its transition to sustainable mobility ([34]). In 2022, battery electric vehicles accounted for 0.2% of Slovakia's passenger vehicle fleet. Its 2 100 publicly accessible charging points provided one charging point for every four e-vehicles, above the EU average of 1:10. Passenger cars accounted for 83% of the total distance travelled by passengers (just below the EU average of 85%). The share of freight transported by road is relatively low, however, at 55% (EU average: 75%), with rail (27%) and pipelines (15%) having a more significant role. 44% of the rail network is electrified (EU average: 56%).

Slovakia lacks the required ambition to meet its 2030 target on carbon removals through land use, land-use change and forestry (LULUCF). Its capacity for carbon removals through land use can only be maintained by planting more trees and through better landscape management. With higher net removals in 2020 thanks to reduced harvesting, Slovakia's land use sector is seeing a decline in net carbon removals owing to ageing forests. Its 2030 LULUCF target will require additional carbon removals of 504 kt CO_2eq ([35]), resulting in total net carbon removals of 6 821 kt CO_2 eq. However, according to the latest projections, Slovakia is expected to fall short of this figure ([36]).

A high climate protection gap ([37]) **related to floods call for monitoring.** Slovakia has continued to make progress on climate adaptation. Enhanced climate observation tools inform decision-making in specific sectors. A crucial step was the approval of the national adaptation plan in 2021. This plan outlined the priorities for adaptation in vulnerable sectors, notably water management, agriculture, forestry, nature, health, and urban planning. An evaluation of progress made in implementing the plan was submitted to the government. A comprehensive assessment of Slovakia's vulnerability to climate impacts is being planned as part of preparations for a climate law and an updated adaptation strategy, but this may take time. Although guidelines exist for adaptation monitoring and evaluation, information on spending and results in this area is incomplete. The main barriers to successful implementation are a lack of financial resources, low awareness at regional and local level, and inadequate inter-ministerial cooperation, in particular on mainstreaming adaptation into sectoral policies and plans ([38]).

Air quality continues to be a serious concern in Slovakia. According to the latest estimates (for 2021) by the European Environmental Agency, Slovakia faces around 1 060 years of life lost for every 100 000 inhabitants due to exposure to particulate matter ($PM_{2.5}$) and 76 years lost due to exposure to nitrogen dioxide (NO_2). Furthermore, the indicator for smog-precursor emission intensity to GDP decreased by 62% between 2008 and 2020, reaching 0.80 tonne/EUR 10 - below the EU average.

The development of infrastructure continues to have a major impact on biodiversity in Slovakia. At the end of 2021, 37.4% of Slovakia's land area was under protection. According to the report on the conservation status of protected habitats and species covered by Article 17 of the Habitats Directive, in 2013-2018 only 38% of habitats and 23% of species were in a good conservation status. The pressures include development of infrastructure such as hydropower plants, roads, motorways, water reservoirs and anti-flood infrastructure.

Intensive agriculture has a major impact on ecosystems, biodiversity and air quality. Agricultural land is still affected by biodiversity loss and the common farmland bird index dropped from 98.9 in 2011 to 83.5 in 2018. Slovakia is in the process of converting to organic agriculture. The share of Slovakia's utilised agricultural area

([34]) Unless otherwise indicated, data in this section refer to 2021. See European Commission, 2023, EU transport in figures, transport.ec.europa.eu.

([35]) National LULUCF targets of the Member States in line with Regulation (EU) 2023/839.

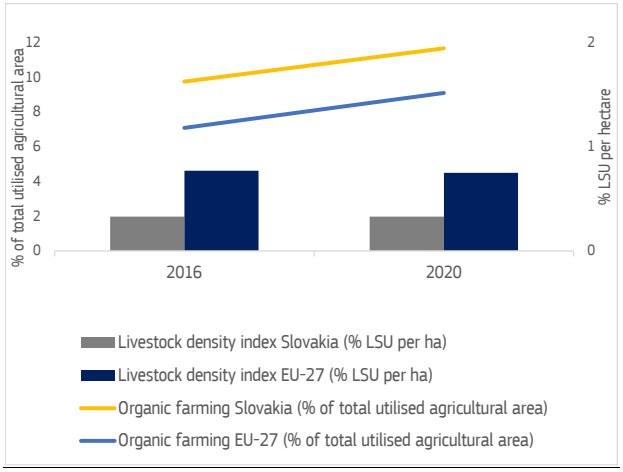
([36]) Projections submitted in Slovakia's draft updated national energy and climate plan, 2023.

([37]) On the climate protection gap, see the annotations to Table A6.1.

([38]) See the Commission's 2023 assessment and recommendation on Slovakia's progress on climate adaptation.

(UAA) under organic agriculture reached 13.5% in 2021 against the EU average of 9.1% ([39]) and the EU-wide goal of at least 25% by 2030. Furthermore, conservation tillage practices, which increase soil organic carbon, covered 18% of Slovakia's tillable area in 2016. Slovakia's livestock density index decreased from 0.35% to 0.33%, below the EU average of 0.75%. Intensive animal farming is usually the main cause of the emission of pollutants such as ammonia. Slovakia's agricultural sector was responsible for 87.3% of the country's total ammonia emissions in 2021 (EU average: 90.7%). Slovakia has one of the lowest shares of irrigated land in the EU, accounting for 1.5% of its UAA. The water abstracted for agricultural purposes accounted for 5.1% of total abstraction in 2019.

Graph A6.2: **Changes in livestock density and organic farming**

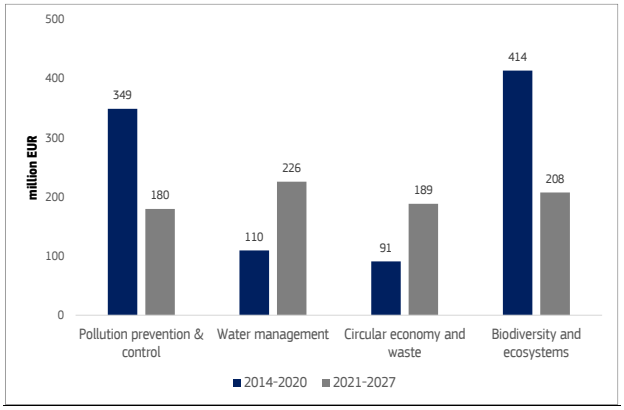


Livestock unit (LSU)/ha of UAA: it measures the stock of animals (cattle, sheep, goats, equidae, pigs, poultry and rabbits) converted in LSUs per hectare of UAA.
Source: Eurostat

Intensive agriculture continues to generate pollution. According to the latest figures on the gross nitrogen balance on agricultural land, Slovakia has a nitrogen surplus, with an average nitrogen balance of 63.3 kg of nitrogen per hectare in 2019. The content of nitrate in groundwater stands below the EU average (17.9 vs 20.5 mg nitrate/l), and 12% of groundwater monitoring stations showed levels above the maximum of 50 mg nitrate/l. Furthermore, the country showed an average phosphorous balance of -3.1 kg/ha in 2019. Waterbodies are also affected by pesticide pollution, and 34.4% of monitoring sites were reported to have pesticide levels exceeding the thresholds set by the Water Framework Directive and the Groundwater Directive. Both surface water and groundwater are highly polluted and measurements from 50% of large rivers and 41% of groundwater showed levels exceeding the threshold.

Slovakia would benefit from increasing its environmental investment, particularly in sustainable water management, and circular economy and waste. In 2014-2020, the environmental investment gap was estimated at EUR 975 million per year, equivalent to 1.1% of GDP (above the EU average of 0.8%). The gap is estimated to be smaller in 2021-2027, at EUR 802 million. Slovakia can benefit from increased funding, in particular for sustainable water management (estimated gap of EUR 226 million per year) and for circular economy and waste (EUR 189 million per year) as the investment gap widened there. By contrast, the annual investment gaps for biodiversity and ecosystems and pollution prevention and control decreased to EUR 208 million and EUR 180 million respectively but remains excessive.

Graph A6.3: **Environmental investment gap, annual average**



The numbers are computed by the European Commission based on the latest internal reports, Eurostat, EIB and national data sources.
Source: European Commission

([39]) In 2020. 2021 data not yet available.

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

							Target	Distance	
		2005	2019	2020	2021	2022	2030	WEM	WAM
Progress to climate and energy policy targets									
Greenhouse gas emission reductions in effort sharing sectors [1]	Mt CO_{2eq}, %, pp	23,137.1	-13%	-18%	-12%	-12%	-23%	-21	-11
Net greenhouse gas removals from LULUCF [2]	Kt CO2eq	-4 265	-4 994	-7 179	-7 211	-7 226	-6,821	n/a	n/a
Share of energy from renewable sources (1) [3]	%	6%	17%	17%	17%	18%	35%	-	-
Energy efficiency: primary energy consumption [3]	Mtoe	17.4	16.0	15.2	16.4	15.4	13.6		
Energy efficiency: final energy consumption [3]	Mtoe	11.6	11.2	10.4	11.6	10.6	8.7		

							EU-27		Projected
		2018	2019	2020	2021	2022	2021	2022	2030
Green transition: mobility									
Greenhouse gas emissions: road transport	Mt CO2e	-	-	-	7.4	7.6	769.0	786.6	8.2
Share of zero-emission vehicles in new registrations [4]	%	0.3	0.2	1.2	1.5	1.9	9	12.1	n/a
Number of publicly accessible AC/DC charging points		-	-	465	1242	2221	299178	446956	n/a
Share of electrified railways	%	43.8%	43.7%	43.7%	43.7%	-	56.1%	-	n/a
Green transition: buildings									
Greenhouse gas emissions: buildings	Mt CO2e	-	-	-	5.4	5.0	537.0	486.7	4.3
Final energy consumption in buildings	2015=100	99.7%	99.7%	99.5%	113.0%	102.3%	104.0%	97.2%	
Climate adaptation									
Climate protection gap [5]	score 1-4	-	-	2.4	1.6	1.6	1.5	1.5	n/a

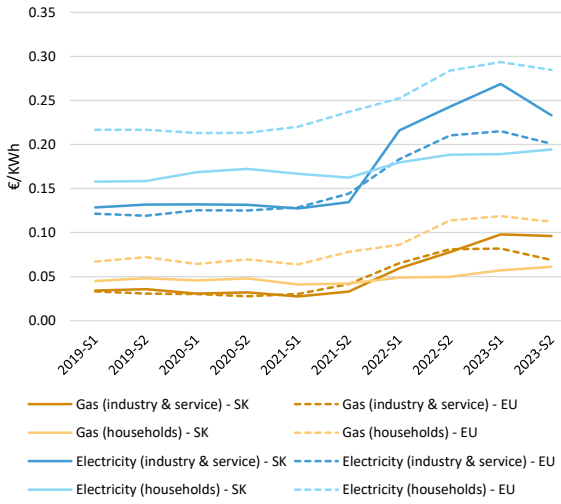
		2018	2019	2020	2021	2022	2020	2021	2022
State of the environment									
Water | Water exploitation index (WEI+) (1) [6]	% of renewable freshwater	1.3	1.2	-	-	-	3.6	-	-
Circular economy | Material footprint [7]	tonnes per person	14.8	13.6	12.7	12.8	12.1	14.2	14.8	14.9
Pollution | Years of life lost due to air pollution by PM2.5 [8]	per 100.000 inhabitants	1,103	809	845	1,060	-	545	584	-
Biodiversity | Habitats in good conservation status [9]	%	37.6					14.7		
Common farmland bird index [10]	2000=100	84	-	-	-	-	78	-	-
Green transition: agri-food sector									
Organic farming	% of total utilised agricultural area	9.85	10.31	11.67	13.45	-	9.1	-	-
Nitrates in groundwater	mg NO_3/litre	14.38	12.58	12.45	-	-	20.42	-	-
Food waste per capita	Kg per capita			106	99	-	130	131	-
Share of soil in poor health [11]	%					37			41
Soil organic matter in agricultural land [12]	Mt per ha	100	-	-	-	-	7,904	-	-

Source: (1) Member States' emission data for 2019 and 2020 are in global warming potential (GWP) values from the 4th Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC). Member States' 2005 base year emissions under Regulation (EU) 2018/842, emissions data for 2021 and 2022, and 2030 projections are in GWP values from the 5th Assessment Report (AR5) of the IPCC. 2021 data are based on the final inventory reports, 2022 data are based on approximated inventory reports and European Environmental Agency's calculation of effort sharing emissions. The final data for 2021 and 2022 will be established after a comprehensive review in 2027. The 2030 target is in percentage change of the 2005 base year emissions. Distance to target is the gap between the 2030 target and projected effort sharing emissions with existing measures (WEM) and with additional measures (WAM), in percentage change from the 2005 base year emissions. The measures included for the 2030 emission projections reflect the state of play as reported in Member States' draft updated national energy and climate plans or, if unavailable, as reported by 15 March 2023 as per Regulation 2018/1999. (2) Net removals are expressed in negative figures, net emissions in positive figures. Reported data are from the 2024 greenhouse gas inventory submission. 2030 value of net greenhouse gas removals as in Regulation (EU) 2023/839 – Annex IIa. (3) The 2030 national objectives for renewable energy and energy efficiency are indicative national contributions, in line with Regulation (EU) 2018/1999 (the Governance Regulation), the EU-level 2030 renewable energy target set out in Directive EU/2018/2001 amended by Directive EU/2023/2413 (the revised Renewable Energy Directive) – 42.5% of gross final energy consumption with the aspiration to reach 45% –, and the formula in Annex I to Directive (EU) 2023/1791 (the Energy Efficiency Directive). (4) Passenger battery electric vehicles (BEV) and fuel cell electric vehicles (FCEV). (5) The climate protection gap refers to the share of non-insured economic losses caused by climate-related disasters, based on modelling of the risk from floods, wildfires, windstorms, and the insurance penetration rate. Scale: 0 (no protection gap) –4 (very high gap) (European Insurance and Occupational Pensions Authority, 2022). (6) Total water consumption in renewable freshwater resources available for a territory and period. (7) Material extractions for consumption and investment. (8) Years of potential life lost through premature death due to exposure to particulate matter with a diameter of less than 2.5 micrometres. (9) Share of habitats in good conservation status according to the records submitted under Art. 17 of the Habitats Directive (Directive 92/43/EEC) for 2013-2018. (10) Multi-species index measuring changes in population abundances of farmland bird species. (11) Source: annex 12 of the Commission's proposal for a soil monitoring law, SWD (2023) 417 final. (12) Estimates of organic carbon content in arable land.

This Annex ([40]) sets out Slovakia's progress and challenges in accelerating the net-zero energy transition while bolstering the EU's competitiveness in the clean energy sector ([41]). It considers measures and targets put forward in the draft updated National Energy and Climate Plans (NECPs) for 2030 ([42]).

Both average household gas and electricity prices in Slovakia increased in the second half of 2023 compared to 2022, but regulated electricity and gas prices for households were still significantly lower than the EU average, although the same could not be said for the industrial and service sectors. Throughout 2022, household gas and electricity prices were stable, 70% and 45.6% lower than the EU average. Both prices increased the following year by 22% and 3%, remaining significantly below the EU average, by 46% and 32%. For the industrial and services sectors, both gas and electricity prices were higher than the EU average. According to Eurostat data, the average gas industry/service price in the second half of 2023 was 40% higher than the EU average, while the average industry/service electricity price in the same period were by 16% higher compared to the EU average.

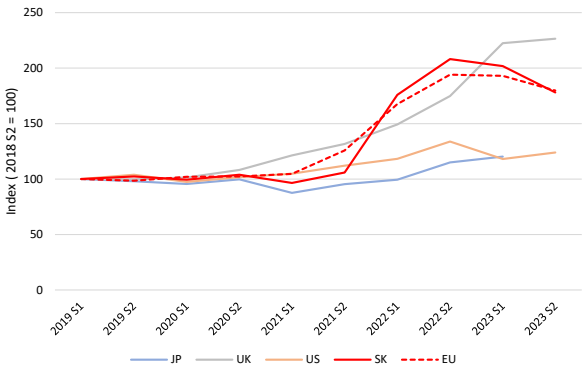
Graph A7.1: **Slovakia´s energy retail prices for households and industry & service**



(1) For industry, consumption bands are I3 for gas and IC for electricity, which refer to medium-sized consumers and provide an insight into affordability
(2) For households, the consumption bands are D2 for gas and DC for electricity
(3) Industry prices are shown without VAT and other recoverable taxes/levies/fees as non-household consumers are usually able to recover VAT and some other taxes
Source: Eurostat

In relative terms, electricity prices for non-household consumers have increased significantly compared to the US, Japan, and to a lesser extent, the UK, thus potentially affecting the international competitiveness of energy-intensive industries in Slovakia.

Graph A7.2: **Trends in electricity prices for non-household consumers (EU and foreign partners)**



(1) For Eurostat data (EU and HR), the band consumption is ID referring to large-sized consumers with an annual consumption of between 2 000 MWh and 20 000 MWh, such as in electricity intensive manufacturing sectors, and gives an insight into international competitiveness
(2) JP = Japan
Source: Eurostat, IEA

([40]) It is complemented by Annex 6 as the European Green Deal focuses on the clean energy transition and by Annex 8 on the action taken to protect the most vulnerable groups, complementing ongoing efforts under the European Green Deal, REPowerEU and European Green Deal Industrial Plan.

([41]) In line with the Green Deal Industrial Plan and the Net-Zero Industry Act.

([42]) Slovakia submitted its draft updated NECP in August 2023, and the Commission issued an assessment and country-specific recommendations on 18 December 2023. Commission Recommendation, Assessment (SWD) and Factsheet of the draft updated National Energy and Climate Plan of Slovakia - European Commission (europa.eu).

To minimise the impact of price spikes, Slovakia regulated electricity and gas prices for vulnerable consumers, meaning all households and small businesses. Thanks to legislative changes in 2022, the scope of vulnerable consumers who can benefit from regulated prices was broadened to, for example, social services and social housing. In 2023, Slovak households had one of the lowest energy prices in the EU. For an average household, the price of electricity increased by less than 3% and the gas price increased by approximately 16% compared to 2022. ([43])

Consumer empowerment in the electricity and gas markets have been ongoing but are still not on a par with the rest of the EU. Slovakia has reported the transposition of the Electricity Directive. However, it applies regulated prices for vulnerable consumers (including all households), with the result that consumer engagement in the market is limited. In terms of smart meters, Slovakia has decided to proceed with the rollout of selective smart meters for consumers whose annual consumption is over 4 MWh (approximately 23% of all forecasted demand points in 2020).

Slovakia has significantly decreased its dependence on Russian gas flows since the beginning of the war in Ukraine, but Russian gas still represented 69% of its total gas demand in 2023. Nuclear power remains the biggest source of electricity generation, producing 62% of Slovakia's electricity in 2022 ([44]). In 2018, Slovakia relied completely on Russian energy imports, including natural gas, oil, nuclear fuel, and around one-third of its solid fuel imports, specifically coal. Its dependence on Russia in this regard has decreased over time, as, since the beginning of the war in Ukraine, the Slovak authorities having considerably reduced their consumption of Russian gas. According to the draft updated NECP, the State Gas Company (SPP) is now able to cover around 70% of consumption using non-Russian sources. Slovakia reduced its gas demand between August 2022 and November 2023 by 23% compared to the average of the past 5 years ([45]).

In 2022, Slovakia diversified its gas suppliers, establishing connections with all neighbouring countries, **implementing interconnection projects with Hungary, reverse-flow projects with Czechia, Ukraine, and Austria, and developing underground gas storage sites.** Slovakia's largest gas supplier, the SPP, signed contracts for Norwegian gas and LNG for the first time, and has even started looking into joining LNG terminals in the Baltic Sea countries. Slovakia is in a very good position in terms of natural gas underground storage capacities due to its favourable geological condition, with a total storage capacity amounting to 3.38 bcm, representing around 75% of its annual gas consumption in 2022. Slovakia fulfilled its gas storage obligations last winter, reaching 98.8% by 1 November 2023, and ended the winter season with a storage filled at 69.90% by 1 April 2024.

Natural gas plays an important role in the Slovak energy mix, as in 2021 it was the country's main energy source, at 26% (against the EU average of 24%). However, it accounts only for 7% of Slovakia's electricity mix, half the EU average (15%) ([46]). Slovakia increased its nuclear capacity in 2023, with the connection to the grid of, and a reactor added to, the Mochovce-3 nuclear power plant. The new reactor reached full power in September 2023, with the result that approximately 60% of Slovakia's electricity now comes from nuclear power. Additional capacity will be created with the completion of Mochovce-4, preliminarily in 2025. Slovakia is also considering using small modular reactors, in particular to ensure the security of its supply and the stability of the electricity transmission system in the east part of the country after the decommissioning of the Vojany fossil fuel power plant in March 2024. The fuel assemblies for all reactors are currently contracted from the Russian supplier TVEL. However, in a bid to diversify, a contract has been signed with Westinghouse and, in June 2023, *Slovenské Elektrárne* signed a Memorandum of Understanding with Framatome, to work together on the development of European nuclear fuel

([43]) 625_odhad-vyvoja-regulovanych-cien-energii-2024-28072023.pdf (gov.sk)

([44]) Source: Fraunhofer

([45]) December 2023 data for Slovakia is missing.

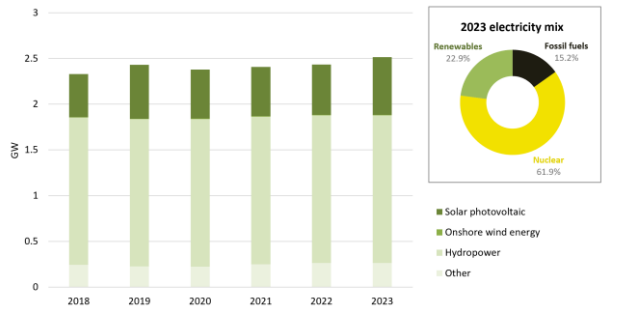
([46]) Source: Fraunhofer.

design for water-water energetic reactor (WWER)-440 reactors.

Slovakia's draft updated NECP is unclear about its commitment to phase out coal power for power generation compared to the approved Territorial Just Transition Plans (TJTP). Both plans do refer to Slovakia's commitment to phase out coal mining and combustion in the energy sector by 2023, by closing the Bani Nováky mines, and reducing coal use by decommissioning the Nováky and Vojany coal power plants in 2023 and 2024 respectively. However, the closure of the Handlova coal mine expected in the TJTP in 2024 is not consistent with the draft updated NECP. In addition, the analytical basis and the impact assessment of the draft updated NECP do not seem to include Slovakia's commitment. ([47]) The final updated NECP and the TJTPs should be aligned.

Renewable installed capacity did not increase in 2022 compared to 2021, remaining at 2406 MW ([48]), lagging behind progress at EU level of an increase of almost 10%. Slovakia's total wind capacity in 2022 was 4 MW (with no increase registered).

Graph A7.3: **Slovakia's installed renewable capacity (left) and electricity generation mix (right)**



(1) "Other" includes solid biofuels, renewable municipal waste and biogas
Source: IRENA, Ember

In the acceleration of solar deployment, Slovakia's total installed capacity in 2022 was 537 MW, 100% of which was in the form of photovoltaic panels ([49]).

Slovakia did not take significant steps in implementing reforms to accelerate the deployment of renewables. In particular, it has neither identified nor introduced simplified permit procedures for renewable energy communities and renewables self-consumers. At the same time, it has not introduced single contact points, or limited the number of authorities involved in permitting, or introduced measures to ensure the availability of administrative resources. It published its long-term schedule for auctions for the next 3 or 5 years, with useful details about the renewable energy project pipeline.

Heating and cooling represents almost 86% of the Slovakia's residential final energy consumption, 20% of which is from renewables. There are approximately 600 000 individual gas boilers installed in Slovakia, nearly one gas boiler for every 10 inhabitants. Approximately 13 000 heat pumps were sold in 2022, an increase of 106% compared to 2021, bringing the total stock of heat pumps installed in the residential sector to around 44 500. Electricity in Slovakia is 3.31 times more expensive than gas, meaning that end users save energy but pay more if they choose a heat pump for heating ([50]).

Further integrating renewables requires the development and modernisation of the electricity system, in particular investments in distribution grids. Slovakia is well-interconnected with neighbouring countries at transmission system level. There is one Project of Common Interest (PCI) for a new transmission line with Czechia aiming to maintain secure operation of both transmission systems, while more efforts are put on smart interconnection of the distribution grids. There are two on-going PCI projects in this context: ACON with Czechia and the Danube InGrid with Hungary. Slovakia also intends to support the modernisation and digitalisation of

([47]) See the Commission's assessment of the draft updated NECP.

([48]) IRENA report 2023

([49]) IRENA report Renewable Energy Statistics 2023, the data might differ from the Eurostat data because of using different methodology in calculating the capacity in AC and DC.

([50]) Therefore, Slovakia would benefit from analysing how taxation and network charges and levies affect the economics of decarbonized heating, and addressing any imbalances.

the transmission system and regional distribution systems through the Recovery and Resilience Facility funding.

Energy storage will also be crucial for ensuring the flexibility required by the higher proportion of renewables in the electricity system. Slovakia has one PCI for upgrading pumped-hydro storage (Slovenské elektrárne Integrator), while other storage projects are under consideration.

Slovakia has made significant progress in contributing to reaching the 2030 EU energy efficiency targets. In 2022, its primary energy consumption was 15.5 Mtoe, a 5.8% decrease compared to 2021, and a 5.3% decrease compared to 2012. Its final energy consumption was 10.8 Mtoe, a 6.9% decrease compared to 2021, and a 2.8% decrease compared to 2012. In the last year, the best results came from industry, which decreased its final energy consumption by 12.4%, and the worst from the transport sector, which increased its final energy consumption by 3.4%.

Slovakia has implemented a series of energy efficiency measures with support from several EU funds, with most measures aimed at buildings and industries. The Slovak recovery and resilience plan is investing EUR 446.5 million in a large-scale renovation to make at least 25 164 family homes more energy efficient. An additional investment of around EUR 368 million aims to decarbonise industry through energy efficiency improvements and the deployment of innovative technologies. Under cohesion policy, 8% of the overall funding allocated to Slovakia covers energy efficiency investments.

Most of Slovakia's energy efficiency measures remain grant-based and the use of financial instruments is very limited. In terms of existing funding schemes to mobilise energy efficiency investments, Slovakia mainly uses grants-based funding measures implemented by the Slovak Innovation and Energy Agency (SIEA), or by various ministries or the Environment Fund. Only one measure provides debt financing, while all others provide grants or subsidies.

Regarding the energy savings obligation in line with the requirements of Article 8 of the Energy Efficiency Directive recast (previously Article 7), Slovakia has overachieved by 14% the amount of savings required by 2020.

Slovakia's building stock's energy performance levels vary depending on the type of building. The renovation of multi-apartment buildings has a long tradition in Slovakia, with the proportion of renovated multi-apartment buildings gradually increasing over the last few years and reaching in 2021 approximately 80% of buildings build before 2000. The proportion of renovated family homes in 2021 was 61% (for buildings constructed before 2000). On the downside, renovation of the non-residential building sector has been slow. As a result, non-residential buildings are the most energy-intensive of Slovakia's entire building stock, particularly hospitals, schools, school facilities and hotels. Slovakia does not report doing any checks on products covered by ecodesign and energy labelling ([51]).

Slovakia predicts annual consumption of 200 kilotonnes of hydrogen by 2030. The hydrogen currently produced from fossil fuel will gradually be replaced by renewable and low-carbon hydrogen. Several hydrogen projects with neighbouring countries are being considered, with a generic corridor to transmit hydrogen from Ukraine to Slovakia, Czechia, Austria and Germany on Slovakia's list of PCIs.

Slovakia continues to depend on imports for clean energy technologies. Even so, there have been positive developments in battery manufacturing and Slovakia's foothold in the solar photovoltaic modules supply chain is growing. Slovakia has a lot of battery manufacturing potential, with one Chinese company investing in the country in power battery technology research and development and innovation. In November 2023, the government signed a Memorandum of Understanding with two battery companies, the Chinese one mentioned above and a Slovak one, to support the construction of a lithium-ion battery gigafactory with 10GWh in Slovakia by 2025, 20GWh in 2026 and 40Gwh by 2027 to supply the electric vehicles market. The first Slovak battery production line was launched a month later. Despite the strong demand for it, solar modules

([51]) According to the internet-supported information and communication system for the pan-European market surveillance (ICSMS) data, 1 Jan 2023-31 Dec 2023.

manufacturing has only recently developed in Slovakia. The pioneer is a Slovak company founded in 2021, specialising in the production of photovoltaic panels, that plans to build a 150 MW plant in Vranov. The plant will produce double-sided glass panels and aims for a capacity of 500 MW by 2024. Possibilities for increasing the production of photovoltaic panels in Slovakia are also being explored thanks to a Memorandum of Understanding with Japan.

Slovakia is one of the EU countries that invests very little in energy research and innovation. Public investment in it as an Energy Union priority is worryingly low. It has decreased more than threefold, from 0.029% in 2014 to 0.008% in 2021 (as a proportion of GDP). While private research and innovation investments decreased from EUR 18 million in 2014 to EUR 2.8 million in 2020. Public investments are mainly in sustainable transport (55%) and efficient systems (34%), while private investments are mainly in nuclear safety (92%). The number of patent families filed in 2019 for clean technologies was 6, or around 1.1 patent families per million inhabitants.

Table A7.1: **Key Energy Indicators**

		Slovakia				EU			
		2019	2020	2021	2022	2019	2020	2021	2022
ENERGY DEPENDNCE	**Import Dependency [%]**	**69.8%**	**56.3%**	**52.6%**	**69.6%**	**60.5%**	**57.5%**	**55.5%**	**62.5%**
	of Solid fossil fuels	92.2%	86.2%	88.1%	96.1%	43.3%	35.8%	37.3%	45.8%
	of Oil and petroleum products	101.3%	102.0%	98.3%	103.0%	96.7%	96.8%	91.7%	97.7%
	of Natural Gas	136.6%	88.1%	69.0%	137.3%	89.7%	83.6%	83.6%	97.6%
	Dependency from Russian Fossil Fuels [%]								
	of Natural Gas	100.0%	85.4%	68.9%	38.6%	39.7%	41.3%	41.1%	21.0%
	of Crude Oil	99.9%	99.7%	99.6%	96.1%	28.8%	26.7%	26.4%	19.5%
	of Hard Coal	39.3%	35.0%	25.8%	8.9%	43.5%	49.1%	47.4%	21.5%

	2016	2017	2018	2019	2020	2021	2022
Gas Consumption (in bcm)	**4.7**	**5.0**	**4.9**	**4.9**	**4.9**	**5.5**	**4.5**
Gas Consumption year-on-year change [%]	1.7%	5.4%	-1.2%	-0.1%	-0.4%	11.9%	-17.4%
Gas Imports - by type (in bcm)	**4.4**	**5.2**	**4.4**	**6.7**	**4.3**	**5.1**	**6.2**
Gas imports - pipeline	4.4	5.2	4.4	6.7	4.3	5.1	6.2
Gas imports - LNG	0.0	0.0	0.0	0.0	0.0	0.0	-
Gas Imports - by main source supplier (in bcm) (1)							
Russia	4.3	4.4	4.4	6.7	3.7	3.5	2.4
Not specified	0.1	0.8	-	-	0.6	1.6	3.8

	2019	2020	2021	2022	2023
LNG Terminals - storage capacity m3 LNG					
Number of LNG Terminals	0	0	0	0	0
LNG Storage capacity (m3 LNG)	0	0	0	0	0
Underground Storage					
Number of storage facilities	2	2	2	2	2
Technical Capacity (bcm)	3.6	3.8	3.8	3.5	3.3

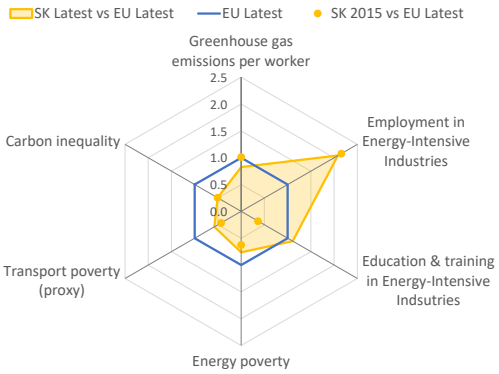
	2016	2017	2018	2019	2020	2021	2022	2023
Gross Electricity Production (GWh) (2)	**27,064**	**27,738**	**26,971**	**28,434**	**28,838**	**30,016**	**26,838**	-
Combustible Fuels	7,015	7,367	7,542	7,953	7,897	8,999	6,254	-
Nuclear	14,774	15,081	14,843	15,282	15,444	15,730	15,920	-
Hydro	4,606	4,623	3,879	4,571	4,799	4,552	3,963	-
Wind	6	6	6	6	4	5	4	-
Solar	533	506	585	589	663	671	650	
Geothermal	-	-	-	-	-	-	-	-
Other Sources	130	155	116	33	31	59	47	-
Gross Electricity Production [%]								
Combustible Fuels	25.9%	26.6%	28.0%	28.0%	27.4%	30.0%	23.3%	-
Nuclear	54.6%	54.4%	55.0%	53.7%	53.6%	52.4%	59.3%	-
Hydro	17.0%	16.7%	14.4%	16.1%	16.6%	15.2%	14.8%	-
Wind	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
Solar	2.0%	1.8%	2.2%	2.1%	2.3%	2.2%	2.4%	-
Geothermal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
Other Sources	0.5%	0.6%	0.4%	0.1%	0.1%	0.2%	0.2%	-
Net Imports of Electricity (GWh)	**2,651**	**3,028**	**3,682**	**1,700**	**319**	**774**	**1,412**	-
As a % of electricity available for final consumption	10.2%	11.2%	13.7%	6.5%	1.3%	2.9%	5.9%	-
Electricity Interconnection [%]		**43.3%**	**42.7%**	**45.3%**	**41.4%**	**40.2%**	**47.0%**	**50.6%**
Share of renewable energy consumption - by sector [%]								-
Electricity	22.5%	21.3%	21.5%	22.1%	23.1%	22.4%	22.9%	-
Heating/cooling	9.9%	9.8%	10.6%	19.7%	19.4%	19.5%	19.9%	-
Transport	7.8%	7.0%	7.0%	8.3%	9.3%	8.8%	8.9%	-
Overall	12.0%	11.5%	11.9%	16.9%	17.3%	17.4%	17.5%	-

	2019	2020	2021	2022	2023
VC investments in climate tech start-ups and scale-ups (EUR Mln)	-	-	**32.72**	**7.37**	-
as a % of total VC investment (3) in Slovakia start-ups and scale-ups	-	-	53.6%	6.2%	-
Research & Innovation spending in Energy Union R&i priorites					
Public R&I (EUR mln)	4.1	9.0	8.3	-	-
Public R&I (% GDP)	0.004%	0.010%	0.008%	-	-
Private R&I (EUR mln)	15.4	2.8	-	-	-
Private R&I (% GDP)	0.016%	0.003%	-	-	-

(1) The ranking of the main suppliers is based on the latest available figures (for 2022)
(2) Venture Capital investment includes Venture Capital deals (all stages), Small M&A deals and Private Equity (PE) growth deals (for companies that have previously been part of the portfolio of a VC investment firm or have received Angel or Seed funding).
Source: Eurostat, Gas Infrastructure Europe, JRC elaboration based on PitchBook data (03/2024), JRC SETIS (2024)

This Annex monitors Slovakia's progress in ensuring a fair transition towards climate neutrality and environmental sustainability, particularly for workers and households in vulnerable situations. Slovakia's green economy is expanding. Total jobs in the environmental goods and services sector grew to around 49 400in 2021, reaching 1.9% of total employment (EU: 2.7%) Between 2015 and 2022, the greenhouse gas emission intensity of Slovakia's workforce (see Graph A8.1 and Table A8.1) declined slightly from 14.5 to 11.8 tonnes per worker, below the EU average (14.3 tonnes per worker in 2022) ([52]), indicating a positive trend in the green transition. However, support is needed to provide workers with the skills needed for the green transition, in line with the Council Recommendation on ensuring a fair transition towards climate neutrality ([53]), to support the fair transition and implement the REPowerEU plan. Slovakia's recovery and resilience plan (RRP) outlines crucial reforms and investment for a fair green transition ([54]), 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, EU Labour Force Survey, EMPL-JRC GD-AMEDI/AMEDI+ and DISCO(H) projects (see Table A8.1).

Employment in Slovakia's sectors most affected by the green transition remains stable, but workers in declining activities need active support. In 2023, employment in Slovakia's energy-intensive industries ([55]) comprised 7.3% of total employment (3.5% in the EU). Slovakia still has the EU's highest proportion of direct automotive employment in total manufacturing (16.2% of employees in manufacturing) ([56]), and the transition towards electromobility represents a major economic and labour market challenge for the country. The job vacancy rate in construction (see Graph A8.2), a key sector for the green transition, is substantially lower than the EU average (0.4% vs 3.6% in EU in 2023). Nevertheless, 73% of small and medium-sized enterprises (SMEs) in the sector reported that skills shortages are holding them back in general business activities ([57]). According to the European Labour Authority (ELA) ([58]), labour shortages were reported in 2023 for a number of occupations that required specific skills or knowledge for the green transition ([59]), including building and related electricians, insulation workers and house builders.

([52]) Workforce-related calculations are based on the EU Labour Force Survey. Note, in the 2023 country report for Slovakia, such indicators were calculated based on employment statistics in the national accounts. This may result in limited comparability across the two reports.

([53]) 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.

([54]) See the 2023 country report.

([55]) Mining and quarrying (NACE B), chemicals (C20), minerals (C23), metals (C24) and automotive (C29).

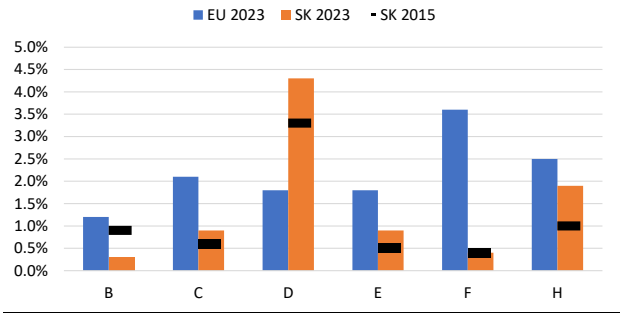
([56]) ACEA, 2020.

([57]) Eurobarometer on skills shortages, recruitment, and retention strategies in small and medium-sized enterprises.

([58]) Based on the European Labour Authority 2024 EURES Report on labour shortages and surpluses 2023, i.e. data submitted by the EURES National Coordination Offices.

([59]) Skills and knowledge requirements are based on the European Skills Competences and Occupations (ESCO) taxonomy on skills for the green transition.

Graph A8.2: **Job vacancy rate in transforming sectors and mining and quarrying**



B - Mining and quarrying
C - Manufacturing
D - Electricity, gas, steam and air conditioning supply
E - Water supply; sewerage, waste management and remediation activities
F - Construction
H - Transportation and storage
Source: Eurostat jvs_a_rate_r2.

Upskilling and reskilling rates in energy-intensive sectors are increasing. In energy-intensive industries, workers' participation in education and training increased from 4.0% in 2015 to 12.1% in 2023, and it is now above the EU average (10.9%). In Slovakia, 33% of SMEs think that the skills required for greening business activities are becoming more important (EU: 42%) ([57]). If Slovakia matches its projected contribution to the EU's 2030 renewable energy target, between 1 000 and 1 300 additional skilled workers will be needed for the deployment of wind and solar energy, which may require an investment in skills of EUR 3.9-4.9 million ([60]). To address the need for skills training, specific investment is planned under the RRP and the 'Slovakia' programme, encompassing the Just Transition Fund and ESF+ and the European Regional Development Fund (ERDF), for reskilling workers in those regions affected by the transition. The territorial just transition plan sets out the strategy for investing EUR 459 million, while the ESF+ and ERDF funding of skills for the whole country will amount to EUR 308 million (with EUR 72 million specifically for green skills and jobs, and the green economy).

Energy poverty indicators increased further in recent years due to the spike in energy prices. The share of the population unable to keep their homes adequately warm increased from 5.8% in 2015 to 7.1% in 2022, still below the EU average (9.3%) ([61]). The indicator increased by 1.3 percentage points between 2021 and 2022 on the back of energy price increases due to supply constraints caused by the COVID-19 pandemic and Russia's war of aggression against Ukraine, despite the emergency measures implemented in Slovakia. In particular, 25.2% of the population at risk of poverty (AROP) (EU: 20.1%) and 5.0% of lower middle-income households (in deciles 4-5) (EU: 11.6%) were affected in 2022. However, in January 2023, 21.4% of the population at risk of poverty spent a considerable proportion of their budget (more than 6%) on private transport fuels (EU: 37.1%) ([62]). A housing allowance is in place to partly cover the cost of housing, including energy. The Office for the Regulation of Network Industries (ÚRSO) prepared a plan to protect customers in energy poverty in 2022 and set up a cross-ministerial working group in 2023 to work a definition and relevant measures. A housing allowance was put in place to cover part of the cost of housing, including energy.

Air pollution remains a critical issue leading to environmental inequalities in Slovakia. The average levels of air pollution in 2021 stood above the EU average (15.4 vs 11.4 µg/m3 PM2.5), with all the population living in regions exposed to critical levels of air pollution ([63]). This has led to a significant impact on health, affecting vulnerable groups in particular, and around 5 350 premature deaths annually ([64]). In 2021, the consumption footprint for 20% of the population with the highest income was 1.4 times higher than the footprint of the poorest 20% (EU: 1.8) ([65]). For both

([60]) EMPL-JRC AMEDI+ project.

([61]) 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.

([62]) Affordability of private transport fuels is one key dimension of transport poverty. The indicator has been developed in the context of the EMPL-JRC GD-AMEDI/AMEDI+ projects. Methodology explained in Economic and distributional effects of higher energy prices on households in the EU.

([63]) Two times higher than the recommendations in the WHO Air Quality Guidelines (annual exposure of 5µg/m^3).

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

([65]) Developed in the context of the EMPL-JRC DISCO(H) project. Methodology explained in Joint Research Centre, 2024. Carbon and environmental footprint inequality of household consumption in the EU. JRC137520. The EU average refers to EU27 without Italy (household income data not available for IT in the HBS)

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

Indicator	Description	SK 2015	SK	EU
GHG per worker	Greenhouse gas emissions per worker - CO2 equivalent tonnes	14.5	11.8 (2022)	14.3 (2022)
Employment EII	Employment share in energy-intensive industries, including mining and quarrying (NACE B), chemicals (C20), minerals (C23), metals (C24), automotive (C29)	7.6%	7.3% (2023)	3.5% (2023)
Education & training EII	Adult participation in education and training (last 4 weeks) in energy-intensive industries	3.9%	12.1% (2023)	10.9% (2023)
Energy poverty	Share of the total population living in a household unable to keep its home adequately warm	5.8%	7.1% (2022)	9.3% (2022)
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	Ratio between the consumption footprint of the top 20% vs bottom 20% of the income distribution	1.4	1.4 (2021)	2.7 (2021)

Source: Eurostat (env_ac_ainah_r2, lfsa_egan2d, ilc_mdes01), EU Labour Force Survey (break in time series in 2021), EMPL-JRC GD-AMEDI/AMEDI+ and DISCO(H) projects.

groups, the consumption footprint is highest for food and housing).

Slovakia is starting to implement measures enabling a fair transition towards climate neutrality. Slovakia is taking measures to create more jobs and promote upskilling policies and employment incentives focusing on vulnerable groups, such as young people not in education, employment or training and low-skilled workers. Efforts should continue to address the challenges of the green transition, such as delivering training courses for green skills, providing governance for the green transition, and providing financial support to green businesses or enabling them to access such support, particularly those businesses in the circular economy. A positive development in the labour market is the Alliance of Sectoral Councils which could focus more on training and reskilling workers in green sectors in the near future. Slovakia should make an effort to lower the tax wedge on the workforce (i.e. the taxation of earnings from labour) and include the trade unions more in the green transition process. In the area of occupational safety and health, it is important to consider the impacts of climate change and the risks emerging in new, green occupations ([66]).

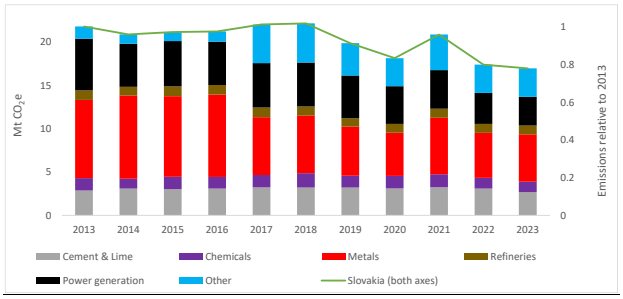
([66]) Based on the monitoring review of the Council Recommendation on ensuring a fair transition towards climate neutrality, which took place in October 2023.

ANNEX 9: RESOURCE PRODUCTIVITY, EFFICIENCY AND CIRCULARITY

The green transition of industry and the built environment, in particular decarbonisation, resource efficiency and circularity, is essential to boost Slovakia's competitiveness ([67]). In this regard, priorities for Slovakia are waste management and the use of circular materials in industry and construction.

The pace of Slovakia's circular economy transition is insufficient to achieve the Circular Economy Action Plan goals. The material footprint decreased from 13.4 to 12.8 tonnes per capita between 2016 and 2022, placing Slovakia below the EU average. The amount of total waste produced increased from 1.7 to 2.3 tonnes per capita between 2010 and 2020. Still, Slovakia's 2023 draft updated national energy and climate plan (NECP) recognises the major role of the circular economy in cutting greenhouse gas emissions and supporting energy efficiency and security. The document mentions the importance of circularity in the early stages of products as well as in consumption patterns and the final stages of waste management. However, the draft NECP does not propose any specific policies and measures not related to waste management, and the circular economy is not mentioned in the research, innovation and competitiveness section.

Graph A9.1: **ETS emissions by sector since 2013**



Source: European Commission

In 2023, the sectors covered by the EU emissions trading system (ETS) in Slovakia ([68]) emitted 15% less greenhouse gases than in 2019. In 2023, about a fifth of the greenhouse gases emitted by Slovakia's ETS installations came from power generation, significantly less than the EU average (57%). Of the total emissions from all industry sectors, cement and lime production emitted a fifth, 9% and 7% came from the chemical industry and refineries, respectively, 40% came from the metals industry, and 24% were attributed to other industries. Between 2019 and 2023, the power sector reduced emissions by 33%, while those of the industry sectors declined by 9%. Since 2013, greenhouse gas emissions have declined by 44% in power generation and by 14% in the industry sectors – with a large decrease (39%) in the metals industry and a slight increase in cement and lime production (7%) – leading to a total greenhouse gas emissions reduction of 22% in this period.

There is still room to bolster Slovakia's industrial efficiency. Between 2017 and 2022, the circular material use rate increased and the gap with the EU average became narrower. The rate stood at 9.1%, versus an EU average of 11.5%. Resource productivity has increased as well and reached 2.13 purchasing power standards per kilogram (PPS/kg) in 2022, versus an EU average of 2.45 PPS/kg. Slovakia was dependent on imports for 45.2% of materials used in 2022, compared with an EU average of 22.4%, making the country comparatively more vulnerable to supply chain disruptions. Furthermore, water abstraction for manufacturing purposes accounted for 33.6% of total water abstracted in 2019, making manufacturing the most water-intensive economic activity.

Slovakia's industry is progressing in taking up circular economy approaches. The 2022 Eco-Innovation Scoreboard placed the country in the 'eco-innovation catching-up performers group', with a score of 94.4. As of September 2023, Slovakia totalled only 1 awarded EU Ecolabel licence and 5 products with the EU Ecolabel, showing a low take-up of products and licences, which has slightly slowed down in the last few years.

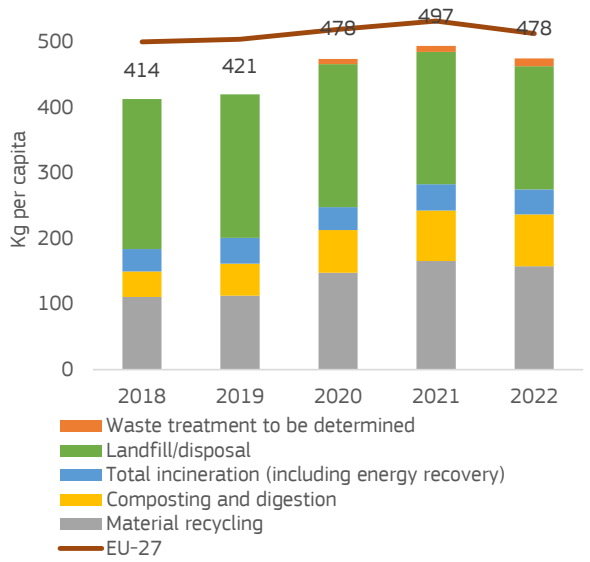
There is room to further improve Slovakia's waste management system. The municipal waste recycling rate stood at 49.5% in 2022, missing the target of recycling 50% by 2020. The country is not on track to meet the packaging and

([67]) See also Annexes 6, 7 and 12.

([68]) This analysis excludes air travel. For more details and the data sources, see Weitzel, M; van der Vorst, C. (2024), Uneven progress in reducing emissions in the EU ETS, JRC Science for policy brief, JRC138215, Joint Research Centre.

municipal waste recycling targets for 2025. The recycling rate of plastic packaging was 56.3% in 2020, above the target of 50%, but plastic packaging production is on the rise, and Slovakia's recycling facilities would benefit from keeping up with this trend. In 2021, Slovakia was among the top performers in e-waste recycling, with a rate of 92.5%. Landfilling has declined, but Slovakia still has one of the highest landfilling rates in the EU and the country is not on track to meet the 2035 landfilling target. Illegal and substandard landfills are still in operation and lack rehabilitation and definite closure. Innovation in waste treatment technologies is still low, as illustrated by the fact that no new patents were registered in 2021.

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



Source: Eurostat

Slovakia could use its building stock more efficiently. In 2020, Slovakia's residential floor area per capita was below the EU average – 35.8 versus 52.3 m^2 per capita. It is growing at a similar rate to the EU average. By contrast, the non-residential floor area per capita was among the lowest in the EU – 8.4 m^2 per capita versus an EU average of 19.4 m^2 per capita – in 2020. The long-term renovation strategy for building stock submitted in 2020 does not mention the circular economy transition in relation to the buildings and renovation sector.

Construction remains a major source of waste and wastewater treatment is an issue. The amount of waste generated from construction and demolition activities per capita almost doubled between 2012 and 2020 but remained below the EU average. The proportion of backfilling dropped from 13.3% in 2018 to 1.1% in 2020, below the EU average of 9.9%. Slovakia has made good improvements in construction and demolition waste recovery. The rate stood at 81% in 2020, achieving the Waste Framework Directive's target of recovering 70% by 2020. Furthermore, in 2020, only 70% of the population was connected to at least secondary wastewater treatment, versus an EU average of 81%.

Table A9.1: **Circularity indicators**

	2018	2019	2020	2021	2022	2023	EU-27	Latest year
Industry								
Resource productivity (purchasing power standard (PPS) per kilogram)	1.6	1.8	1.8	1.9	2.1	-	2.5	2022
Circular material use rate (%)	4.9	8.4	10.4	8.2	9.1	-	11.5	2022
Eco-innovation index (2013=100)	85.6	79.1	85.5	88.1	94.4	-	121.5	2022
Recycling of plastic packaging (%)	51.4	52.8	56.3	60.2	-	-	40.7	2021
Cost of air emissions from industry (EUR bn)	-	-	-	-	-	-	352.7	2021
Built environment								
Recovery rate from construction and demolition waste (%)	51.0	-	81.0	86.1	-	-	89.0	2020
Soil sealing index (base year = 2006)	104.8	-	-	-	-	-	103.4	2018
Non-residential floor area (m^2 per capita)	8.2	8.3	8.4	-	-	-	18.0	2020
Waste backfilled (%)	13.3	-	1.1	-	0.1	-	9.9	2020

Source: Eurostat, European Environment Agency

Digital transformation is key to ensuring a resilient and competitive economy. In line with the Digital Decade Policy Programme, particularly 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 20.5% of its total RRP budget to the digital transition (EUR 1.23 billion) ([69]). Under Cohesion Policy, an additional EUR 0.9 billion (7% of the country's total Cohesion Policy funding) is allocated to the country's digital transformation ([70]).

The Digital Decade Policy Programme sets out a pathway for EU's successful digital transformation by 2030. Slovakia's national roadmap outlines the actions it intends to take to reach the objectives and targets at national level. The first Report on the State of the Digital Decade highlighted the need to accelerate and deepen the collective efforts to reach the EU-wide targets and objectives ([71]). Through this, a digitally skilled population increases the development and adoption of digital technologies and leads to productivity gains and new business models. It also leads to higher inclusion and participation in an environment increasingly shaped by the digital transformation ([72]). Digital technologies, infrastructure and tools all play a role in addressing the current structural challenges, including strategic dependence in various areas, cybersecurity and climate change.

Slovakia's indicators on digital skills show a need for improvement. The country scores below the EU average for basic digital skills. The percentage of ICT specialists is stagnating at 4.2% of total employment. The RRP is expected to contribute to boosting the level of digital skills in various parts of the population.

Digital infrastructure and connectivity have improved, but progress is still needed to support Slovakia's digital economy. Very high capacity network (VHCN) coverage remains below the EU average (69% versus 79%). Similarly, fibre to the premises (FTTP) coverage stands at 64%, at the same level as the EU average. Slovakia has progressed quickly on 5G coverage. 79% of populated areas now benefit from overall 5G coverage, still significantly below the EU average of 89%. In terms of 5G coverage in the 3.4–3.8 GHz spectrum, Slovakia scores slightly below the EU average of 41%. Slovakia is not using its RRP to increase investment in connectivity infrastructure.

Digitalisation of businesses is a key challenge for Slovakia. 42% of Slovak SMEs have a basic level of digital intensity, which is below the EU average (58%). Companies' use of advanced digital technologies such as cloud computing, artificial intelligence or big data is below the EU average of 55%. 46% of companies in Slovakia use at least one of these three technologies. As part of its RRP, Slovakia has rolled out a new scheme ([73]) to support research and application of advanced digital technologies by companies, research institutions and other entities. In 2022, 1.8% of enterprises reported ICT service outage due to cyberattacks (e.g. ransomware attacks, denial of service attacks). Over the same year, 17.4% of enterprises developed or reviewed their ICT security policy within the previous 12 months.

Slovakia is approaching the EU average on digital public services. It has a score of 72 for digital public services for citizens, below the EU average of 79. Almost 4 million people (or almost 72% of all citizens) have access to an electronic identification (eID) scheme, which has been notified to the European Commission under the

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

([70]) This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion Policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

([71]) European Commission (2023): 2023 Report on the state of the Digital Decade | Shaping Europe's digital future (europa.eu).

([72]) 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) and OECD (2019): Going Digital: Shaping Policies, Improving Lives – Summary, https://www.oecd.org/digital/going-digital-synthesis-summary.pdf.

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

Table A10.1:**Key Digital Decade targets monitored by the Digital Economy and Society Index indicators**

	Slovakia			EU	Digital Decade target by 2030 (EU)
	2022	2023	2024	2024	
Digital skills					
At least basic digital skills	**55%**	**55%**	**51%**	**56%**	**80%**
% individuals	2021	2021	2023	2023	2030
ICT specialists ([1])	**4.3%**	**4.3%**	**4.2%**	**4.8%**	**20 million**
% individuals in employment aged 15-74	2021	2022	2023	2023	2030
Digital infrastructure/connectivity					
Fixed very high capacity network (VHCN) coverage	**67%**	**71%**	**69%**	**79%**	**100%**
% households	2021	2022	2023	2023	2030
Fibre to the premises (FTTP) coverage ([2])	**62%**	**67%**	**64%**	**64%**	**-**
% households	2021	2022	2023	2023	
Overall 5G coverage	**14%**	**55%**	**79%**	**89%**	**100%**
% populated areas	2021	2022	2023	2023	2030
Digitalisation of businesses					
SMEs with at least a basic level of digital intensity	**43%**	**NA**	**42%**	**58%**	**90%**
% SMEs	2021		2023	2023	2030
Data analytics	**NA**	**NA**	**30%**	**33%**	**-**
% enterprises			2023	2023	
Cloud	**31%**	**31%**	**30%**	**39%**	**-**
% enterprises	2021	2021	2023	2023	
Artificial intelligence	**5%**	**5%**	**7%**	**8%**	**-**
% enterprises	2021	2021	2023	2023	
AI or cloud or data analytics ([3])	**NA**	**NA**	**46%**	**55%**	**75%**
% enterprises			2023	2023	2030
Digitalisation of public services					
Digital public services for citizens	**65**	**67**	**72**	**79**	**100**
Score (0 to 100)	2021	2022	2023	2023	2030
Digital public services for businesses	**75**	**78**	**79**	**85**	**100**
Score (0 to 100)	2021	2022	2023	2023	2030
Access to e-health records	**NA**	**42**	**66**	**79**	**100**
Score (0 to 100)		2022	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 evolution will also be monitored separately and taken into consideration when interpreting VHCN coverage data in the Digital Decade.
(3) At least 75% of EU 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

eIDAS Regulation. Slovakia's performance concerning access to e-health records is much poorer (a score of 66, which is below the EU average of 79), suggesting that there is significant room for improvement. Recent RRP milestones include the digitalisation of public procurement processes through a single electronic platform.

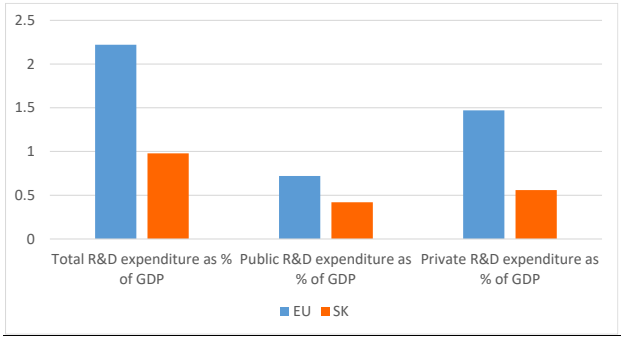
This Annex provides a general overview of the performance of Slovakia's research and innovation system, which is essential for delivering the twin transition and ensuring long-term competitiveness.

Slovakia is an 'emerging innovator' and the gap between its performance and the EU average is widening. According to the 2023 edition of the European Innovation Scoreboard ([74]), its performance is improving (by 6.4 percentage points) but at a lower rate than the EU average (8.5 pps).

R&D intensity ([75]) increased in 2022 but remains well below the EU average. The R&D intensity experienced a solid year-on-year growth (from 0.92% of GDP in 2021 to 0.98% in 2022). However, this was below its peak in 2015 (1.16%) and remains significantly below the EU average (2.24% in 2022). On a positive note, many R&I calls provided for under the recovery and resilience plan (RRP) were successfully launched throughout 2023 to support public and private R&I beneficiaries and to promote science-business cooperation ([76]). Moreover, the new national research, development and innovation strategy 2030 ([77]) adopted by the government in March 2023 sets a 2% target for R&D intensity with the share of business enterprise expenditure of 1.2%. Implementation of the ambitious strategy and its action plan, which contains a large scale of 91 concrete measures, will be crucial to keep the reform processes initiated alive and further improve the effectiveness of R&D investment.

The R&I ecosystem would benefit from higher-quality public research outputs. The share of scientific publications among the top 10% most cited publications of the total scientific publications of the country (4.5% in 2020 compared to the EU average of 9.6%) is one of the lowest among EU Member States and points to a weak public science base, adversely affected by historic underinvestment and problems linked to retaining students and young researchers ([78]). In the context of its RRP, Slovakia has introduced a system of periodic evaluation of scientific performance. As a result, 20 public universities and 44 public research institutions (PROs) were already evaluated. Their quality profiles were published ([79]) and should serve as one of the criteria for institutional funding distribution to increase the effectiveness of Slovak higher education institutions (HEIs) and PROs and the creation of higher-level scientific outputs. In addition, the RRP contains various relevant investments to support young scientists and excellent science teams.

Graph A11.1: **Total R&D expenditure as % of GDP in 2022**



Source: Eurostat

Collaboration between companies and the research sector is weak and technology transfer subdued. Public expenditure on R&D financed by business enterprise (national) as % of GDP is low, substantially below the EU average (0.008 in 2021 in comparison to 0.054) and decreasing over time (0.028 in 2010). Data on public-private scientific co-publications as % of total number of publications show a more positive trend (5.5 in 2015, 6.9 in 2022) while also remaining below the EU average of 7.6%. In 2021, numbers of researchers (FTE) employed by business are significantly lower than the EU average (1.8 in comparison to 5.6 per thousand active population). The underdeveloped academia-business interaction is caused by low R&D

([74]) 2023, European Innovation Scoreboard (EIS), country profile: Slovakia, ec_rtd_eis-country-profile-sk.pdf (europa.eu). The EIS provides a comparative analysis of innovation performance in EU countries.

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

([76]) On the contrary, substantial cohesion policy resources of 2014-2020 programming period were not spent on R&I and were diverted to other areas to avoid decommitments.

([77]) Milestone under Slovak recovery and resilience plan.

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

([79]) Periodické hodnotenie výskumnej, vývojovej, umeleckej a ďalšej tvorivej činnosti | Ministerstvo školstva, vedy, výskumu a športu Slovenskej republiky (minedu.sk)

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

Slovakia	2010	2015	2020	2021	2022	EU average (1)
Key indicators						
R&D intensity (GERD as % of GDP)	0.61	1.16	0.9	0.92	0.98	*2.24*
Public expenditure on R&D as % of GDP	0.35	0.83	0.41	0.4	0.42	*0.73*
Business enterprise expenditure on R&D (BERD) as % of GDP	0.25	0.32	0.49	0.51	0.56	*1.48*
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	2.9	3.4	4.5	:	:	*9.6*
PCT (Patent Cooperation Treaty) patent applications per billion GDP (in PPS)	0.5	0.6	0.58	:	:	*3.4*
Academia-business cooperation						
Public-private scientific co-publications as % of total publications	5.8	5.5	6.3	6.9	6.9	7.6
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	8.8	8.9	:	*16.9*
Public support for business enterprise expenditure on R&D (BERD)						
Total public sector support for BERD as % of GDP	0.03	0.034	0.065	0.092	:	*0.204*
R&D tax incentives: foregone revenues as % of GDP	0.00002	0.003	0.043	0.06	:	*0.104*
Green innovation						
Share of environment-related patents in total patent applications filed under PCT (%)	17.7	20.2	9	:	:	*14.7*
Finance for innovation and economic renewal						
Venture capital (market statistics) as % of GDP	0.001	0.008	0.016	0.021	0.019	*0.085*
Employment share of high growth enterprises measured in employment (%)			10.19	:	:	*12.51*

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

spending and weak business engagement with HEIs ([80]). To foster science - business cooperation, the RRP aims to mobilise private participation in R&D through several schemes and by transforming the Slovak Academy of Sciences into a public organisation, to facilitate collaboration with private entities.

The innovation capacity of Slovakia remains limited and needs to evolve to support the transition towards a more knowledge-based economy. Development and diffusion of innovative technologies and solutions across the economy, in particular SMEs, remains limited which is also mirrored in modest numbers of patent applications ([81]) (see also Annex 12). This is caused by a number of factors, such as the low availability of venture capital, which remains below the EU average (0.019% in 2022 versus the EU average of 0.085%) and the lack of highly skilled and qualified workforce ([82]) (see more in Annex 15). Only 16% of medium-sized firms report that they engage in R&D spending on a continuous basis, compared with an EU average of approximately one third ([83]). The RRP envisages several investment streams to support business innovation. Also, the newly adopted national R&I action plan includes supportive measures such as the networking and modernisation of public regional and innovation hubs.

([80]) SME and Entrepreneurship Policy in the Slovak Republic | en | OECD, p. 87.

([81]) In 2020, 0.58 patents were filed under the Patent Cooperation Treaty per billion GDP vs the EU average of 3.4.

([82]) Numbers of new graduates in science and engineering per thousand population aged 25-34 are decreasing (13.1 in 2015 vs 8.9 in 2021) and are below the EU average of 16.9.

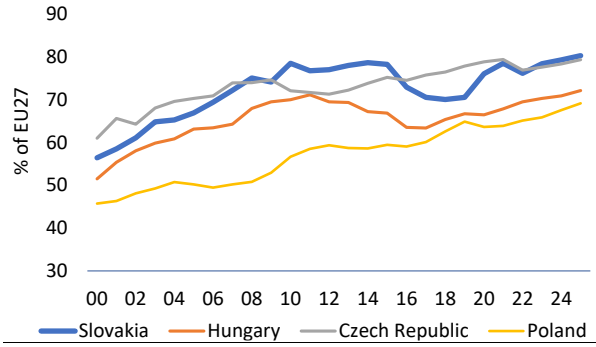
([83]) SME and Entrepreneurship Policy in the Slovak Republic | en | OECD.

The competitiveness of the Slovak economy has further deteriorated. Higher labour, production and energy costs, inflation, geopolitical tensions, and specific features of the structure of the Slovak economy and its exports have demonstrated the need to build a resilient economic base by addressing its structural challenges in order to stay competitive in the EU and global markets. In the IMD World Competitiveness ranking 2023 ([84]), Slovakia ranks 53rd (out of 69 countries) and has fallen back in terms of overall performance by four places compared to 2022. The data show the biggest decline in the economic performance indicator, placing Slovakia in 56th place compared to 52nd in 2022 and 42nd in 2019. Slovakia also ranks as the second last EU country in the 2023 Global Innovation Index ([85]) with the weakest points in business regulation and the net inflow of foreign investments.

Productivity growth in Slovakia slowed in the last decade and remains a key challenge for the Slovak economy. Productivity growth rose during the first decade of the 2000s but has slowed in the last decade. The economic model, which is based on low wages and high levels of FDI (especially in the automotive sector), has lost steam and Slovakia has lost its leadership in productivity among the Visegrad countries (see Graph A12.1). Productivity growth in 2020-2022 slowed to a third of the rate before the 2008-2009 financial crisis ([86]). However, labour productivity recovered in 2023 and is expected to further grow in 2024, largely due to capital deepening which has been the most important driver of labour productivity growth in the last decade.

Long-term structural problems related to the quality of the business environment, education and innovation area, which are hampering the previous rapid productivity growth, have been accentuated by multiple crises (energy, inflation and climate) over the last 3 years. The Slovak business sector is dominated by microfirms with low productivity, limited personnel and limited ability to obtain finance for automation and innovation. It lacks domestic productive enterprises with a high level of digitisation. The productivity gap between multinational enterprises and domestic firms remains large. Slovakia is one of the EU Member States that is most highly integrated into global value chains and its output relies to a larger extent on foreign intermediate inputs. Furthermore, its industrial sector tends to participate in the downstream stages of production ([87]), which partially explains why productivity growth has slowed. Accelerated digitalisation of SMEs and the shift to a knowledge-based economy can lead to higher productivity and improve Slovakia's competitiveness.

Graph A12.1: **Labour productivity (GDP per hour worked) in PPS (% of EU-27)**



Source: European Commission calculations based on AMECO

Slovak firms are significantly lagging behind in innovation and R&D spending. Only a third of Slovak firms are involved in innovation activities, while the EU average is 50%. The innovation gap also applies to large companies. Only 66% of firms employing more than 250 people are engaged in innovation activities (the third lowest share in the EU after Romania and Hungary). Slovak firms do not innovate because of high costs, lack of qualified staff and high levels of competition ([88]). Moreover, high levels of underachievement in basic skills in Slovakia may affect the future skills supply, skills mismatches and overall productivity of the future workforce (see Annex 15 for PISA 2022 results).

Industry, which is a key pillar of the Slovak economy, is facing challenges related to the green transformation, the energy crisis and the geopolitical situation; and this is affecting its competitiveness. Slovakia is one

([84]) World Competitiveness Ranking 2023
([85]) Global Innovation Index 2023
([86]) Institute of Economic Analysis (IHA), *Report on Productivity and Competitiveness 2022.*
([87]) IMF country report, June 2022
([88]) National Bank of Slovakia, July 2023 (Structural Challenges 2023)

of the most industrialised Member States. Its industry's share of added value was 25.4% in 2022 (% share of total gross added value), compared to 20.5% in the EU ([89]). Its manufacturing added value is 18% of GDP, above the EU average of 15%. High energy prices, cheap third-country competition, insufficient state support and labour shortages are challenging for Slovak firms, but they see political instability and frequent legislative changes as one of the largest problems. The data show that more than 76% of businesses rated overall government performance negatively in 2023 and that this was impacting their future growth ([90]).

Development in the industrial sectors fluctuated in 2023. In total, for the first 11 months of 2023, industrial production dropped by 0.6% year-on-year ([91]). The result was most significantly affected by growth of over 5% in manufacture of transport equipment and by a 6.5% increase in manufacture of electrical equipment. However, this did not completely make up for the almost 9% decrease in manufacture of rubber and plastic products and the decrease of more than 20% in manufacture of computer, electronic and optical products. The annual growth of producer prices in industry declined to 8.8% in 2023 (compared to 29.4% in 2022), thus partially reflecting the fading of the effects of the supply shocks (including those related to Russia's full-scale military aggression against Ukraine). However, the production prices of Slovak industrial sectors were still 50% higher than during the period before the COVID-19 pandemic ([92]).

Slovak businesses see the green transformation as an opportunity. Slovakia has recognised e-mobility and the battery industry as a new strategic sector for the economy. All businesses that operate car factories in Slovakia (or that are in the process of setting them up) are investing substantially in electromobility. The building of new gigafactories, which were announced at the end of 2023 and beginning of 2024, will boost the entire automotive ecosystem in Slovakia. However, supporting the diversification of the Slovak economy could end its dependence on one dominant industry and thus reduce its vulnerability to supply-chain disruptions and global uncertainty.

Slovakia could benefit from manufacturing green technologies, which is a newly emerging and promising pillar of the domestic industry. Several large investors have in recent years announced plans to produce heat pumps in Slovakia. Investment in this new industrial segment and in strategic goods could support the transition towards a net-zero economy and further strengthen industrial diversity in Slovakia. The reforms and investments included in the REPowerEU chapter of the amended Slovak Recovery and Resilience Plan (RRP) could further accelerate manufacturing of green technologies and deployment of renewables by streamlining the permitting framework (e.g. use of geothermal energy, heat pumps, biomass and biomethane). Moreover, the aim of the new action plan of the 2023-2026 National Hydrogen Strategy ([93]), which was approved in June 2023, is to create conditions for investment in low-carbon hydrogen in cases where direct electrification will not be possible or cost-effective.

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

Slovak businesses are well integrated into the single market and global value chains. Slovakia is one of the most export-oriented economies in the world and has the second

([89]) Eurostat, June 2023
([90]) 123dopyt.sk (September 2023)
([91]) Statistical Office of the Slovak Republic.
([92]) Eurostat (sts_inpp_a).
([93]) Action plan of the National Hydrogen Strategy for 2023-2026

highest share of exporting and importing firms in the EU. Its EU trade integration has been the second highest on average in the last 5 years in the EU as a share of national GDP ([94]). However, while Slovakia's economy has a significant comparative advantage in the export of vehicles, sophisticated commodity groups make up only a small share of total exports. The transition to an economy with higher added value and innovation intensity would make the economy more resilient and less vulnerable to external shocks.

Slovakia could further benefit from the single market. According to its conformity deficit indicator, the percentage of all directives transposed incorrectly (1.3) was above the EU average (1.1) in 2023. The Single Market Scoreboard ([95]) also indicates scope for further improvement regarding the number of ongoing infringement procedures. Slovakia ranks above the EU average (31 vs 25.9 for the EU) and delays in implementing single market rules. However, Slovakia has performed better regarding the transposition deficit indicator. The percentage of all directives not transposed decreased from 0.9% in 2022 to 0.6% in 2023 (below the EU average of 0.7%). In addition, in 2023 Slovakia solved 100% of the SOLVIT cases (37) it handled as lead centre (above the EU average of 88.3%). Professional services (e.g. tax advisers, architects, civil engineers, lawyers, patent agents and tourist guides) remain highly regulated ([96]). 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 the industries that they serve ([97]).

Slovakia is in the preliminary stage of implementing the components needed to connect to the Once-Only Technical System (OOTS) ([98]). As part of the Single Digital Gateway Regulation ([99]), the system will enable the automated cross-border exchange of evidence between competent authorities, improving online access to information, administrative procedures and assistance within the EU. The onboarding of Slovak competent authorities is crucial for the system to function smoothly and to reduce administrative burden.

Slovakia's business environment is improving to some extent, but challenges persist. Over the last few years, several RRP measures have been introduced to reduce regulatory burden on businesses. These measures include: (i) *ex ante* evaluation of planned transposition of legislation to prevent unjustifiable gold plating; (ii) *ex post* evaluation of the effectiveness and justification of already introduced regulation; (iii) the 'one-in-two-out' rule that ensures that new legislation does not increase administrative costs for businesses; and (iv) three packages of individual measures based on stakeholder consultations to simplify administrative requirements to businesses. The reforms have high potential, if consistently applied, to build a competitive business environment in Slovakia. However, the data show ([100]) that the most significant obstacle to the functioning and further growth of the Slovak firms is the tax wedge for businesses (71.5% of SMEs view this as a serious or decisive obstacle). SMEs view instability and ambiguity of laws and legal regulations as the second most serious or decisive obstacle to running a business in Slovakia (67.2% of SMEs). A systematic legislative process and reduction of excessive regulatory burden would improve the business environment, helping businesses to better plan their investments, make progress with the digital and green transition and remain competitive.

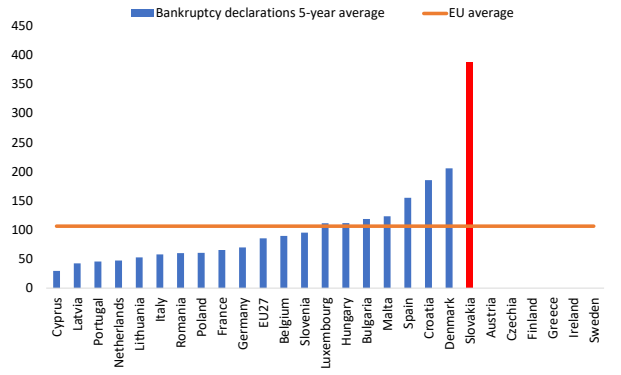
Slovakia has reported the most bankruptcy declarations in the EU in recent years. During the last 5 years the number of bankruptcy declarations was on average 288% times higher than in 2015, compared to 6.37% in the EU (see Graph A12.2). Bankruptcy declarations in Slovakia were 204.3% higher in 2023 than in 2015 (compared to an EU average of 5.6%). Liquidity measures decreased the number of bankruptcies during the COVID-19 pandemic crisis, but costly and lengthy insolvency procedures further hinder resource reallocation. Improvements to the insolvency framework are planned in Slovakia's RRP. The RRP reform aims to harmonise the insolvency framework, including early warning

([94]) Eurostat: BOP_C6_A.
([95]) Single Market Scoreboard 2023.
([96]) Communication on updating the reform recommendations for regulation in professional services, COM(2021)385
([97]) OECD – impact of the 2022 RRP on PMR.pdf.
([98]) Regulation (EU) 2022/1463.
([99]) Regulation (EU) 2018/1724.

([100]) O*pinions of SMEs on the quality of the business environment in Slovakia*. Slovak Business Agency, 2023.

tools and insolvency specialisation in business courts.

Graph A12.2: **Bankruptcy declarations, 2018-2023, 5-year average**



Source: Eurostat

Late payments continue to be a serious structural issue. 56% of SMEs have experienced late payments in the last 6 months (above the EU average of 49%) ([101]). Excessive payment delays in the public health sector (the average payment time at the end of 2022 was 232 days ([102]) – almost four times the exceptional period of 60 days set out in the Late Payment Directive) considerably limit the competitiveness and resilience of Slovak SMEs.

Public and private investments represent a challenge to – but also untapped potential for – further economic growth in Slovakia. The low volume of public investment is one of the reasons for economic stagnation. The EU funds play an important role, complementing domestic investment and giving the economy a significant development impetus. In 2011-22, public investment stood at just under 4% of GDP, lower than in the other Visegrad Four countries ([103]). In Slovakia, public investment from the State budget has fallen continuously over the last two decades. Moreover, a Eurobarometer survey ([104]) shows that 63% of surveyed investors are either fairly or very unconfident that their investment will be protected by Slovakia's law and courts if something goes wrong (the EU average is 40%). 'Unpredictable, non-transparent administrative conduct and difficulty in challenging administrative decisions in court', 'frequent changes in legislation or concerns about quality of the law-making process' and 'difficulty in obtaining fair compensation or protecting property' are the main reasons for respondents' concerns about the effectiveness of investment protection.

Energy costs, availability of skilled staff and uncertainty about the future remain the main long-term barriers to private investment. Slovakia is one of the few EU Member States where private investment levels decreased between the first quarter of 2023 and the fourth quarter of 2019. Slovakia's average share of intangible assets was the lowest in the EU in 2022. The share of firms facing an increase of 25% or more in energy spending was one of the highest ([105]).

Access to finance (both loans and equity) continues to be underdeveloped and to hamper investment. The percentage indicator for rejected or refused loans decreased between 2023 (16.7%) and 2021 (26.3%). It remains weak and well above the EU average of 10.2% ([106]). Slovakia's performance in the equity index reached the lowest level in the EU in 2022 (0.05 in Slovakia vs 0.17 in the EU). Financial instruments under the Slovak RRP are intended to increase the share of innovative businesses and investment in companies with technological and innovative potential, but more needs to be done to further promote the availability of finance for entrepreneurs (especially SMEs and innovative firms).

Challenges persist with the implementation of the main public procurement objectives, such as ensuring fair competition, transparency and digitalisation. Progress was made in professionalising public procurement in 2023, partly due to the establishment of comprehensive training methods and programmes. These efforts could help the procurement system to deliver efficiency and value for money. The strategic role of public procurement in the achievement of different policy objectives related to the environment, innovation and social

([101]) SAFE Survey 2023
([102]) GROW monitoring report (February 2023). The Commission decided to refer Slovakia to the Court of Justice of the EU in April 2023. Case C-412/23 is still with the Court.
([103]) National Bank of Slovakia, July 2023
([104]) Perceived independence of the national justice systems in the EU among companies - Eurobarometer survey 2024 (europa.eu)
([105]) EIB Investment Survey 2023
([106]) SAFE survey 2023.

considerations is recognised; and efforts are being made to promote and support the use of public procurement as a strategic governance tool. However, Slovakia's contracting authorities still do not benefit from a strategic use of public procurement in practice. The level of use of the lowest price criteria to award contracts remained 96% in 2023([107]). Furthermore, the lack of competition in the public procurement market remains an issue, because the proportion of public contracts awarded in procedures where there was just one bidder increased once again to 33% in 2023 (30% in 2022). Moreover, Slovakia currently lacks a strategy for digitalisation of public procurement processes to improve their transparency and speed up the procedures. Ensuring fair competition and full transparency in public procurement will be key to enhancing the effectiveness and efficiency of government spending.

There is untapped potential to further innovate and digitalise the economy and increase productivity. Slovakia is an Emerging Innovator with a performance of 65.6% of the EU average ([108]). Areas of weakness (e.g. R&D expenditure in the business sector, government support for business R&D, and venture capital expenditure) are at the level of one third of the EU average (Annex 11). Slovakia could benefit from joining the Unitary Patent system ([109]). The system entered into force in June 2023 with the objective of reducing complexity and costs for companies. According to the European Patent Office, Slovakia has one of the lowest levels of patent applications in the EU. 17 out of 49 patent applications were granted in 2022 ([110]). 60% of Slovak SMEs have at least a basic level of digital intensity, but this is below the EU average of 69% (and the 2030 EU target of 90%, which was established by the digital decade policy programme) ([111]). Only 6% of enterprises analysed big data in 2020 (significantly below the EU average of 14%). The uptake of e-invoicing for automated processing is very low in Slovakia. 17% of enterprises reported that they had sent e-invoices in 2020 (significantly below the EU average of 32%) and Slovakia is one of the four lowest-ranking EU Member States for this indicator.

([107]) The currently available data are preliminary. The technical preparation of a new public procurement platform means that only the regular data available in Tenders Electronic Daily (TED) have been taken into account.

([108]) European Innovation Scoreboard 2023

([109]) Unitary Patent system

([110]) https://www.epo.org/en/about-us/statistics/statistics-centre#/countrydashboards

([111]) Digital Decade Country Report 2023.

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

Slovakia							
POLICY AREA	**INDICATOR NAME**	**2019**	**2020**	**2021**	**2022**	**2023**	**EU27 average***
HEADLINE INDICATORS							
Economic Structure	Net Private investment, level of private capital stock, net of depreciation, % GDP[1]	4.1	1.7	2	2.6	4	**3.8**
	Net Public investment, level of public capital stock, net of depreciation, % GDP[1]	0.5	0.3	0.1	0	1.9	**1.2**
	Real labour productivity per person in industry (% yoy)[2]	9.2	-8.7	13.6	-2.6	6.4	**-1.24**
Cost competitiveness	Nominal unit labour cost in industry (% yoy)[2]	-3.8	11.1	-6	9.3	2.7	**9.83**
SINGLE MARKET							
Single Market integration	EU Trade integration, % (Average intra-EU imports + average intra EU exports)/GDP[2]	67.3	62.0	67.5	74.0	66.3	**42.9**
Compliance	Transposition deficit, % of all directives not transposed[3]	0.2	1.4	1.4	0.9	0.6	**0.7**
	Conformity deficit, % of all directives transposed incorrectly[3]	0.9	1.1	1.3	1.4	1.3	**1.1**
	SOLVIT, % resolution rate per country[3]	75.0	100.0	100.0	100.0	100.0	**88.3**
	Number of pending infringement proceedings[3]	27	27	27	27	31	**25.9**
Restrictions	EEA Services Trade Restrictiveness Index[4]	0.04	0.04	0.04	0.04	0.04	**0.05**
Public procurement	Single bids, % of total contractors[3]	25	26	27	30	33	**28.6**
	Direct Awards, %[3]	6	5	3	5	3	**8.1**
ECONOMIC STRUCTURE							
Shortages	Material Shortage (industry), firms facing constraints, %[5]	9.0	8.8	23.3	31.8	14.3	**17.2**
	Labour Shortage using survey data (industry), firms facing constraints, %[5]	26.5	13.8	23.0	27.0	26.0	**23.3**
	Vacancy rate, % of vacant posts to all available ones (vacant + occupied)[2]	0.975	0.7	0.7	0.9	0.9	**2.5**
Strategic dependencies	Concentration in selected raw materials, Import concentration index based on a basket of critical raw materials[6]	0.2	0.23	0.24	0.25	0.31	**0.22**
	Installed renewables electricity capacity, % of total electricity produced[2]	0.4	0.4	0.4	0.4		**50**
BUSINESS ENVIRONMENT - SMEs							
Investment obstacles	Impact of regulation on long-term investment, % of firms reporting business regulation as major obstacle[7]	25.9	21.1	22.4	14.0	19.0	**22.2**
Business demography	Bankruptcies, Index (2015=100)[2]	606.3	411.9	352.9	264.2	304.3	**105.6**
	Business registrations, Index (2015=100)[2]	143.0	138.7	143.2	119.5	130.6	**120.2**
Late payments	Payment gap - corporates B2B, difference in days between offered and actual payment[8]	-	14	13	12	15	**15**
	Payment gap - public sector, difference in days between offered and actual payment[8]	-	16	10	13	18	**16**
	Share of SMEs experiencing late payments in past 6 months, %[9]	54.3	50.8	45.6	55.1	55.7	**48.7**
Access to finance	EIF Access to finance index - Loan, Composite: SME external financing over last 6 months, index values between 0 and 1[10]	0.32	0.30	0.34	0.33	-	**0.49**
	EIF Access to finance index - Equity, Composite: VC/GDP, IPO/GDP, SMEs using equity, index values between 0 and 1[10]	0.07	0.07	0.05	0.05	-	**0.17**

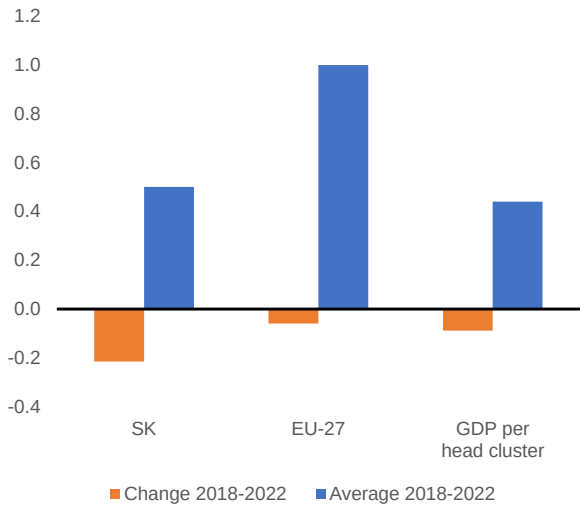
1) last available year

Source: (1) AMECO, (2) Eurostat, (3) Single Market Scoreboard, (4) OECD, (5) COMEXT and Commission calculations, (6) EIB Investment Survey, (7) Intrum Payment Report, (8) SAFE survey, (9) EIF SME Access to Finance Index

* Own Commission calculations for the EU27 average

Slovakia's public administration is essential for the economy's competitiveness by, in particular, shaping the conditions for the twin transitions and creating a favourable business environment. The overall perception of government effectiveness in Slovakia is below the EU average and is decreasing (Graph A13.1). The recovery and resilience plan (RRP) contains substantial reforms to improve administrative performance although implementation is delayed due to recent political instability.

Graph A13.1: **Government effectiveness**



Average value over 2018-2022 and change over 2018-2022. The GDP per head bar shows the mean value of the government effectiveness indicator for the group of EU countries belonging to the same GDP per head cluster as Slovakia (EU countries are ranked in terms of their GDP per head and grouped into three equally sized clusters).
Source: Worldwide Governance Indicators.

Given the very fragmented governance system, efficient coordination across the different governance levels remains a challenge, making it more difficult to implement policies and investment projects. Although there have been government proposals aimed at addressing territorial fragmentation across regional and local governments, they have not led to any specific plans. Tackling this fragmentation would help improve the provision of local public services and strengthen the financial autonomy of local and regional governments.

There is room for improvement in evidence-based policy-making. In central government, *ex ante* impact assessments are frequently skipped, e.g. using fast-track legislative procedures. For example, 67 out of 107 approved laws in 2023 were sponsored by Parliament, and others went through the fast-track procedure without being preceded by impact assessments.

Administrative capacity continues to be a challenge. Reversing past changes in civil service legislation has had negative results, such as the impact of political instability on staffing and recruitment decisions made directly by ministers. Although gender parity in senior civil service positions is higher than the EU average (Table A13.1), this is not the case for top-level political positions: only 3 out of 16 ministers and only 33 out of 150 Members of Parliament are women.

Slovakia ranks below the EU average for the maturity of open data and the maturity of digital public services (Table A13.1). Local governments have struggled to fully implement e-government regulations to improve the quality of service provision, especially given the high percentage of people with a low internet connection or no connection at all.

Slovakia has reformed the assessment, selection and budgeting of public investment. However, monitoring and ex-post assessment of projects continue to be weak. Project selection at ministry level has improved through a methodology for the preparation and evaluation of investment projects, including the role of investment strategies. In addition, all central government investment projects above EUR 1 million must be submitted to the Ministry of Finance for evaluation. For projects above EUR 40 million, mandatory feasibility studies are published, which has significantly increased transparency. Since 2021, only evaluated and prepared projects can be included in the budget. By contrast, there is no methodology for central monitoring besides of beneficiaries, and there are no systematic ex post reviews or asset registers.

There is room for strengthening Slovakia's independent fiscal institution to help address fiscal challenges, by for example, stepping up policy dialogue with the government, interactions with parliament and broadening its mandate to do ex post assessments of forecasts.

Slovakia continues to struggle absorbing cohesion funds. The government continues its efforts to streamline implementation of cohesion funds, including through a Technical Support Instrument project.

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

SK	Indicator ([1])	2019	2020	2021	2022	2023	EU-27([2])
E-government and open government data							
1	Share of internet users within the last year that used a public authority website or app	n/a	n/a	n/a	81.6	80.5	75.0
2	E-government benchmark overall score ([3])	n/a	60.6	59.8	62.4	64.2	75.8
3	Open data and portal maturity index	0.3	0.5	0.5	0.6	0.9	0.8
Educational attainment level, adult learning, gender parity and ageing							
4	Share of public administration employees with higher education (levels 5-8, %)	42.8	45.2	52.2 (b)	51.0	53.1	52.9
5	Participation rate of public administration employees in adult learning (%)	6.9	3.2	6.1 (b)	22.2 (b)	15.7	17.9
6	Gender parity in senior civil service positions ([4])	5.6	5.6	0.4	6.0	1.6	9.2
7	Ratio of 25-49 to 50-64 year olds in NACE sector O	2.2	2.0	2.0 (b)	2.4	2.1	1.5
Public financial management							
8	Medium-term budgetary framework index	0.8	0.8	0.8	0.8	n/a	0.7
9	Strength of fiscal rules index	1.3	1.3	1.3	1.3	n/a	1.4
Evidence-based policy making							
10	Regulatory governance	n/a	n/a	1.98	n/a	n/a	1.7

([1]) High values denote a good performance, except for indicator # 6. ([2]) 2023 value. If unavailable, the latest value available 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: E-government activities of individuals via websites, 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).

There are concerns about judicial independence and the effectiveness of the law enforcement system in Slovakia. In 2022, the estimated time for resolving administrative cases at first instance (648 days) was one of the highest in the EU, even though it had fallen compared to previous years. There is a good level of digitalisation in the justice system, especially for civil, commercial, and administrative cases. However, there are concerns about judicial independence, regarding the lack of safeguards in the dismissal procedure of the non-peer elected members of the Judicial Council, as well as recent statements made by Government representatives criticising specific judges, including representatives of the highest courts. Serious concerns also continue to prevail about the effectiveness of the fight against corruption, linked to the discretionary power of the Prosecutor-General to annul investigations of high-level corruption cases, the recent dissolution of the Special Prosecutor's Office as a specialised entity in fighting high-level corruption, and the envisaged de facto elimination of the police force specialised in tackling corruption (NAKA). The subsequent transfer of prosecutors' case files has raised concerns as to the lack of rules for the handover to new prosecutors and the lack of safeguards to ensure the effective investigation and prosecution of high-level corruption crimes ([112]).

([112])For a more details, see the 2024 EU Justice Scoreboard and the 2024 Rule of Law Report (forthcoming).

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

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

The Slovak labour market continued its recovery in 2023, but several challenges persist, notably as regards long-term unemployment. The employment rate reached 77.5% in 2023, surpassing both the EU average of 75.3% and the national target for 2030 (76.5%). Although the 2023 unemployment rate of 5.8% was slightly below the EU average (6.1%), long-term unemployment remains a significant issue, with two-thirds of jobseekers categorised as long-term unemployed in 2022 (and 3.8% of the active population aged 15-74 in 2023). In terms of employment, Slovakia stands out because of its marked regional disparities (see Annex 17 for more details).

Slovakia's high share of dependent self-employed persons creates significant risks of poor working conditions and so-called bogus self-employment. Slovakia has the EU's highest share of self-employed people who display both economic and personal or organisational characteristics of dependency ([113]). According to the Slovak Supreme Audit Office, bogus self-employment in Slovakia has risen from 84 000 to nearly 110 000 people in the past decade. Since self-employed people can opt out of social security contribution schemes and pay six times less in tax and social security contributions during their first year of activity and 2.3 times less in subsequent years compared to other workers, this has a significant impact on the state's taxation and social security revenue.

The disparity in earnings between men and women remains a persistent feature of the Slovak labour market. In general terms, Slovakia ranks among the lowest-scoring Member States in the 2023 EU Gender Equality Index, scoring only 59 points out of 100 (vs an EU average of 70).

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

Policy area	Headline indicator	
Equal opportunities and access to the labour market	Adult participation in learning (during the last 12 months, excl. guided on the job training, % of the population aged 25-64, 2022)	49.5
	Early leavers from education and training (% of the population aged 18-24, 2023)	6.4
	Share of individuals who have basic or above basic overall digital skills (% of the population aged 16-74, 2023)	51.3
	Young people not in employment, education or training (% of the population aged 15-29, 2023)	11.2
	Gender employment gap (percentage points, population aged 20-64, 2023)	7.7
	Income quintile ratio (S80/S20, 2022)	3.1
Dynamic labour markets and fair working conditions	Employment rate (% of the population aged 20-64, 2023)	77.5
	Unemployment rate (% of the active population aged 15-74, 2023)	5.8
	Long term unemployment (% of the active population aged 15-74, 2023)	3.8
	Gross disposable household income (GDHI) per capita growth (index, 2008=100, 2022)	124.4
Social protection and inclusion	At risk of poverty or social exclusion (AROPE) rate (% of the total population, 2022)	16.5
	At risk of poverty or social exclusion (AROPE) rate for children (% of the population aged 0-17, 2022)	24.7
	Impact of social transfers (other than pensions) on poverty reduction (% reduction of AROP, 2022)	33.82
	Disability employment gap (percentage points, population aged 20-64, 2022)	21
	Housing cost overburden (% of the total population, 2022)	2.5
	Children aged less than 3 years in formal childcare (% of the under 3-years-old population, 2022)	2.3
	Self-reported unmet need for medical care (% of the population aged 16+, 2022)	2.8

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

(1) Update of 25 April 2024. Members States are categorised based on the Social Scoreboard according to a methodology agreed with the EMCO and SPC Committees. Please consult the Annex of the Joint Employment Report 2024 for details on the methodology

Source: Eurostat

In 2022, the gender pay gap in Slovakia stood at 17.7% (increasing from 16.6% in 2021), although the share of women completing tertiary education remained higher than the share of men. In 2023, the gender employment gap was 7.7 percentage points (pps) (EU: 10.2 pps).

The lack of places available in early childhood education and care remains a significant challenge. The difficulties related to the participation of women in the labour market, especially those with young children, are primarily attributed to the limited availability of places in good quality and affordable early childhood education and care (ECEC) facilities. Slovakia has the EU's lowest enrolment rate of children under 3 years of age in formal childcare, at 2.3% in 2022 (and dropping to 1% in 2023), which is significantly below the EU average of 2022 (35.9%). This situation is also due to a wide-

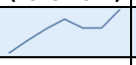
([113])European Labour Authority, February 2023, Study-on-the-extent-of-dependent-self-employment-in-the-EU.pdf (europa.eu)

spread negative perception of ECEC and to the system of parental leave and parental allowance for children up to 3 years of age, which dissuades people from using ECEC to return to work. To improve the overall situation, Slovakia should make full use of its ESF+ and ERDF allocations to create new and affordable places (also from the cost-benefit perspective) for children aged 0-3 that would meet a high standard of quality.

There is a positive trend of increasing participation in adult learning, but a relatively high rate of young people not in employment, education or training (NEETs) may aggravate existing skills gaps and affect labour market outcomes. Together with demographic challenges and the under-representation of various groups on the labour market, this also undermines Slovakia's potential to increase its economic competitiveness. The youth unemployment rate in Slovakia was 19.8% in 2023 remaining above the EU average of 14.5%. The NEET rate fell to 11.2% in 2023, which corresponds to the EU average. However, the unemployment rate of low-skilled young people at the level of 46.5 % is too high when comparing to the EU average (26.5 % in 2016) ([114]). The Youth Guarantee in Slovakia was only partially successful ([115]). The planned adoption of the life-long learning Act is crucial for the promotion of adult learning to maintain the positive trend of the last 12 months. Participation in adult learning reached a level of 49.5% in 2022 ([116]), almost reaching the national target of 50% and exceeding the 2016 level (42.6%). Slovakia is using ESF+ funding to strengthen cooperation between the Sectoral Councils to increase the demand for knowledge and skills, and is increasing the incentives for additional upskilling and reskilling of young people and adults.

Slovakia performs well in reducing the share of people at risk of poverty or social exclusion (AROPE), however there are large regional disparities and the increased share of children at risk requires monitoring. While remaining relatively low, Slovakia's AROPE rate continued to increase reaching 17.6% in 2023 (16.5% in 2022 vs 21.6% EU average). Nevertheless, significant regional disparities persist. In particular, the eastern part of the country has higher levels of poverty and social exclusion ([117]). Minimum income adequacy, which is measured as a share of the national poverty threshold, is still well below the EU average in 2021 (28.4% vs 58.9% in the EU). The significant rise in the rate of children at risk of poverty or social exclusion, from 19.7% in 2021 to 24.7% in 2022, is a cause for concern ([118]). More efforts are needed to address the challenges related to child poverty and early childhood education and care services, as well as to implement the European Child Guarantee recommendation.

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

Indicators	Latest data	Trend (2016-2022)	2030 target	EU target
Employment (%)	77.5 (2023)		76.5	78
Adult learning[1] (%)	49.5 (2022)		50	60
Poverty reduction[2] (thousands)	93 (2022)		-70	-15,000

(1) Adult Education Survey, special extraction: adults in learning in the past 12 months, special extraction excl. guided on-the-job training.
(2) Change in the number of persons at risk of poverty or social exclusion (AROPE), reference year 2019.
Source: Eurostat, DG EMPL

Significant gaps remain in the social inclusion of the Roma population and in getting more Roma people into work or education, especially in marginalised communities. The underlying challenges are complex, ranging from a lack of employment opportunities, generalised discrimination, social exclusion and a high probability of early school leaving, to the inaccessibility of basic services such as water, sanitation or adequate housing. The share of young Roma from marginalised communities who are not in employment, education or training is 67%, compared to 12% of the general population in the same age group (16-

([114])EACEA, YouthWiki retrievable at https://national-policies.eacea.ec.europa.eu/youthwiki/chapters/slovakia/31-general-context

([115])National plan for strengthening the Youth Guarantee in the Slovak Republic with a view until 2030

([116])Formal and non-formal education and training (excluding guided on-the-job training)

([117])The rate in Eastern Slovakia was 23.1% in 2022, while in Western Slovakia it was 12.6%.

([118])Proposal for a Joint Employment Report 2024 - Publications Office of the EU (europa.eu).

24) ([119]). Despite some recent progress ([120]), equal access to quality education represents a major shortcoming. Roma children also have a much lower participation rate in pre-primary education compared to the overall population ([121]). The most serious challenge is the over-representation of Roma pupils in schools for children with special educational needs and in classes for pupils with mental health issues or other disabilities ([122]).

([119])Markovič, F. & Plachá, Ľ. (2022). Príjmy a životné podmienky v marginalizovaných rómskych komunitách: Vybrané ukazovatele zo zisťovania EU SILC MRK 2020 retrievable at https://www.romovia.vlada.gov.sk/site/assets/files/1563/analyticka_sprava_eu_silc_mrk_2020_elektronicka_final.pdf

([120])For example, adoption of a new definition of the concept of special educational needs, and the introduction of a new model of support measures for a child experiencing obstacles to access education.

([121])Barbora Holubová (CELSI) for the European Centre of Expertise, January 2024.

([122])Education and Training Monitor 2023.

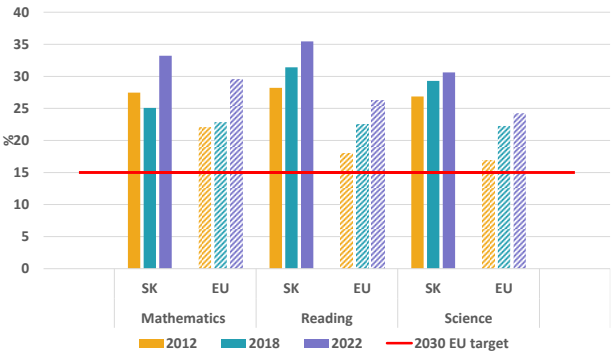
This Annex outlines the main challenges of Slovakia's education and training system based on the 2023 Education and Training Monitor and the 2022 OECD Programme for International Student Assessment (PISA) results.

The PISA 2022 showed highly concerning results for Slovakia indicating that the quality of education remains a challenge. Underachievement increased in all three tested areas between 2018-2022 - in mathematics (by 8.1 pps), in reading (by 4 pps), and in science (by 1.3 pps) - and remains above the EU averages, although they also increased (by 6.6 pps, 3.7 pps and 2 pps respectively) (see Graph 15.1). In mathematics, the share of underachieving students was 33.2% (vs 29.5% in the EU) in 2022, and the share of top performers dropped by 3.4 pps to 7.3% (vs 7.9% in the EU). In reading, the share of low-performing students increased significantly (by 7.2% to 35.4% during 2012-2022), while the share of top performers was among the lowest in the EU in 2022 (3.4% in Slovakia vs 6.5% in the EU). In science, the share of underachieving students increased since 2012 by 3.8 pps and is now well above the EU average (30.6% in Slovakia vs 24.2% in the EU in 2022). Since 2018, the share of top achievers in science remained relatively stable but it is below the EU average (4.3% in Slovakia vs 6.9% in the EU).

High inequalities persist in education. Socio-economic background is a strong predictor of performance. In 2022, 62.6% of the students from disadvantaged backgrounds in Slovakia did not obtain a basic level in mathematics (EU 48%) compared with 12.1% of advantaged students (EU 10.9%). Underachievement is higher among boys than girls in reading (gender gap is 11.9 pps in Slovakia vs 8.9 pps in the EU) and in science (4 pps in Slovakia vs 2.7 pps in the EU), while there is just a slight difference (2 pps vs 1 pp in the EU) in mathematics. While school closures during the COVID-19 pandemic might have played a role in declining performance, other factors are also linked to this, including long-term underfunding for education, teachers' shortages and the attractiveness of the teaching profession ([123]). While the inclusion of learners with special needs into mainstream schools has been improving, the education system does not seem to be able to sufficiently support them (and the schools). Moreover, the rate of children living in severe material and social deprivation increased from 7.9% in 2018 to 10.8% in 2022 and is now above the EU average (8.4%, see Annex 14) ([124]).

Young Slovak students lack basic skills, which negatively affects their future employability, and the country's competitiveness. A high level of underachievement in basic skills directly affects the country's future supply of skills, leading to possible skills mismatches. This will have a negative impact on overall productivity and competitiveness (Annex 12), as well as the (already limited) innovation capacity (Annex 11).

Graph A15.1: **Underachievement rates by field, PISA 2012, 2018 and 2022**



Source: OECD (2023).

Slovakia faces teacher shortages ([125]), mainly in larger cities. Teachers' salaries are below that of other tertiary-educated workers (0.8 at upper secondary level (OECD, 2023)). Regional top-up contributions to the salaries and non-financial contributions to teachers are being considered, while negotiations with social partners continue. Moreover, there is scope to enhance attractiveness by improving the quality and focus of teaching professionals' education and training, and by increasing the availability of teaching assistants and peer-learning and mentoring opportunities.

Despite a recent favourable policy development, participation in early childhood education (ECE) remains among the lowest in the EU. In 2022, the ECE rate was 77.4% (vs

([123])European and Training Monitor (2023), TALIS (2018)

([124])*Eurostat* (ilc_mdsd11)

([125])European and Training Monitor (2023)

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

				2012		2018		2023	
Indicator			Target	Slovakia	EU-27	Slovakia	EU-27	Slovakia	EU-27
[1]Participation in early childhood education (age 3+)			96%	72.3% [2013]	91.8% [2013]	77.6%	92.2%	77.4% [2021]	92.5% [2021,d]
[2]Low-achieving 15-year-olds in:		Reading	< 15%	28.2%	18.0%	31.4%	22.5%	35.4% [2022]	26.2% [2022]
		Mathematics	< 15%	27.5%	22.1%	25.1%	22.9%	33.2% [2022]	29.5% [2022]
		Science	< 15%	26.9%	16.8%	29.3%	22.3%	30.6% [2022]	24.2% [2022]
Early leavers from education and training (age 18-24)	[3]Total		< 9 %	5.3%	12.6%	8.6%	10.5%	6.4%	9.5%
	[3] By gender	*Men*		6.0%	14.5%	8.3%	12.1%	6.8%	11.3%
		Women		4.6%	10.6%	8.8%	8.7%	6.0%	7.7%
	[4] By degree of urbanisation	*Cities*		: [bu]	11.2%	4.6% [u]	9.4%	: [u]	8.6%
		Rural areas		7.8% [b]	14.0%	11.5%	11.0%	8.8%	9.9%
	[5] By country of birth	*Native*		5.3%	11.3%	8.5%	9.2%	6.4%	8.2%
		EU-born		: [u]	26.2%	: [u]	22.4%	: [u]	21.0%
		Non EU-born		: [u]	30.1%	: [u]	23.0%	: [u]	21.6%
[6]Socio-economic gap (percentage points)				42.6	:	40.4	29.5	50.6 [2022]	37.2 [2022]
[7]Exposure of VET graduates to work-based learning			≥ 60% (2025)	:	:	:	:	62.1%	64.5%
Tertiary educational attainment (age 25-34)	[8]Total		45%	27.0%	34.1%	37.2%	38.7%	39.8%	43.1%
	[8] By gender	*Men*		21.5%	29.1%	30.0%	33.3%	31.2%	37.6%
		Women		32.8%	39.2%	44.8%	44.2%	48.7%	48.8%
	[9] By degree of urbanisation	*Cities*		42.5% [b]	43.5%	53.7%	49.0%	60.9%	53.3%
		Rural areas		18.7% [b]	24.8%	26.2%	27.7%	30.5%	31.7%
	[10] By country of birth	*Native*		26.9%	35.4%	37.2%	39.7%	39.6%	44.2%
		EU-born		: [u]	29.3%	: [u]	36.7%	: [u]	40.2%
		Non EU-born		: [u]	24.2%	: [u]	31.0%	: [u]	37.1%
[11]Participation in adult learning (age 25-64)			≥ 47% (2025)	:	:	42.6% [2016]	37.4% [2016]	49.5% [2022]	39.5% [2022]
[12]Share of school teachers (ISCED 1-3) who are 55 years or over				21.5% [2013]	22.7% [2013]	24.7%	23.8%	26.0% [2021]	24.5% [2021]

Notes: b = break in time series; d = definition differs; e = estimated; p = provisional; u = low reliability; : = data not available.
Source: 1,3,4,5,7,8,9,10,12=Eurostat; 11= Eurostat, Adult Education Survey; 2,6=OECD, PISA.

92.5% in the EU) for children from age 3 to the starting age of compulsory primary education.

The inclusiveness of education remains a challenge. In 2023, the European Commission referred Slovakia to the Court of Justice for failing to desegregate Roma children in education. The proportion of early school leavers among those aged 18-24 remains below the EU average (6.4% in Slovakia vs 9.5% in the EU in 2023), while early school leaving is widespread among the Roma as almost three out of four young Roma (aged 18-24) leave the education system early ([126]). Moreover, a significant number of children displaced from Ukraine are yet to be enrolled in Slovak schools ([127]).

Slovakia is implementing ambitious reforms to increase the quality and inclusiveness of education. For example, in 2023, the pilot phase of the new curricula began and the School Act amendment introduced new initiatives aiming to reduce the influence of pupils' socio-economic background on their performance. The RRP fosters inclusive education with a budget of EUR 210 million. Moreover, the RRP improves the quality of education in the components dedicated to primary and higher education, with respectively a budget of EUR 449 million and EUR 159 million.

The tertiary educational attainment rate substantially increased over the last decade but remains below the EU average. From 26.9% in 2013 to 39.8% of 25-34-year-olds in 2023 held a tertiary degree, still below the EU average of 43.1%. The gender gap is well above the EU average (17.5 pps vs 11.2 pps in the EU). Participation in work-based learning in VET remains under the EU average, and progress has been made in adult participation in lifelong learning (Annex 14).

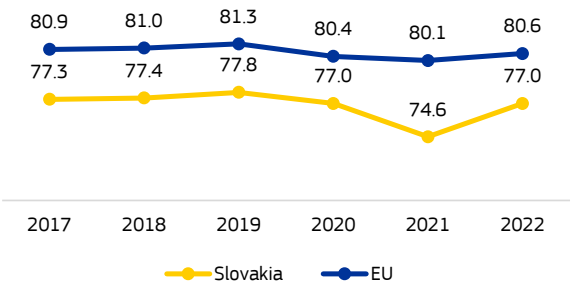
([126])Fundamental Rights Agency (2021)

([127])Ministry of Education, Research, Development and Youth Education estimates that around 30% of Ukrainian children (3-17) potentially living in Slovakia are outside of the Slovak school education system.

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.

Life expectancy at birth in Slovakia is among the lowest in the EU. Due to the COVID-19 pandemic, life expectancy in Slovakia had fallen by more than 3 years in 2021, compared to 2019. Life expectancy then rebounded in 2022 almost to the pre-pandemic level, as mortality from COVID-19 declined in 2022 ([128]). However, life expectancy in Slovakia remains low compared to other EU countries. In 2021, the leading causes of death were diseases of the circulatory system ('cardiovascular diseases') followed by COVID-19 and cancer. Mortality rates from preventable and treatable causes in Slovakia are among the highest in the EU. At the same time, mortality in the economically active age groups, as a proportion of total mortality and relative to the workforce size, is among the highest in the EU. The cancer mortality rate is one of the highest in the EU too.

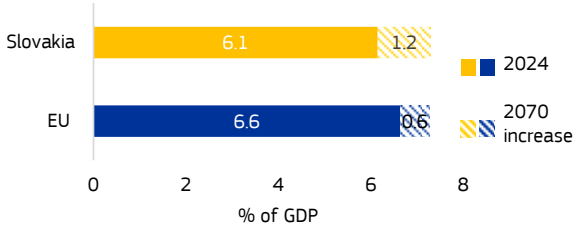
Graph A16.1: **Life expectancy at birth, years**



Source: Eurostat

Health spending in Slovakia remains significantly below the EU average. In 2021, Slovakia spent on health (per capita and adjusted for differences in purchasing power) less than half the EU average. Spending per capita is below the respective EU average for outpatient care, inpatient care, disease prevention, pharmaceuticals and medical devices. In nominal terms, Slovakia's health expenditure in 2021 rose by nearly 17% compared to 2020, accounting for 7.8% of GDP (EU average: 10.9%). Provisional data from the OECD suggest that in 2022 total healthcare spending remained at 7.8% of GDP. Based on the age profile of the Slovak population, public spending on health is projected to increase by 1.2 percentage points (pps) of GDP by 2070, compared to 0.6 pps for the EU overall, raising significant fiscal sustainability concerns over the medium and long term (see Graph 16.2 and Annex 21).

Graph A16.2: **Projected increase in public expenditure on healthcare over 2024-2070**



Baseline scenario
Source: European Commission / EPC (2024)

Spending on prevention remains among the lowest in the EU. Between 2019 and 2021, spending on prevention in Slovakia as a proportion of total health expenditure increased from 0.8% to 1.6%. Despite this increase, Slovakia was still one of the few EU countries that allocated less than 3% of total healthcare spending to preventive measures in 2021, against an EU average of 6%. Between 2019 and 2021, budget shares for prevention across the EU increased most for emergency response, disease detection and immunisation programmes. Slovakia's low spending on prevention raises questions about the preparedness of the health system for possible future public health crises.

Slovakia has a long-standing shortage of doctors and nurses. Slovakia has a slightly lower density of doctors and a substantially lower density of nurses than the EU overall. The number of active doctors per 1 000 population in Slovakia (3.7) remained below the EU average (4.1) in 2021. Shortages are linked to the age profile of doctors and migration. Approximately one third of doctors are aged 55 or over, which raises concerns about future shortages. The moderate rise in the number of medical graduates in recent years has had some positive impact in mitigating the

([128])Based on data provided directly by Member States to the European Centre for Disease Prevention and Control, under the European Surveillance System.

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

	2018	2019	2020	2021	2022	EU average (latest year)
Treatable mortality per 100 000 population (mortality avoidable through optimal quality healthcare)	165.4	163.6	168.8	206.0	NA	93.3 (2021)
Cancer mortality per 100 000 population	310.6	293.3	301.8	275.1	NA	235.4 (2021)
Current expenditure on health, % GDP	6.7	6.9	7.1	7.8	NA	10.9 (2021)
Public share of health expenditure, % of current health expenditure	80.1	79.8	80.3	79.7	NA	81.1 (2021)
Spending on prevention, % of current health expenditure	0.8	0.8	1.0	1.6	NA	6.0 (2021)
Available hospital beds per 100 000 population	570	576	568	567	NA	525 (2021)
Doctors per 1 000 population	3.5	3.6	3.7	3.7	NA	4.1 (2021)*
Nurses per 1 000 population	5.7	5.7	5.8	5.7	NA	7.9 (2021)
Total consumption of antibacterials for systemic use, daily defined dose per 1 000 inhabitants per day ***	22.0	19.3	14.4	16.0	20.8	19.4 (2022)

Note: The EU average is weighted for all indicators except for doctors and nurses per 1 000 population, for which the EU simple average is used. Doctors' density data refer to practising doctors in all countries except Greece, Portugal (licensed to practise) and Slovakia (professionally active). Nurses' density data refer to practising nurses in all countries except Ireland, France, Portugal, Slovakia (professionally active) and Greece (hospital only).

Source: Eurostat Database; except: * OECD, ** Joint Questionnaire on non-monetary healthcare statistics, *** ECDC, **** Council Recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach.

shortage of doctors, but no further increases are anticipated. More than 40% of medical students in Slovakia come from abroad but then return to their home country or migrate to other EU countries to complete specialty training or work, and are therefore not adding to Slovakia's health workforce. The number of nurses has been stable over the last decade, with 5.7 nurses per 1 000 population in 2021, much lower than the EU average (7.9). The low density of nurses is due to migration and a reduction in the numbers of nursing graduates. Both issues are related to the unattractiveness of the nursing profession as a result of low wages, long working days and low prestige. Strikes at the end of 2022 led to marked pay increases for health workers, including nurses. The recent hike eliminated health workers' pay differentials with neighbouring countries but did not address major issues relating to working conditions. Increasing the attractiveness of the nursing profession and staff retention are key to addressing current shortages.

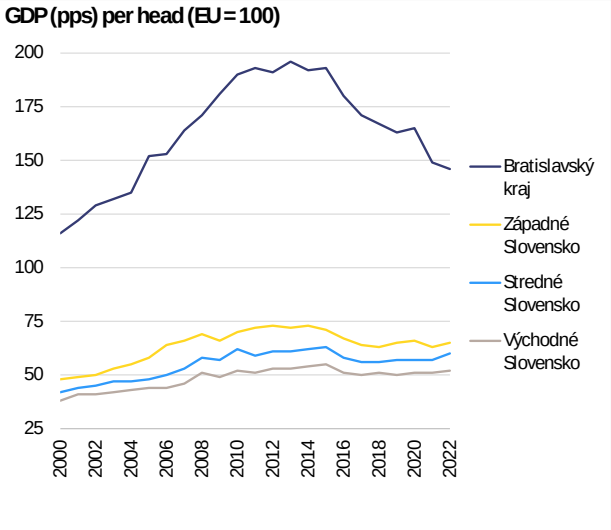
EU funds support substantial investments in healthcare in Slovakia. Historically, Slovakia has lagged behind in terms of investment in healthcare. Among EU countries, it has invested a comparatively low percentage of GDP in gross capital formation in healthcare. This is reflected, for instance, in the low availability of key diagnostic technologies (notably medical imaging). Slovakia allocated a large share of its recovery and resilience plan (RRP) to investments in health. Specifically, EUR 1.15 billion (18% of the RRP's total value) will be invested in the physical and digital infrastructure of the Slovak health system to improve its quality, accessibility and efficiency. The RRP includes investments in hospitals (such as buildings and the modernisation of equipment) to support the optimisation of the hospital network. The RRP also focuses on health sector digitalisation, emergency care and mental healthcare. These investments may help Slovakia to overcome the low uptake of digital health solutions. For example, the number of individuals accessing personal health records online in Slovakia is below the EU average, while data for 2022 indicate a fall in the uptake of telemedicine since 2020, in contrast to the steady increase in telemedicine uptake seen in the EU. Complementary investments in healthcare are planned under the EU cohesion policy funds over the 2021-2027 programming period. In particular, Slovakia will invest EUR 166 million in health infrastructure and in measures to improve the accessibility of health services for vulnerable and socially disadvantaged groups ([129]).

([129])The EU cohesion policy data reflect the status as of 13 May 2024.

Annex 17 showcases the economic and social regional dynamics in Slovakia. It provides an analysis of economic, social and territorial cohesion in the Slovak regions and assesses emerging investment and subnational reform needs to foster economic growth, social development and competitiveness in the country.

Overview of economic and social performance at regional level

Graph A17.1: **Gross domestic product (pps) per inhabitant in % of the EU-27 average**



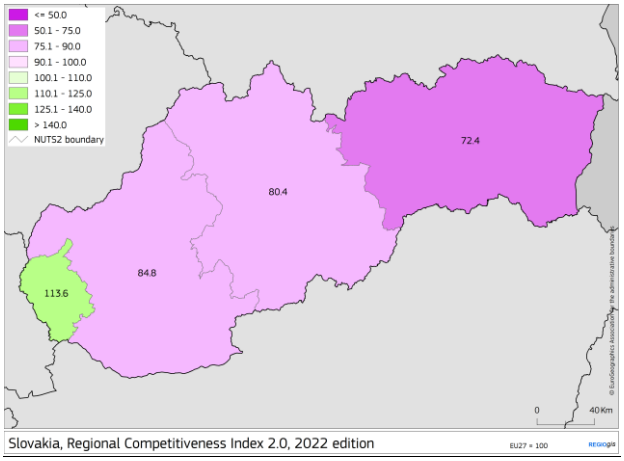
Source: Eurostat

Regional disparities in Slovakia have diminished, but large gaps persist between the capital region and the rest of the country. In 2022, GDP per capita in the capital region of Bratislava corresponded to 146% of the EU average. The other three regions in Western, Central and Eastern Slovakia lagged far behind, at 65%, 60% and 52% of the EU average respectively. While GDP per capita in Bratislava is increased by the contribution of commuters from other regions, the average compensation per employee and household income per capita (both about 50% above the national average in Bratislava) also point to significant disparities between the capital and the other regions. The fast catching up of the Bratislava region in 2001-2010 was followed by an equally sharp decline starting from 2015. The other three regions were catching up at a much more moderate pace and their convergence to the EU average has stagnated since 2015 (Graph A 17.1).

The three regions east of Bratislava have been growing at a higher pace, but they still lag behind in productivity. In 2013-2022, long-term real GDP growth averaged 0.57% per year in Bratislava while in Western, Central and Eastern Slovakia, it was between 2.19% and 2.63%. Labour productivity in Bratislava, measured as real gross value added per worker, amounted to EUR 49 000 per worker in 2021. This exceeded the national average of EUR 33 000 per worker, but stayed considerably below the EU average of EUR 56 000.

Weak innovation performance and low investment in R&D are a drag on regional development. R&D expenditure in the capital region, at 1.5% of GDP, is 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 2023 regional innovation scoreboard.

Map A17.1: **Slovakia, Regional Competitiveness Index 2022**



Source: DG REGIO, JRC

The capital region is far more competitive than the other three regions and attracts new inhabitants. Differences in the business environment, as well as transport infrastructure, human capital and labour market conditions contribute to significant gaps in competitiveness. Only in Bratislava is the regional competitiveness index above the EU average set at 100. Eastern Slovakia scores particularly low (Map A17.1). The index measures a region's ability to offer an attractive environment for businesses and residents to live and work in. Indeed, the population of the capital increased by 18.5% between 2013 and 2021, mainly due to net migration. Western, central and eastern Slovakia

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

NUTS 2 region name	GDP per capita (purchasing power standard/ PPS)	GDP per capita growth	Productivity (gross value added (PPS) per person employed)	Real productivity growth	R&D expenditure	CO2 emissions from fossil fuels per head	Employment rate	Unemployment rate	People at-risk-of-poverty or social exclusion	Population aged 30-34 with tertiary education	Early school leavers
	EU27 = 100, 2022	Average % change on the preceding year, 2013-2022	EU27 = 100, 2022	Average % change on the preceding year, 2013-2022	% of GDP, 2021	tCO2 equivalent, 2022	% of population aged 20-64, 2023	% of labour force, 2023	% of population, 2022	% of population aged 30-34, 2022	% of population aged 18-24, 2022
European Union	100	1.44	100	0.7	2.3	8.0	75.3	6.1	21.6	42.8	9.6
Slovakia	71	2.24	75.9	1.3	0.9	8.4	77.5	5.8	16.5	39.3	7.4
Bratislava Region	146	0.57	109.8	1.4	1.5	7.9	85.8	2.3	10.9	55.4	4.7
Western Slovakia	65	2.19	69.7	1.2	0.8	9.2	78.8	3.6	12.6	35.0	5.9
Central Slovakia	60	2.86	65.1	1.3	0.7	5.3	78.0	5.9	17.0	33.9	7.5
Eastern Slovakia	52	2.63	67.8	1.6	0.6	10.2	71.6	10.4	23.1	40.5	10.9

Source: Eurostat, EDGAR database

recorded declines in population (-1.6%, -3.5% and -1.6% respectively).

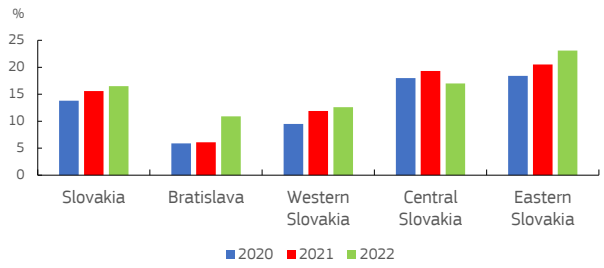
Central and Eastern Slovakia lag in terms of transport connectivity. This is measured by the ratio between the number of people living within a radius set by a travel time of 1h30 and the number of people that live within a distance of 120 km By car, this ratio was 84% in Bratislava but it dropped to 51% in the western region, 30% in the central region and 39% in the eastern region. By rail the ratio was 3% to 4% in Western, Central and Eastern Slovakia while it stood at 18% for Bratislava. Bratislava has on average 221 electric vehicle charging points per million inhabitants (below the EU average of 288) while the other three regions have only between 15 and 28.

Regional differences in employment remain large and unemployment is widespread in Eastern Slovakia. The employment rate in the capital region was 85.8% in 2023 while only 71.6% of the working population was employed in Eastern Slovakia. Conversely, the unemployment rate, at 10.4% in Eastern Slovakia was significantly higher than in the other regions (2.3% in the capital region, 3.6% in western Slovakia and 5.9% in central Slovakia). In Bratislava, 54% of jobs were in knowledge-intensive sectors while the share ranged from 30% to 38% in the other regions.

Human capital is concentrated in Bratislava. The share of people with a tertiary education in the working age population (25-64) was 47% in the region of Bratislava, far more than in the Western, Central and Eastern Slovakia (24.8%, 26.6% and 28.2% respectively). In the younger age bracket (30-34), Eastern Slovakia with 40.5% share of people with a tertiary education clearly ranked above Western and Central Slovakia, but still lagged behind Bratislava. Due to the outward migration of 15-39-year-olds, the two regions of Central and Eastern Slovakia are considered to be at risk of being in talent development trap ([130]).

Poverty has been on the rise in the capital region. After a steady decline until 2020, the share of people at-risk-of-poverty or social exclusion increased from 13.8% in 2020 to 16.5% in 2022 in Slovakia (Graph A17.1). The region of Bratislava recorded the biggest increase, by 5 percentage points. People in rural areas are more at risk than in cities and the gap (19.9% vs 11%) was much larger in Slovakia than in the EU as a whole (22.1% vs 21.7%).

Graph A17.2: **People at-risk-of-poverty or social exclusion by NUTS2 regions**



Source: Eurostat

Investment and subnational reform needs ahead

Slovakia needs to mobilise environmental investments at both national and regional level. This is essential to make up for the fallout of investments in 2014-2020, when an important part of planned projects in the sustainable use of natural resources did not materialise. Slovakia has committed to compensate for this deficit in the 2021-2027 programming period. That requires

([130])Communication Harnessing talent in Europe's regions, COM(2023) 32 final.

increased funding, notably, for drinking water and wastewater infrastructure, circular economy and waste management, clean air, as well as nature and biodiversity protection. Waste management systems deserve special attention and would be best designed and implemented at regional level. These investments will also help Slovakia meet EU environmental targets in areas where it is seriously lagging behind. Moreover, facilitating investments in the green transition of industry, decarbonisation of energy-intensive industries and net-zero technologies manufacturing, could support the higher added-value production and contribute to more sustainable economy and more resilient sectors most hit by the transition. Slovakia could benefit from the opportunities of the STEP initiative to boost investments in critical technologies to support the development of the necessary skills, technologies and infrastructures. These investments could strengthen the industrial diversity in Slovakia and stimulate the involvement in new strategic value chains.

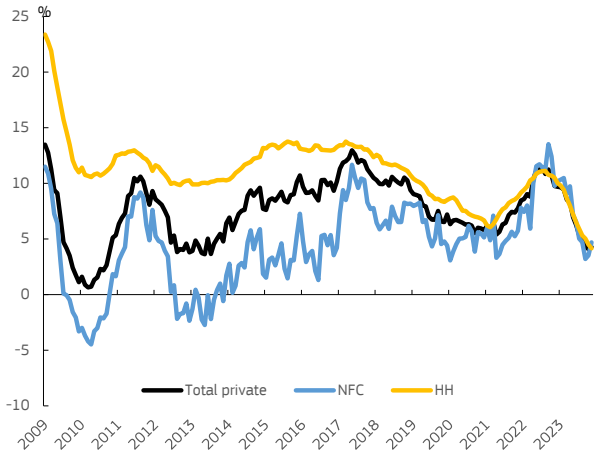
Improving living conditions and social inclusion of Roma remains a high priority. Relatively worse labour market, social and education outcomes in regions with high presence of marginalised Roma communities confirm long-standing challenges of Roma inclusion. The 2021-2027 cohesion policy programming period allocates significant funding to projects that benefit Roma as well as municipalities where they live. To make the best use of it, Slovakia needs to overcome obstacles that have hindered investments in the past years, such as problems with land ownership rights and slow public procurement processes. It is also necessary to ensure sufficient administrative capacity in both funds and project management and set right incentives for potential beneficiaries.

Slovakia's banking sector is relatively small, highly concentrated and predominantly foreign owned. Total banking-sector assets were equivalent to 100.2% of GDP in Q3-2023. Foreign-owned banks account for around 87% of total banking-sector assets, while the five largest banking groups hold around 79.0% of total banking-sector assets. Capital markets play a less important role than banks in financing the economy. Stock market capitalisation remained very low at 1.8% of GDP in 2022 (EU average: 65.6%). Green bonds accounted for 2.2% of all issued bonds still outstanding in Q3-2023 (EA average: 4.0%).

The Slovakian banking sector remains resilient. It is highly profitable, well capitalised, and liquid. Banking-sector profitability has improved since Q3-2022 with return on equity of 11.4% in Q3-2023 (EU average: 9.9%) mainly driven by an increase in net interest income, in particular from the corporate sector. A new special levy on bank profits was introduced in 2024 to partially finance a mortgage-subsidy scheme. The cost-to-income ratio further declined to 45.8% in 2023 (EU average: 52.8%) from 50.5% in 2022, reflecting an improvement in the efficiency of bank operations. Slovakian banks remain well capitalised. The banking capital-adequacy ratio remained stable at 19.6% in Q3-2023 (EU average: 19.6%), signalling the robustness of the banking sector, with a common equity tier 1 ratio of 16.8% in Q3-2023 (EU average: 16.1%). There is a significant amount of liquidity in the banking system, as the liquidity coverage ratio was 183.2% in Q3-2023. To further strengthen the resilience of credit institutions, the country's central bank, the National Bank of Slovakia (NBS), increased the countercyclical capital buffer rate applicable to the risk exposure of local banks from 1% to 1.5% as of 1 August 2023.

Slovakian banks continue to reduce their non-performing loans (NPLs). The NPL ratio remained rather low at 1.9% in Q3-2023 (EU average: 1.8%). Similarly, the coverage ratio of NPLs remained high at 62.6% in Q3-2023, which reflects banks' ability to absorb future losses (EU average: 43.7%). Asset quality remained stable for both loans to corporates and loans to households in Q3-2023. However, the economic slowdown and current financial conditions (higher interest rates and growth uncertainty) could pose risks in the future – primarily for the debt-repayment capacity of borrowers.

Graph A18.1: **Evolution of Credit Activity**



Source: ECB

Lending activity slowed down in Q3-2023. Lending to both non-financial corporations and households decelerated in Q3-2023 (year-on-year), mainly due to a decline in demand for credit amid elevated interest rates. Corporate loans experienced a significant downturn towards the end of 2022 before stabilising (in particular, both the commercial real estate sector and the industrial sector experienced a sharp slowdown) ([131]).

The housing market in Slovakia has been on a downward trend since mid-2022. Housing prices fell by 3.8% in Q3-2023 year-on-year due to rising interest rates and the reduced credit capacity of households ([132]). Another reason why potential buyers have postponed their decision to buy housing is the growing gap between the cost of servicing a mortgage and the lower cost of renting. The total number of purchase transactions for real estate has declined in recent months.

([131])Národná Banka Slovenska, November 2023, *Financial Stability Report*, NBS.sk.

([132])Eurostat.

Table A18.1:**Financial Soundness Indicators**

	2017	2018	2019	2020	2021	2022	2023	EU	Median
Total assets of the banking sector (% of GDP)	91.7	91.2	91.6	100.1	106.3	104.0	100.2	257.0	184.6
Share (total assets) of the five largest banks (%)	74.5	75.6	75.7	76.8	79.3	78.9	-	-	69.6
Share (total assets) of domestic credit institutions (%)[1]	15.6	15.1	14.9	14.2	13.5	13.2	13.2	-	62.9
NFC credit growth (year-on-year % change)	7.8	8.2	4.4	5.1	7.8	10.2	1.9	-	2.4
HH credit growth (year-on-year % change)	12.4	10.7	8.5	6.7	9.2	10.0	3.8	-	1.4
Financial soundness indicators:[1]									
- non-performing loans (% of total loans)	3.7	3.2	2.9	2.5	2.0	1.7	1.9	1.8	1.8
- capital adequacy ratio (%)	18.6	17.8	18.0	19.3	19.4	19.5	19.6	19.6	20.1
- return on equity (%)[2]	9.3	9.3	8.3	5.3	8.4	9.4	11.4	9.9	13.2
Cost-to-income ratio (%)[1]	57.8	56.4	58.0	59.7	53.7	50.5	45.8	52.8	44.9
Loan-to-deposit ratio (%)[1]	96.2	98.5	99.1	95.4	89.6	91.6	94.1	93.3	80.2
Central bank liquidity as % of liabilities	1.7	1.7	0.7	4.9	11.1	6.9	4.0	-	0.7
Private sector debt (% of GDP)	89.8	90.5	91.8	94.8	92.6	92.7	-	133.0	118.4
Long-term interest rate spread versus Bund (basis points)	59.8	48.9	49.9	47.2	29.3	93.2	121.5	107.7	104.2
Market funding ratio (%)	29.8	28.8	27.9	25.1	24.1	22.2	-	50.8	39.8
Green bonds outstanding to all bonds (%)[3]	-	-	-	-	0.6	1.7	2.2	4.0	2.7

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

(1) Last data: Q3 2023.
(2) Data is annualized.
(3) Data available for EA countries only, EU average refers to EA area.
Source: ECB, Eurostat

Household indebtedness has continued to rise but is expected to fall in the coming months. According to Eurostat, household debt in Slovakia rose from 42.5% of GDP in 2019 to 47.1% of GDP in 2022 ([133]). In the future, rising interest rates and economic uncertainty are expected to dampen demand for mortgages, and end the recent pattern of sharp growth in property prices, thus mitigating the risks associated with rising indebtedness. The NBS notes that young mortgage borrowers have been the most affected by the recent increase in interest rates. In recent years, the NBS introduced a number of borrower-based measures, such as limits on the debt-service-to-income ratio and on the loan-to-value ratio. In January 2023, the NBS partially adjusted the total-debt-to-income limit for mortgage loans held by people in retirement, thus preventing them from going into retirement with excessive mortgage debt.

Banks are increasingly exposed to the commercial real estate sector (CRE), which is facing risks. The sector is more indebted than other sectors and may feel the impact of interest rate hikes and slower sales development to a greater extent. However, no increase in NPLs is expected in this sector due to the relatively high gross margin levels of CRE firms ([134]).

Slovakia has taken measures to address weaknesses in its AML/CFT system. Competent authorities can now rely on a broader set of tools to prevent, detect, investigate, and prosecute money laundering. Authorities are also taking steps to address emerging risks, in particular in relation to virtual assets, although more work needs to be done to ensure compliance with the Financial Action Task Force recommendation in this area. Concerns remain about the resources and powers of Slovakia's Financial Intelligence Unit and deficiencies in beneficial ownership information.

Slovakia's insurance sector is rather small. The total assets of all insurers were equivalent to 4.8% of GDP in 2022. The level of sector capitalisation in terms of the solvency capital requirement ratio was 191% in the first half of 2023. A new accounting standard in the insurance sector – IFRS17 – was implemented on 1 January 2023. According to the NBS, although figures indicate year-on-year growth in the profitability of the insurance sector between 2022 and 2023, it would be misleading to make any comparison between profit recorded under old accounting standards and profit recorded under new accounting standards ([135]).

([133])Eurostat.

([134])Národná Banka Slovenska, November 2023, *Financial Stability Report*, NBS.sk.

([135])Národná Banka Slovenska, November 2023, *Financial Stability Report*, NBS.sk.

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 compared with GDP remain below the EU aggregate, which does not help mitigate the budget deficit. New bank levy became effective in 2024. It is taxing bank profits that are deemed excessive and is expected to generate EUR 340 million (0.25% of GDP) in 2024. The tax rate is set at 30% in 2024 and will be decreased by 5 pps each year until it reaches 15% in 2027. However, the European Central Bank (ECB) has warned in its opinion of 12 September 2023 that a windfall tax could undermine the capital position of lenders, impact the provision of new lending and distort monetary policy. New rules amending excise duties on tobacco and spirits products are set to increase revenues while aiming to improving health. With the same objectives, reduced VAT rates for alcoholic beverages with an alcohol content of more than 0.5% by volume served in restaurants was abolished.

The tax mix could 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 (34.8% in 2022) were considerably below the EU aggregate (40.2% in 2022), even though they were 7 pps higher than in 2010, and increased slightly to 35.3% in 2023. The ratio of revenues from labour taxes to total tax revenues (52.4% in 2022) was close to the EU aggregate (50.6% in 2022), while the share of consumption taxes in total tax revenues was higher (32.7% in 2022; EU: 27.3%). Environmental taxes were above the EU aggregate in 2022, 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 pollution and resources taxes generated below-average revenues. This indicates potential to strengthen the application of the 'polluter pays' principle. Slovakia only has two of six main types of taxes on pollution and resources (i.e. taxes on NOx emissions and waste landfilling). There could be scope to expand waste disposal taxes (including incineration) and to introduce other taxes (e.g. on discharge of waste into water or plastic products). Recent tax developments related to the green transition include the government's approval of a EUR 30 million investment incentive (tax break) for a EUR 108 million investment to be implemented in 2024-28 by the Žilina Kia car plant to produce electric cars.

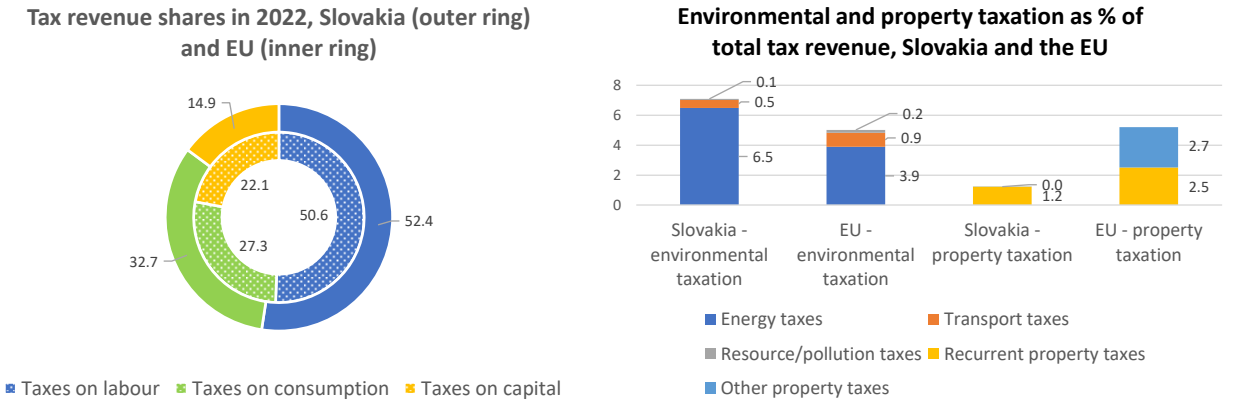
Revenues from property taxes are relatively

Table A19.1:**Taxation indicators**

		Slovakia					EU-27				
		2010	2020	2021	2022	2023	2010	2020	2021	2022	2023
Tax structure	Total taxes (including compulsory actual social contributions) (% of GDP)	27.8	34.6	35.2	34.8	35.3	37.9	40.0	40.4	40.2	
	Labour taxes (as % of GDP)	14.4	18.9	18.9	18.2		20.0	21.3	20.7	20.3	
	Consumption taxes (as % of GDP)	9.8	11.4	11.5	11.4		10.8	10.7	11.2	11.0	
	Capital taxes (as % of GDP)	3.6	4.3	4.8	5.2		7.1	8.0	8.6	8.9	
	Of which, on income of corporations (as % of GDP)	2.6	3.2	3.9	3.8		2.4	2.5	3.0	3.4	
	Total property taxes (as % of GDP)	0.4	0.5	0.5	0.4		1.9	2.3	2.2	2.1	
	Recurrent taxes on immovable property (as % of GDP)	0.4	0.5	0.5	0.4		1.1	1.2	1.1	1.0	
	Environmental taxes as % of GDP	2.1	2.5	2.4	2.5		2.4	2.2	2.3	2.0	
Progressivity & fairness	Tax wedge at 50% of average wage (Single person) (*)	31.8	36.4	36.9	37.1	37.3	33.9	31.7	32.1	31.8	31.7
	Tax wedge at 100% of average wage (Single person) (*)	38.1	41.3	41.5	41.5	41.6	41.0	40.1	39.9	40.0	40.2
	Corporate income tax - effective average tax rates (1) (*)		19.2	19.2	19.3			19.5	19.0	19.0	
	Difference in Gini coefficient before and after taxes and cash social transfers (pensions excluded from social transfers) (2) (*)	5.6	6.3	6.4	6.0		8.6	8.1	8.2	7.9	
Tax administration & compliance	Outstanding tax arrears: total year-end tax debt (including debt considered not collectable) / total revenue (in %) (*)		22.8	21.6				40.9	35.5		
	VAT Gap (% of VAT total tax liability, VTTL)(**)	31.3	13.9	10.6	11.5			9.7	5.4		

(1) Forward-looking effective tax rate (OECD).
(2) A higher value indicates a stronger redistributive impact of taxation.
(*) EU-27 simple average.
(**) Forecast value for 2022, if available. For more details on the VAT gap, see European Commission, Directorate-General for Taxation and Customs Union, 2023, *VAT gap in the EU*, https://data.europa.eu/doi/10.2778/911698.
For more data on tax revenues as well as the methodology applied, see the Data on Taxation webpage, https://ec.europa.eu/taxation_customs/taxation-1/economic-analysis-taxation/data-taxation_en.
Source: European Commission, OECD.

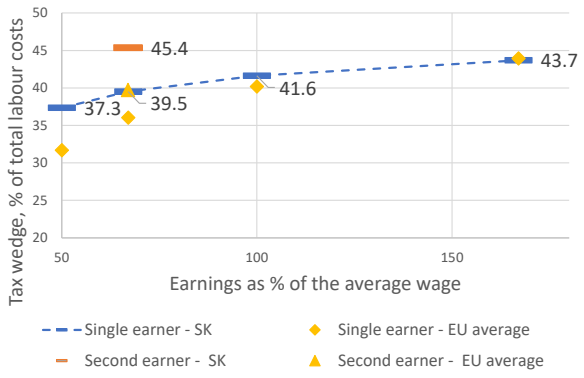
Graph A19.1: **Tax revenues from different tax types, % of total revenue**



Source: European Commission

low (0.4% of GDP in 2022 compared with 2.1% in the EU as a whole), despite being considered relatively growth-friendly. Unlike most other Member States, Slovakia has an area-based taxation system, whereby immovable property is taxed based on its area rather than its estimated market value. In such a taxation framework, the location, quality, type, number of rooms and age of the dwelling are not factored in, and this hampers equity and efficiency. Slovakia still does not possess either valuation systems or sufficient data to align property values to market values, but a value-based taxation system could improve fairness, increase tax revenues and help dampen real estate demand.

Graph A19.2: **Tax wedge for single and second earners, % of total labour costs, 2023**



The second earner tax wedge assumes a first earner at 100% of the average wage and no children. For the methodology of the tax wedge for second earners, see OECD, 2016, *Taxing Wages 2014-2015*.

Source: European Commission

Labour taxation is less progressive than on average in the EU due to a relatively high tax wedge for lower wage earners. Graph A19.2 shows that the labour tax wedge for Slovakia in 2023 was above the EU average for single people earning 50% or 67% of the average wage, and close to the EU average at higher wage levels. Second earners earning a wage of 67% of the average wage, whose spouses earn the average wage, were subject to a tax wedge above the EU average. In addition, their tax wedge was higher than that of single persons at the same wage level. The ability of the tax and benefit system to reduce inequality (measured by its ability to reduce the GINI coefficient) has increased since 2010 but has remained below the EU average in recent years (see Table A19.1).

The VAT compliance gap, which has decreased significantly in recent years, remains above the EU average. Between 2017 and 2021, the VAT compliance gap in Slovakia decreased steadily by an average of about 1.9 pps each year. The decrease in the VAT compliance gap was even higher in 2021 – it dropped by 3.4 pps to 10.6% of VAT Total Tax Liability (VTTL). Yet, a majority of Member States saw a decrease of the VAT compliance gap in 2021, which was at least partly due to the COVID-19-induced economic crisis. The improvement in Slovakia's VAT compliance gap is based on a mandatory reporting of all domestic and intra-EU transactions that has been introduced since 2014, coupled with a wider application of the reverse charge mechanism.

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

	2004-07	2008-12	2013-20	2021	2022	2023	forecast 2024	forecast 2025
Real GDP (y-o-y)	7.8	2.1	2.2	4.8	1.9	1.6	2.2	2.9
Potential growth (y-o-y)	.	3.7	2.2	1.5	1.7	2.8	2.3	2.4
Private consumption (y-o-y)	6.5	1.2	2.7	2.6	6.1	-3.2	0.9	1.9
Public consumption (y-o-y)	2.1	1.9	2.3	4.2	-4.5	-0.6	3.4	1.0
Gross fixed capital formation (y-o-y)	9.9	-1.5	1.9	3.5	5.7	10.6	1.1	7.0
Exports of goods and services (y-o-y)	17.7	4.1	2.6	10.5	3.0	-1.4	4.3	4.0
Imports of goods and services (y-o-y)	16.5	1.6	2.8	11.7	4.3	-7.6	5.3	4.0
Contribution to GDP growth:								
Domestic demand (y-o-y)	6.4	0.6	2.3	3.0	3.6	0.1	1.4	2.8
Inventories (y-o-y)	0.6	-0.6	0.1	2.6	-0.6	-5.0	1.6	0.0
Net exports (y-o-y)	0.7	2.0	-0.1	-0.9	-1.1	6.5	-0.8	0.1
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	.	0.7	-0.2	-0.3	0.1	0.5	0.3	0.1
Capital accumulation (y-o-y)	.	1.0	1.0	0.5	0.6	1.5	1.3	1.5
Total factor productivity (y-o-y)	.	2.1	1.3	1.4	0.9	0.8	0.8	0.8
Output gap	1.7	-0.1	-0.3	0.4	0.6	-0.6	-0.7	-0.3
Unemployment rate	14.8	12.6	8.7	6.8	6.1	5.8	5.4	5.2
GDP deflator (y-o-y)	3.1	1.0	1.0	2.4	7.5	10.1	4.6	3.2
Harmonised index of consumer prices (HICP, y-o-y)	4.1	2.7	1.1	2.8	12.1	11.0	3.1	3.6
HICP excluding energy and unprocessed food (y-o-y)	3.0	2.5	1.4	3.4	10.4	11.4	3.5	3.3
Nominal compensation per employee (y-o-y)	8.4	3.8	4.2	6.9	5.5	10.4	7.8	6.4
Labour productivity (real, hours worked, y-o-y)	4.9	1.8	2.7	4.6	-2.3	0.8	1.6	2.3
Unit labour costs (ULC, whole economy, y-o-y)	1.9	2.0	3.3	1.4	5.4	8.9	5.7	3.5
Real unit labour costs (y-o-y)	-1.1	1.0	2.2	-0.9	-1.9	-1.1	1.0	0.4
Real effective exchange rate (ULC, y-o-y)	5.8	2.2	1.4	1.2	1.3	0.9	0.5	0.9
Real effective exchange rate (HICP, y-o-y)	7.0	2.6	0.4	0.0	2.0	4.4	.	.
Net savings rate of households (net saving as percentage of net disposable income)	0.6	1.7	3.4	4.2	-1.7	-0.1	.	.
Private credit flow, consolidated (% of GDP)	7.7	6.0	5.3	4.5	8.4	2.3	.	.
Private sector debt, consolidated (% of GDP)	48.5	66.5	87.7	92.6	93.6	85.5	.	.
of which household debt, consolidated (% of GDP)	13.1	24.6	39.7	47.0	47.1	44.0	.	.
of which non-financial corporate debt, consolidated (% of GDP)	35.4	42.0	48.0	45.6	46.5	41.5	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (1)	1.5	3.4	3.2	1.7	1.5	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	-2.6	3.6	0.7	-1.2	-4.8	5.0	3.5	3.4
Corporations, gross operating surplus (% of GDP)	30.9	30.8	28.5	25.5	23.6	28.2	27.2	26.6
Households, net lending (+) or net borrowing (-) (% of GDP)	-0.1	0.7	1.6	2.3	-1.3	-0.2	0.9	0.1
Deflated house price index (y-o-y)	.	-3.6	5.3	3.0	1.3	-9.2	.	.
Residential investment (% of GDP)	3.0	2.9	3.1	4.0	4.4	3.7	.	.
Current account balance (% of GDP), balance of payments	-7.2	-3.6	-1.5	-4.0	-7.3	-1.6	-2.8	-3.2
Trade balance (% of GDP), balance of payments	-2.8	-0.2	1.7	0.2	-5.2	1.8	.	.
Terms of trade of goods and services (y-o-y)	-0.7	-1.2	-0.3	-0.9	-3.9	0.3	0.7	-0.2
Capital account balance (% of GDP)	0.2	1.3	1.2	1.1	1.1	1.1	.	.
Net international investment position (% of GDP)	-47.2	-61.4	-65.9	-60.5	-60.9	-53.9	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) (2)	0.3	-9.9	-14.6	-14.4	-18.2	-14.6	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) (2)	43.4	57.1	84.2	120.8	91.0	84.1	.	.
Export performance vs. advanced countries (% change over 5 years)	.	.	4.1	2.1	-3.4	-1.4	.	.
Export market share, goods and services (y-o-y)	.	.	.	.	.	.	.	.
Net FDI flows (% of GDP)	-5.7	-2.0	-0.6	-1.3	-2.1	-0.1	.	.
General government balance (% of GDP)	-2.7	-5.4	-2.4	-5.2	-1.7	-4.9	-5.9	-5.4
Structural budget balance (% of GDP)	.	.	-2.3	-5.3	-1.9	-4.7	-5.6	-5.3
General government gross debt (% of GDP)	34.6	40.1	52.2	61.1	57.7	56.0	58.5	59.9

(1) domestic banking groups and stand-alone banks, EU and non-EU foreign-controlled subsidiaries and EU and non-EU foreign-controlled branches.
(2) NIIP excluding direct investment and portfolio equity shares.
Source: Eurostat and ECB as of 2024-5-17, where available; European Commission for forecast figures (Spring forecast 2024).

This annex assesses fiscal sustainability risks for Slovakia over the short, medium and long term. It follows the multi-dimensional approach of the European Commission's 2023 Debt Sustainability Monitor, updated based on the Commission 2024 spring forecast.

1 – Short-term risks to fiscal sustainability are low. The Commission's early-detection indicator (S0) does not point to any major short-term fiscal risks (Table A21.2) ([136]). Government gross financing needs are expected to increase to around 11% of GDP on average over 2024-2025 (Table A21.1, Table 1). The sovereign credit rating has been steadily improving and has returned to investment grade at two of the four major rating agencies by the cut-off date of this report.

2 – Medium-term fiscal sustainability risks appear high.

The DSA baseline shows that the government debt ratio is expected to increase at a high level in the medium term (at around 106% of GDP in 2034) (Graph 1, Table 1) ([137]). The debt increase is driven by the assumed structural primary deficit (excluding changes in cost of ageing) of 4.3% of GDP as of 2024. Compared to historical data since 1980, this appears plausible as most past fiscal positions were more stringent than the one assumed in the baseline (Table A21.2) ([138]). The debt dynamics benefit from a favourable, although declining, snowball effect of -0.8 pp. of GDP annually on average over 2025-2034, additionally supported by the impact of Next Generation EU.

The baseline projections are stress-tested against four alternative deterministic scenarios to assess the impact of changes in key assumptions relative to the baseline (Graph 1). Under the *historical structural primary balance (SPB) scenario* (i.e. the SPB returns to its historical 15-year average of -2.0% of GDP) the debt ratio would be lower than under the baseline by about 18 pps. in 2034. However, under the *adverse interest-growth rate differential scenario* (i.e. the interest-growth rate differential deteriorates by 1 pp. compared with the baseline), the debt ratio would be higher than under the baseline by about 7 pps. in 2034. Under the *financial stress scenario* (i.e. interest rates temporarily increase by 1 pp. compared with the baseline) the government debt ratio would be almost unchanged compared with the baseline in 2034. Finally, under the *lower structural primary balance scenario* (i.e. the projected cumulative improvement in the SPB over 2023-2024 is halved) the debt ratio would be higher than under the baseline by around 4 pps. in 2034.

The stochastic projections indicate low risk, pointing to the low sensitivity of these projections to plausible unforeseen events ([139]). These stochastic simulations indicate a 96% probability that the debt ratio will be higher in 2028 than in 2023, implying medium risks given the current high debt level. In addition, the uncertainty surrounding the baseline debt projections (as measured by the difference between the 10th and 90th debt distribution percentiles, reaching around 27 pps. of GDP in five years' time) is low (Graph 2).

3 – Long-term fiscal sustainability risks appear overall high. This assessment is based on the combination of two fiscal gap indicators,

([136])The S0 is a composite indicator of short-term risk of fiscal stress. It is based on a wide range of fiscal and financial-competitiveness indicators that have proven to be a good predictor of emerging fiscal stress in the past.

([137])The assumptions underlying the Commission's 'no-fiscal policy change' baseline include in particular: (i) a structural primary deficit, before changes in ageing costs, of 4.3% of GDP from 2024 onwards; (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 ahead); (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; (iv) real GDP growth rates from the Commission 2024 spring forecast, followed by the EPC/OGWG 'T+10 methodology projections between T+3 and T+10 (average of 1.7%); (v) ageing costs in line with the 2024 Ageing Report (European Commission, Institutional Paper 279, April 2024). For information on the methodology, see the 2023 Debt Sustainability Monitor (European Commission, Institutional Paper 271, March 2024).

([138])This assessment is based on the fiscal consolidation space indicator, which measures the frequency with which a tighter fiscal position than assumed in a given scenario has been observed in the past. Technically, this consists in looking at the percentile rank of the projected SPB within the distribution of SPBs observed in the past in the country, taking into account all available data from 1980 to 2023.

([139])The stochastic projections show the joint impact on debt of 10,000 different shocks affecting the government's budgetary position, economic growth, interest rates and exchange rates. This covers 80% of all the simulated debt paths and therefore excludes tail events.

capturing the required fiscal effort to stabilise debt (S2 indicator) and bring to 60% of GDP (S1 indicator) over the long term ([140]). This assessment is driven by the unfavourable initial budgetary position and the projected increase in ageing costs. Hence, these results are conditional on the country maintaining a sizeable SPB over the long term and duly implementing sustainability-enhancing pension reforms.

The S2 indicator points to high fiscal sustainability risks. The indicator shows that, relative to the baseline, the SPB would need to improve its fiscal position by 9.1 pps. of GDP to ensure debt stabilisation over the long term. This result is underpinned by the unfavourable initial budgetary position (contribution of 4.6 pps.) and the projected increase in ageing-related costs (4.4 pps.). Ageing costs' developments are primarily driven by the projected increase in public pension expenditure (1.9 pps.), followed by the projected increase in long-term care (1.2 pps.) as well as health-care spending (1.1 pps.) (Table A21.1, Table 2). As several 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.

The S1 indicator points to high fiscal sustainability risks. The indicator shows that the country would need to improve its fiscal position by 7.8 pps. of GDP to reduce its debt to 60% of GDP by 2070. This result is mainly driven by the current unfavourable initial budgetary position (contribution of 4.2 pps.) and the projected increase in age-related public spending (3.6 pps.) (Table A21.1, Table 2).

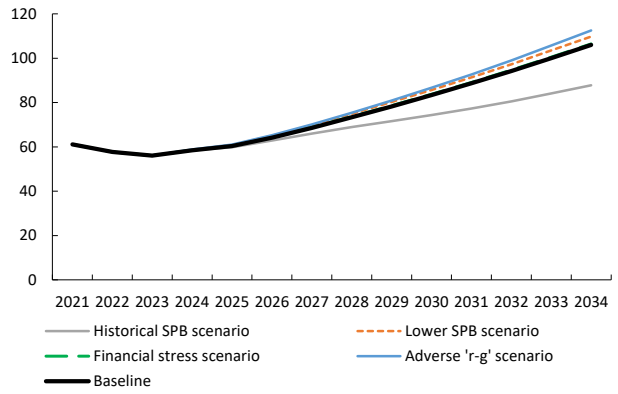
4 – Finally, several additional risk factors need to be considered in the assessment. On the one hand, risk-increasing factors are related to an unfavourable net international investment position, contingent liability risks stemming from the banking sector, and the moderate share of government debt held by non-residents. On the other hand, risk-mitigating factors are related to the structure of debt. In particular, the low share of short-term government debt and the fact that the totality of government debt is denominated in euro (thus excluding currency risks) help to mitigate debt sustainability risks.

([140])The S2 fiscal sustainability indicator measures the permanent SPB adjustment in 2025 that would be required to stabilise public debt in the long term. It is complemented by the S1 indicator, which measures the permanent SPB adjustment in 2025 to bring the debt ratio to 60% 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 % of GDP, 'medium risk' if it is between 2% and 6% of GDP, and 'low risk' if the effort is negative or below 2% of GDP. The overall long-term risk classification combines the risk categories derived from S1 and S2. S1 may notch up the risk category derived from S2 if it signals a higher risk than S2. See the 2023 Debt Sustainability Monitor for further details.

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

Table 1. Baseline debt projections	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Gross debt ratio (% of GDP)	**61.1**	**57.7**	**56.0**	**58.5**	**60.4**	**64.2**	**68.6**	**73.3**	**78.2**	**83.4**	**88.7**	**94.2**	**100.0**	**106.0**
Changes in the ratio	2.2	-3.3	-1.7	2.4	1.9	3.8	4.4	4.7	4.9	5.1	5.3	5.5	5.8	6.0
of which														
Primary deficit	4.1	0.6	3.7	4.5	4.6	4.9	5.3	5.5	5.7	5.8	6.0	6.1	6.2	6.4
Snowball effect	-2.9	-4.3	-5.0	-2.3	-2.1	-1.1	-0.9	-0.8	-0.7	-0.7	-0.6	-0.6	-0.4	-0.4
Stock-flow adjustments	1.0	0.3	-0.5	0.2	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross financing needs (% of GDP)	7.9	4.4	10.1	11.5	11.0	12.3	13.1	13.8	14.4	15.0	15.6	16.3	16.9	17.7

Graph 1. Deterministic debt projections



Graph 2. Stochastic debt projections 2024-2028

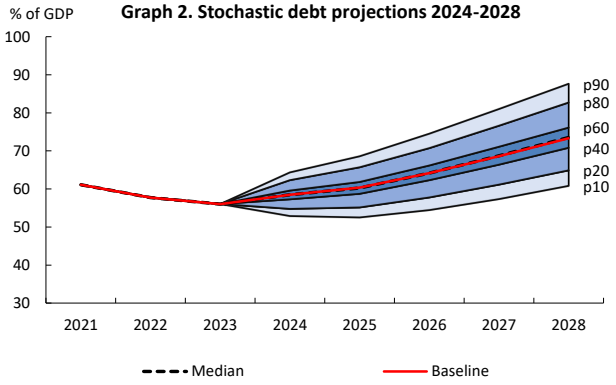


Table 2. Breakdown of the S1 and S2 sustainability gap indicators

		S1	**S2**
Overall index (pps. of GDP)		**7.8**	**9.1**
of which			
Initial budgetary position		4.2	4.6
Debt requirement		0.0	
Ageing costs		3.6	4.4
of which	*Pensions*	1.8	1.9
	Health care	0.9	1.1
	Long-term care	0.7	1.2
	Education	0.2	0.2

Source: Commission services

Table A21.2:**Heat map of fiscal sustainability 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	**HIGH**	**MEDIUM**	**HIGH**	**HIGH**	**HIGH**	**LOW**	**HIGH**	**HIGH**	**HIGH**
		Debt level (2034), % GDP	106.0	87.8	109.8	112.6	106.5				
		Debt peak year	2034	2034	2034	2034	2034				
		Fiscal consolidation space	86%	54%	93%	86%	86%				
		Probability of debt ratio exceeding in 2028 its 2023 level						96%			
		Difference between 90th and 10th percentiles (pps. GDP)						26.8			

(1) Debt level in 2034. Green: below 60% of GDP. Yellow: between 60% and 90%. Red: above 90%. (2) The debt peak year indicates whether debt is projected to increase overall over the next decade. Green: debt peaks early. Yellow: peak towards the middle of the projection period. Red: late peak. (3) Fiscal consolidation space measures the share of past fiscal positions in the country that were more stringent than the one assumed in the baseline. Green: high value, i.e. the assumed fiscal position is plausible by historical standards and leaves room for corrective measures if needed. Yellow: intermediate. Red: low. (4) Probability of debt ratio exceeding in 2028 its 2023 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 10000 different shocks. Green, yellow and red cells indicate increasing uncertainty. (For further details on the Commission's multidimensional approach, see the 2023 Debt Sustainability Monitor)

Source: European Commission (for further details on the Commission's multidimensional approach, see the 2023 Debt Sustainability Monitor)

Source: Commission services