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A REVIEW OF SLOVENIA'S INDUSTRIAL STRATEGY

POLICIES FOR A GREEN, INNOVATIVE, AND SMART ECONOMY

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A Review of Slovenia's Industrial Strategy: Policies for a Green, Innovative, and Smart Economy

Industrial policies have returned to the forefront of policy discussions as governments strive to support businesses amidst ongoing challenges such as productivity slowdown, climate change, natural disasters, and trade shocks. This paper reviews Slovenia's "Industrial Strategy 2021-2030 for green, creative and smart development" (SIS), designed to address these challenges through targeted policy instruments. Leveraging a variety of data sources, the review examines the strategy's design, governance, policy instruments, and their effectiveness in achieving Slovenia's objectives. Despite some unique characteristics, Slovenia shares many challenges with other OECD Members. Thus, the review of Slovenia's industrial strategy offers valuable lessons for designing and implementing similar strategies elsewhere. Key insights emerge not only for broad policy design—such as governance structures—but also for the three thematic pillars of the strategy: green, creative, and smart development.

Keywords: Industrial Policy, Industrial Strategy, Slovenia

JEL codes: L52, L53, O25, O38, Q58

The full report, *Review of the Slovenian Industrial Strategy* (OECD, 2025), summarized in this paper, is available here: [https://one.oecd.org/document/DSTI/CIIE\(2025\)3/FINAL/en/pdf](https://one.oecd.org/document/DSTI/CIIE(2025)3/FINAL/en/pdf).

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This paper draws on the results from the project “Review of the Slovenian Industrial Strategy 2021-2030 for green, creative and smart development” which was financed by the European Commission’s SG Reform as a Technical Support Instrument. This project aimed to measure the success and discuss the opportunities for improvement of the Slovenian Industrial Strategy, five years after its design. This paper aims to summarise the conclusions of the review and the lessons that can be drawn for other OECD countries. Another STI paper focuses on the governance aspect of the project and goes beyond the case of Slovenia.

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Executive summary

In an era of rapid technological change, geopolitical uncertainty, and pressing environmental concerns, governments around the world face a complex set of economic challenges. These include global supply chain disruptions, the slowdown in productivity growth, and the urgent need for sustainable development. In response, industrial strategies have emerged as a key tool for governments to steer economic transformation, strengthen strategic industries, and promote innovation. By setting clear priorities, aligning public and private investment, and leveraging various policy instruments, industrial strategies aim to address these challenges while ensuring long-term economic prosperity.

This paper presents a review of Slovenia's "Industrial Strategy 2021-2030 for green, creative and smart development" (SIS). The SIS was designed in 2019-2020 to address the challenges faced by Slovenian businesses through a clear vision and a set of targeted policy instruments. Leveraging the Quantifying Industrial Strategies (QuIS) database (Criscuolo, Lalanne and Díaz, 2022^[1]) as well as other databases such as corporate effective tax rates (OECD, 2024^[2]) and effective carbon rates (OECD, 2023^[3]) and additional data provided by Slovenia, this review examines the design of the strategy, its policy instruments and their effectiveness in achieving Slovenia's objectives, taking into account the new context of 2024-2025. The full report (OECD, 2025^[4]), summarized in this paper, provides recommendations on how to better align policy tools with strategic goals for the second half of the decade.

The Slovenian business sector has specificities, including a strong manufacturing sector with several large energy-intensive industries and many small firms. Despite these unique characteristics, Slovenia shares many challenges with OECD Member countries, including slow productivity growth, strong regional economic integration, the need to accelerate the transition to a low-carbon and digital economy and the desire to improve economic resilience to potential supply chain disruptions. Given these shared traits, the review of Slovenia's industrial strategy offers valuable lessons for designing and implementing similar strategies elsewhere. Key insights emerge not only for broad policy design—such as governance structures—but also for the three thematic pillars of the strategy: green, creative, and smart development.

Green Transition

The first pillar of Slovenia's industrial strategy focuses on supporting the green transition. Slovenia's large manufacturing sector has started to decarbonise, but declining emissions have not shielded it from the energy crisis of 2022. Ensuring a successful energy transition for businesses will require a mix of regulatory measures, carbon pricing and supportive incentives. Slovenia has a relatively high and broad-based carbon price, but further standardisation across different fuel types and greater predictability of future carbon price could enhance its effectiveness.

As a complement to carbon pricing, tax incentives, grants, and financial instruments can encourage investments in clean technologies. However, these measures come with fiscal costs and risks, such as windfall gains and market distortions. Slovenia's Green and Digital Investment Allowance (GDIA) supports specific clean technologies but overlaps with the general investment allowance. Reducing the benefits of the latter could improve the GDIA's effectiveness. Furthermore, grant programmes aimed at decarbonisation could focus more on the manufacturing sector and be more ambitious.

Creativity and Innovation

The second pillar of the strategy emphasizes creativity and innovation, which are essential for long-term productivity gains. A key challenge for Slovenia remains the low productivity of businesses, which continue to lag behind their peers. This underscores the need for a balanced policy mix that supports investment in both tangible and intangible capital, as well as human capital. Innovation is the primary driver of productivity growth across OECD Member countries, yet Slovenia is not among the leaders in this area. Strengthening the design and evaluation of existing policy instruments is essential, while considering the introduction of complementary policies.

Like many OECD Members, Slovenia offers grants and tax incentives to support research and development. However, these instruments could be better designed to maximize impact, particularly in fostering radical innovation. Small and young firms may require larger grants, greater flexibility, and more predictable funding. Slovenia could also stimulate business R&D through corporate taxation reforms and capital market improvements. Expanding financial instruments—especially government-backed venture capital—could help Slovenian startups secure the funding they need to grow.

Smart Economy

The third pillar of the strategy aims to transform Slovenia into a knowledge-based, technologically advanced economy. While the case for direct government intervention in digital technology adoption is not always clear-cut, there is a strong rationale for supporting digital skill development—especially in a tight labour market.

Slovenia could prioritise lifelong learning and workforce skills development. Industrial policies can incentivise firms to provide employee training, but education and training policies are also crucial. Ensuring that both young people in formal education and working-age adults acquire necessary skills is essential for navigating rapid technological change. This highlights the importance of aligning industrial strategies with broader national and regional policies.

Governance

As evidenced by the policies supporting the green transition and innovation, industrial strategies demand coordination and strategic planning. The review examined diverse policy areas, from taxation and labour markets to housing, gender and infrastructure, that can contribute to industrial success if government agencies collaborate effectively. Slovenia, with its relatively streamlined strategy, may have avoided some of the coordination challenges observed in larger economies, yet opportunities remain to reduce the number of institutions involved and improve their alignment.

The Review also highlights the importance of the European level. Given growing concerns about resilience, the European Union (EU) provides an optimal platform for supporting the business sector in tackling global challenges. However, Slovenia should also reduce its reliance on EU funding to avoid gaps between seven-year funding cycles and could play a greater role in strategic initiatives like Important Projects of Common European Interest.

Lastly, the report identifies areas where Slovenia could utilize evidence to better refine policies, such as skill data and R&D tax allowance evaluations. Enhancing data collection and evaluation cycles could strengthen policy effectiveness. This review represents a first step in that direction.

1 The role of industrial strategies in a world facing compounding crises

Governments around the world are confronted with multiple challenges: climate change is accelerating, the COVID-19 pandemic has revealed fragile supply chains, geopolitical turmoil has made resilience a priority, inflation has hurt economic growth and investment capacities and the energy price crisis of 2022-2023, which particularly affected businesses in the EU relative to their global competitors, has harmed European industry competitiveness, highlighting tensions with climate objectives (OECD, 2024^[5]).

Industrial policy, defined in this work as a set of “interventions intended to improve structurally the performance of the domestic business sector” (Criscuolo et al., 2022^[6]), has made a comeback as a response to these compounded crises. Industrial policy is now called upon to address goals beyond competitiveness and innovation, including accelerating the green transition and increasing resilience of global supply chains. However, industrial policies are costly. They come with fiscal costs at a time when governments are attempting to reduce public spending after COVID-19 recovery packages. They also carry numerous risks if not well designed, including market distortions and political capture.

As governments increasingly discuss industrial policy goals and instruments, one way to put it together is by formalising an industrial strategy for the country, based on a diagnosis of the economy’s strengths and weaknesses and a vision of what could be accomplished (Criscuolo, Guillouet and Lalanne, 2024^[7]). The strategy can bring together the relevant stakeholders and help steer the economy and the government’s actions in the same direction. Slovenia’s Industrial Strategy 2021-2030 for green, creative and smart development (SIS) is precisely an attempt to do so and to rationalise how the government can support firms to achieve this goal. It was designed in 2019-2020 to address the slowdown of labour productivity growth and to accelerate the green and digital transition in a systemic way (Box 1).

The objective of this paper, which summarises the full report (OECD, 2025^[4]), is to present the results of a review of the Slovenian Industrial Strategy conducted by the OECD with financial support from the European Commission’s SG Reform via the Technical Support Instrument 23SI07. The project aimed to measure the success and discuss the opportunities for improvement of the Slovenian Industrial Strategy, five years after its design. The review (OECD, 2025^[4]) leverages the Quantifying Industrial Strategies (QuIS) database (Criscuolo, Lalanne and Díaz, 2022^[1]), other OECD data sources, previous advice given to specific Member countries, the academic literature, and both quantitative and qualitative data provided by Slovenia. Importantly, the analysis takes the policy priorities as given and discusses the relevance and effectiveness of the set of policy instruments that were put in place to achieve the strategy. The objective of the review was not to make recommendations on what priorities should be at the heart of a *new* industrial strategy, although, if designed today, the SIS would have certainly taken into account recent policy developments at the European and global level.

Although the project and this report focus on one country, Slovenia has characteristics similar to many OECD Member countries, which also face the same challenges discussed above. As a small open economy, Slovenia is highly dependent on its European partners, their policies and European policies. Therefore, the findings and recommendations of this report can be useful for countries which have the ambition to support their industry in this uncertain era, including by investing in human capital, accelerating the adoption of digital and green technologies, and fostering innovation.

The paper starts with a diagnosis of the strengths and weaknesses of Slovenia's business sector. It then follows the logic of the SIS with a chapter on each of the three pillars (green, creative and smart). However, the strategy and the review have gone beyond that, so the paper turns to complementary policies and the institutional governance of industrial policy. The paper ends by listing lessons learned beyond Slovenia.

Box 1. The Slovenian Industrial Strategy 2021-2030 for green, creative and smart development

The strategy was designed in 2019-2020 by the (then) Ministry of Economic Development and Technology as a systemic response to low productivity growth and to put Slovenia on a green and digital transition path. Note that the scope of the strategy is not only the manufacturing sector, which is sometimes referred to as “industry”, but the entire business sector. This is explicit in the document and is explained by the fact that the frontiers between manufacturing and services have become blurred with increasing interaction in all branches. The need to encompass the entire business sector is also noted by Criscuolo et al. (2022^[6]). This review therefore also addresses the entire business sector.

The predecessor of the SIS, the Slovenian Industrial Policy 2014-2020, was seen as lacking a “whole of government” perspective. By contrast, the SIS is purportedly wide and refers to all relevant national strategies, such as the Smart Specialisation Strategy or the Slovenian Development Strategy. The SIS specifies the role of the relevant institutions such as other ministries (e.g. Ministry of Infrastructure) and public agencies (e.g. the Slovenian business development agency SPIRIT). This is good practice (Criscuolo, Guillouet and Lalanne, 2024^[7]) and was achieved thanks to the consultation of the relevant stakeholders during the design of the strategy, which was prolonged to the end of 2021 to take into account the effects of the COVID-19 crisis.

The strategy has a rather long list of objectives. The “umbrella” objective is to achieve a 4% yearly growth of labour productivity. It is accompanied by performance objectives in terms of export, investment and other economic indicators. In addition, there are three sets of objectives with regards to the three pillars (green, creative and smart) of the strategy. The main indicator for green development is resource productivity: Slovenia aims to achieve EUR 3.5 of constant (2015) PPP GDP per kg of domestic material consumption in 2030, up from EUR 1.9 in 2018. Other green development indicators include total greenhouse gas emissions (goal of -36% in 2030 compared to 2005) and emissions productivity (goal to reach the EU average in 2030). The main indicator for creative development is the EU's innovation Scoreboard, a composite indicator of innovation performance. Slovenia wants to achieve 110% of the EU average by 2030, up from 85% of the EU average in 2020. The main indicator for smart development is the EU's Digital Economy and Society Index, also a composite. Slovenia aims to be in the 9th place by 2030, up from the 16th place in 2020.

The scope of the strategy is wide, with fourteen “measures or instruments” in five different “areas”: research, development and innovation (R&D&I), entrepreneurship, internationalisation, human resources and business environment. A table indicates how each measure or instrument contributes to the objectives. In addition, each of the measure gives way to an estimated budget and a list of “guidelines”, which includes both objectives and policy instruments.

The instruments with the largest budgets target R&D&I. The first set of measures, called “Research, Development and Innovation”, has the largest budget at EUR 4 billion for 2021-2030 (6% of the 2023 GDP over ten years, or approximately 0.6% of GDP / year). The two measures with the largest budget after R&D&I are promotion of investment (entrepreneurship area) and infrastructure (business environment area), each at EUR 300 million. The headlines of the SIS measures do not include the words “green” or “smart”, but the instruments' description sometimes include green or smart elements.

Source: Republic of Slovenia (2022^[8])

2 Main features of the Slovenian economy and ongoing challenges

Stepping away from the most recent events and crises, this section attempts to identify the main strengths and weaknesses of the Slovenian economy. They are analysed below by comparing Slovenia with two sets of benchmark countries (Box 2).

Box 2. Benchmarks used in this paper

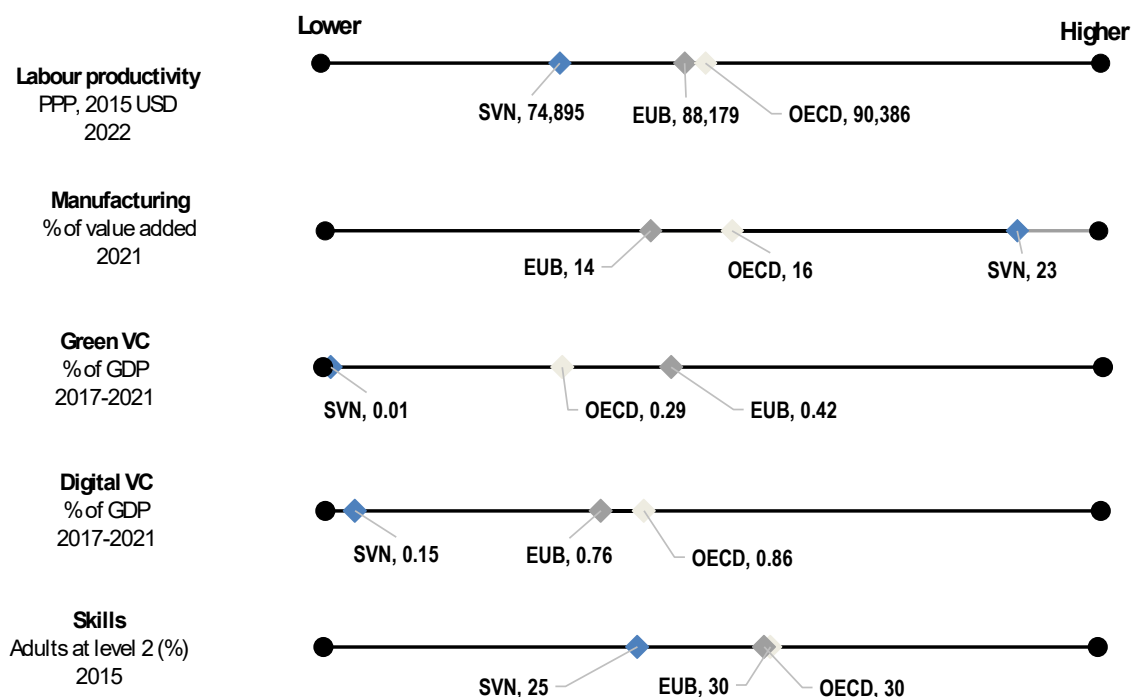
Where relevant, Slovenian data is compared against two groups of benchmark countries:

- OECD: this benchmark averages the 37 other OECD member countries.
- Small European Countries (or “EUB” in some figures, which stands for European benchmark): this benchmark averages 14 European countries among OECD member countries with a GDP equal to at most six times Slovenia's GDP. These countries are Austria, Czechia, Denmark, Estonia, Finland, Greece, Hungary, Iceland*, Latvia, Lithuania, Luxemburg, Norway*, Portugal, Slovak Republic (where * indicates European countries that are not part of the European Union).

Over the past decade, Slovenia has experienced a steady increase in labour productivity. Despite this progress, productivity levels remain below the OECD and small European country averages, reflecting the weak growth of real productivity. In 2022, GDP per person employed in Slovenia reached USD 74 895, up from USD 66 810 in 2012, but remained significantly lower than the OECD average of USD 90 386 and the small European country average of USD 88 179 – all in constant 2015 USD PPP (Figure 1.). A similar trend is observed in GDP per hour worked, which increased from USD 40.7 in 2012 to USD 46.5 in 2022 (constant 2015 USD PPP), yet still lags peer countries. These trends reflect low capital accumulation, which has been slowing down productivity growth in Slovenia since the mid-2000s. By contrast, Total Factor Productivity (TFP) gains were observed since the Global Financial Crisis and Slovenia has benefitted from increases in average human capital accumulation (UMAR, 2023^[9]). During the energy price crisis, large productivity losses in manufacturing implied a setback for Slovenia as a whole, as manufacturing was traditionally a driver of aggregate productivity growth. Accelerating productivity growth, especially in manufacturing, is key for Slovenia to simulate growth and employment creation, and it is one of the main objectives of the Slovenian Industrial Strategy.

Slovenia has a large and diversified manufacturing base. Manufacturing accounts for 23% of Slovenia's value added, third among EU countries. The Slovenian manufacturing sector is not dominated by one particularly large subsector, although metallurgy (fabricated metals and basic metals) accounts for 20% of the manufacturing sector's value added. Manufacturing is also an important sector for the Slovenian economy because it accounts for 22% of its total greenhouse gas emissions (GHG), when including the heat sector in the numerator. This motivates the focus of the Slovenian Industrial Strategy (and of a large part of this report) on the challenges faced by the manufacturing sector, although the aim is to go beyond just manufacturing to address issues faced by the business sector as a whole.

Figure 1. Overview of Slovenia's performance



Note: For each variable in the figure, the "Higher" and "Lower" scales are determined by selecting the third highest and third lowest values from the available countries (top and bottom 5% of the distribution across OECD Member countries).

Source: Labour productivity (OECD), Manufacturing (OECD STAN), Venture Capital (OECD STI Micro-data Lab), Skills (OECD PIAAC)

Slovenia is a small open economy highly integrated in the European single market, but not particularly exposed to global trade risks. Slovenia trades intensively with foreign countries (the aggregation of import and export value is worth 180% of GDP), particularly with other members of the European Union and Switzerland. Due to its diversified industrial base and its high integration in the EU, as of 2019¹, Slovenia is less exposed than comparable European economies in terms of its exports to non-EU countries. The value of its Foreign Market Reliance index on non-EU countries (which uses the OECD's Inter Country Input Output sectoral data and the UN Comtrade's product-level data) is 13.7%, against 15% for other EU countries. This index accounts for both direct and indirect exposure, such as Slovenian firms selling goods to Austrian firms which then export to a non-EU country such as China (Schwellnus et al., 2023^[10]; Baldwin and Freeman, 2022^[11]). On the input side, Slovenia is less exposed than other comparable economies to imports from non-EU countries with a Foreign Input Reliance (FIR) of 14.1% against 15.1% for other EU economies). Some of the most exposed sectors to foreign input risks are the car industry, and parts of the metallurgy sector such as aluminium.

Supply chain resilience is not a priority in the Slovenian Industrial Strategy, reflecting the strengths of the Slovenian economy and global trends at the time of designing it. Many things have changed with the COVID-19 crisis, supply chain disruptions that followed, and a new outlook for international trade. For instance, although the pharmaceuticals sector is not identified as particularly at risk based on the 2019 FIR numbers, imports of pharmaceuticals goods have doubled in the last five years. Specifically, imports of Chinese pharmaceutical goods have almost tripled², which could raise concerns. Moreover, given the recent geopolitical developments and the growing possibility of trade wars, strategic autonomy and resilience are becoming more important, as reflected in the rather negative outlook of Slovenian firms as of February 2025 (European Investment Bank, 2025^[12]). Therefore, these themes could take a larger space in the Slovenian industrial policy going forward.

Slovenian firms face the double challenge of the green and digital transitions, just like many firms across the world. With respect to the green transition, the Slovenian economy is doing relatively well overall with a reduction of emissions of 22% in 2022 compared to 2005. This is on par with EU member countries (-24.5%) according to the Air Emissions Accounts. Firms have played an important role in this reduction and continue to do so, as reflected in investment surveys (European Investment Bank, 2025^[12]). At the same time, because of its relatively large manufacturing sector and its historic reliance on its coal-fired power plant, several large, energy-intensive sectors are more GHG-intensive in Slovenia than elsewhere in the OECD. At 231 g of CO₂eq/kWh, Slovenia's electricity sector is more carbon-intensive than the small European benchmark average (188 g of CO₂eq/kWh) but slightly less than the EU average. It is expected to become even greener when Slovenia retires its only remaining coal-fired power plant. At this stage, Slovenia has not decided what will replace the power plant in the medium term: either more renewables or more nuclear energy, while energy imports will probably increase in both cases.³

Maintaining and increasing competitiveness requires investment, especially in the context of the digital transition. However, the investment rate has historically been lower in Slovenia (18% of GDP in 2016) than in benchmark countries (22%). Investment has risen to catch up with the European and OECD peers recently to 24-25% of GDP in 2022, but this positive trend is mostly explained by an increase of investment made by the public sector and private investment plateaued in 2024 (European Investment Bank, 2025^[12]). Moreover, the share of investment focused on digital technologies is lower (5% of total investment) than elsewhere (12%). This is reflected in a relatively lower adoption of digital technologies, although some advanced technologies (e.g. 3D printing, Internet of Things) are more likely to be adopted by Slovenian firms than by their European peers (European Investment Bank, 2025^[12]). While the high share of small firms in Slovenia explains part of the digital gap, another source of concern is the lack of supply of skilled personnel. Indeed, Slovenian businesses report facing a shortage of high-skill workers, especially workers with digital skills and soft skills.

Slovenian firms also appear to be less innovative than their peers, raising concern for future productivity growth, especially in the context of the green and digital transitions. Although aggregate business expenditure on R&D (1.6% of GDP) is at the same level as the OECD average and higher than the small European benchmark (1.1%), the production of top scientific publications and the filing of patents is lower in Slovenia (5 patents per 100 000 inhabitants) than elsewhere (9 patents per 100 000 inhabitants on average in small European countries and 12 in the OECD). The lower creativity of the Slovenian business sector is also reflected in a lower level of entrepreneurship and particularly the creation of startups (50 funded startups per million inhabitants in Slovenia between 2017 and 2021 vs 170 in small European countries and over 200 in the OECD according to data collected by the OECD from Venture Capital (VC) databases Dealroom and Crunchbase). Reflecting potentially both supply and demand issues, there is 10 times less VC investment in Slovenia as a share of GDP than in Small European countries. The supply of VC could be stimulated with industrial or capital market policies. Ultimately, the low supply of startups could be linked to skills and cultural traits, such as a reluctance to take risks (GEM, 2023^[13]), which can only be changed to some extent, and in the long term, through educational and cultural changes.

Although Slovenia's fundamental education system appears to perform well and a large share of the population has received some tertiary education, a higher share (25%) of Slovenian workers lacks basic skills such as literacy and numeracy compared to the OECD average (around 20%), according to the PIAAC survey realised in 2015 (Slovenia did not participate in a more recent round of the survey). Since then, the situation may have improved following increases in the educational attainment rates. However, businesses also report shortages of high-skilled workers, especially in fields related to Information and Communication Technologies (ICT). Educational programmes at all levels including for working adults could put more emphasis on these skills. Another option is to attract foreign workers, which is currently difficult especially for non-EU citizens due to both economic and administrative issues.

3 Reform options for green development

Slovenia aims to reduce the environmental impact of the business sector, including GHG emissions, in line with the European Union's goal of becoming climate neutral by 2050. This is challenging given the large size of Slovenia's Energy-intensive industries (EIs)⁴, which generate 50% of the value added of Slovenia's manufacturing. Their emissions have decreased rapidly over time, reflecting an increasing emissions productivity which has helped Slovenia keep a small "revealed comparative advantage".⁵ Nevertheless, in a context of intense global competition, the value added of most of these industries has stagnated over the last twenty years, as in the rest of Europe (Dechezlepretre et al., 2024^[14]). Most recently, these sectors have been severely affected by the 2022 energy price crisis. A stark example in Slovenia is the aluminium producer Talum which halted production of primary aluminium.

Carbon pricing is the cornerstone of climate policies and may have contributed to the recent improvements of emissions, although it could be further strengthened. However, complementary policies are also necessary to support both the short-term and long-term competitiveness of the Slovenian business sector.

Strengthening the carbon price signal by enhancing its consistency and providing predictability

By providing a clear price signal for decarbonisation, carbon pricing can help steer firms' investments towards low-carbon production and avoid the risk of stranded assets in a net-zero future, hence helping firms maintain their long-run competitiveness in a low-carbon economy. However, carbon pricing can impact the short-run competitiveness of domestic firms, especially in a globalised world where climate mitigation policies differ widely across countries. Certain features of carbon pricing instruments may help preserve competitiveness of carbon-intensive production in the short run (e.g. free permits, exemptions), but can reduce incentives to invest in clean assets, harming firms' competitiveness in the long run.

While many policy instruments can be deployed to reduce carbon emissions, the principal appeal of carbon pricing is that, in contrast with other mitigation instruments, it encourages cost-effective abatement and at the same time it can raise public revenue (OECD, 2023^[3]). Moreover, carbon pricing creates permanent mitigation incentives, and it reduces rebound effects.⁶ Finally, while direct support measures for innovation are essential, evidence also shows that carbon pricing spurs innovation and investment in low-carbon technologies (Aghion et al., 2016^[15]; Calel and Dechezleprêtre, 2016^[16]).

In 2024, GHG emissions in Slovenia are priced through the European Union Emissions Trading System (EU ETS), fuel excise taxes and a carbon tax. The fuel excise taxes arise from Slovenia's energy tax (*Trošarina na energente*), which applies to specified uses of oil products, natural gas and coal and coke consumption, as well as a strategic stockpile on gasoil used for heating purposes, a surcharge on energy end-use efficiency and a surcharge for the promotion of electricity generation from renewable energy sources and high-efficiency cogeneration. The carbon tax appears under the form of a carbon charge which applies to certain fuel uses on top of the energy tax. Up until August 2024, it had a headline rate of EUR 17.3/tCO₂. In September 2024, the headline rate was revised to EUR 30.85/tCO₂.

The average price faced by CO₂ emissions from energy use in the industry sector is EUR 58/tCO₂, with disparities across subsectors and across fuels. These disparities arise from differences in carbon pricing instrument coverage as well as reduced rates and exemptions (Figure 2). The average permit price of the EU ETS over 2024 is of EUR 64.6/tCO₂.⁷ Emissions from the use of natural gas and “coal and other solid fossil fuels”, the two main fuel categories in the industry sector, when priced, face average tax rates of respectively EUR 23.6/tCO₂ and EUR 6.5/tCO₂.⁸ Non-renewable waste faces no fuel excise or carbon tax.

The industry sector faces broad carbon pricing coverage, with large shares of free allowances for certain subsectors. 92.5% of CO₂ emissions from energy use are covered by at least one carbon pricing instrument: the EU ETS or domestic fuel excise and carbon taxes. There is heterogeneity in the share of emission permits allocated for free across industrial subsectors. In Slovenia, heat providers receive the lowest share of free permits (6% of their surrendered permits⁹ were received for free in 2021), followed by the beverages, food and tobacco sector (22%). Energy-intensive industries, especially when they are exposed to trade (at risk of carbon leakage), receive higher shares of free permits: the non-ferrous metals industry receives the largest share (free permits even exceeded surrendered permits in 2021), followed by the textile and chemical (90%) and paper, pulp and print sectors (89%). Industrial process emissions are exclusively covered by the EU ETS (at 60%), but 84% of these emissions are covered by free permits.

Decarbonising the industry sector also requires decarbonising the power sector, especially for certain energy-intensive trade-exposed sectors (OECD, Forthcoming^[17]). Emissions from the electricity sector are exclusively and entirely covered by the EU ETS, with almost no free permits (1.8%).

The heavy reliance on the EU ETS for pricing industry and electricity emissions brings both advantages and challenges. A strength of ETSs is that they impose a uniform carbon price on emissions from different fuels and sectors (and EU countries in this case). This (i) helps avoid switching to fuels that may be less taxed but are as or even more carbon-intensive, and (ii) increases efficiency, by leaving it up to the polluters to decide how to cut emissions in the least costly manner. However, pricing emissions through ETSs comes with challenges related to the volatility of permit prices and the widespread use of free permits.

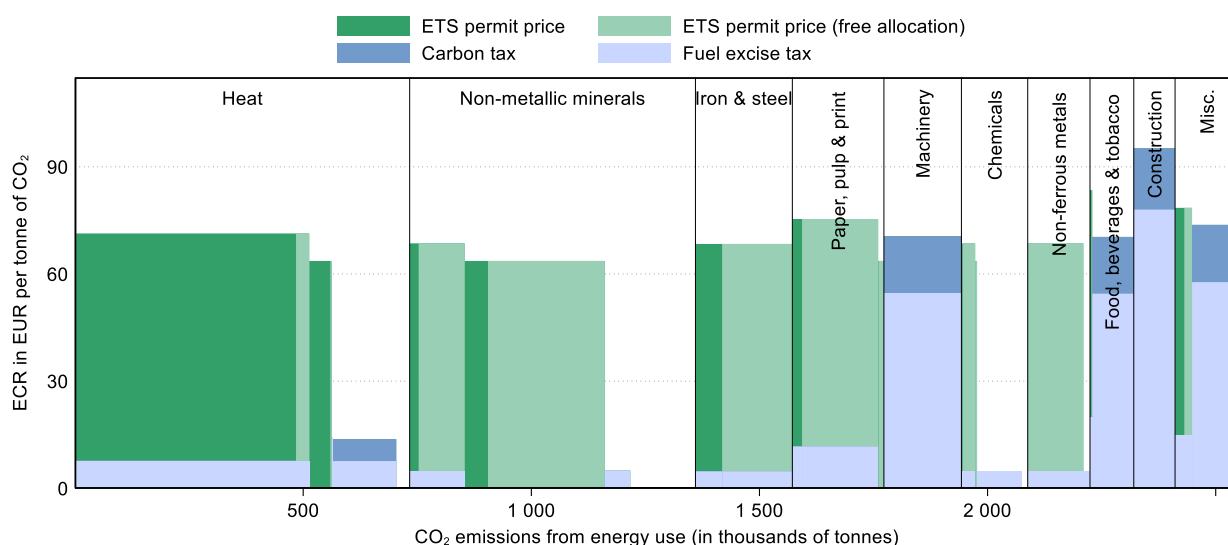
Permit prices are inherently volatile and cannot alone ensure a stable price signal for investment decisions. This uncertainty reduces the possibility for firms to plan, adapt and avoid investing in projects that may cause them to have stranded assets. It also lowers their incentives to invest in low-carbon technology and projects (Flues and van Dender, 2020^[18]; Berestycki et al., 2022^[19]). A price floor for ETS permit prices can decrease uncertainty and help firms plan and adapt (Anderson et al., 2021^[20]). It can also increase the effectiveness of the ETS in reducing emissions (Leroutier, 2022^[21]).

Free permits can ease competitiveness risks and carbon leakage and political acceptability concerns, but risk discouraging low-carbon investment and weaken incentives for green innovation (Flues and van Dender, 2017^[22]; Martin, 2013^[23]). They may also decrease the effectiveness of an ETS to reduce emissions (Dechezleprêtre, Nachtigall and Venmans, 2023^[24]). With the introduction of the European Union carbon border adjustment mechanism (CBAM), free permits are planned to be phased out, which would negatively impact value added of energy intensive industries in Slovenia (-0.2%) (Dechezleprêtre et al., 2025^[25]).

While fuel excise and carbon taxes may come with more certainty, the current heterogeneity in rates of fuel excise and carbon taxes in the Slovenian industrial sector does not provide incentives to switch to less carbon intensive fuels. Natural gas, while less carbon-intensive, faces higher fuel excise tax and higher carbon tax rates than coal and non-renewable waste. The carbon tax does not apply uniformly to all fuels: coal either faces a reduced rate or is exempt, and non-renewable waste is exempt. Exemptions from the carbon tax should be reserved for emissions covered by the EU ETS, otherwise they create incentives which are not aligned with decarbonisation objectives. The recent increase of the headline carbon tax rate (from EUR 17.3/tCO₂ to EUR 30.85/tCO₂), which came along with a decrease in fuel excise tax rates¹⁰, holds the promise of tax rates which could be more uniform across fuels. However, for more effectiveness, reduced rates present in the carbon tax design should increase.

Figure 2. Effective carbon rates by industrial subsector in Slovenia

Emissions-weighted average ECR, by industrial subsector and coverage type, Slovenia, 2024



Note: This figure shows CO₂ emissions from energy use excluding emissions from the combustion of biomass and the effective carbon rate they are subject to in the industry sector, by subsector¹¹ and instrument. Fuel excise tax and carbon tax rates are those applicable in July 2024 and the EU ETS permit price has been averaged from January to July 2024 (latest available date). CO₂ emissions from energy use are based on energy use data (2021) adapted from the International Energy Agency's World Energy Statistics and Balances (IEA, 2024^[26]). Tax coverage is for 2024 and ETS coverage is for 2021. Shares of permits allocated for free are for 2021 (OECD, 2023^[3]).

Source: OECD calculations.

Especially for energy-intensive, trade exposed, sectors, reducing industrial process emissions may warrant important investment needs and financial support (e.g. IEA and WBCSD (2018^[27]) for cement), requiring complementary policies such as grants or tax incentives to overcome existing investment barriers. However, grants and tax incentives carry important risks and costs, including costs from revenue foregone. Additional risks and costs involve providing windfall gains to projects that would have occurred anyway, economic distortions, implementation and complexities can be large. Using them sparingly and evaluating their costs and benefits is therefore crucial (IEA, 2021^[28]).

Reforming investment tax incentives to encourage green investment

Corporate tax incentives can support the adoption of clean investment, but they must be carefully designed to balance benefits and risks (Dressler and Warwick, forthcoming^[29]). Like other targeted support policy, tax incentives can be used as a complementary tool to carbon pricing to steer investment towards carbon-neutral alternatives and address remaining frictions to the adoption of clean technologies. These include frictions relating to immature technologies, adoption spillovers (like learning-by doing or network effects) and investment inefficiencies (like financing frictions and information gaps). The risks and costs highlighted above are relevant and need to be carefully evaluated and integrated in policymaking.

Slovenia uses CIT incentives to actively promote specific economic activities, including an investment allowance for green and digital investments (hereafter GDIA). This measure is available since January 2022 and allows taxpayers to deduct 40% of qualifying investment costs immediately from their tax base, on top of the regular schedule of fiscal depreciation. The GDIA is available for investments across six broad asset groups, including “Environmentally friendly technologies and decarbonising the energy industry, including green electricity generation, cogeneration systems, and electricity and energy storage

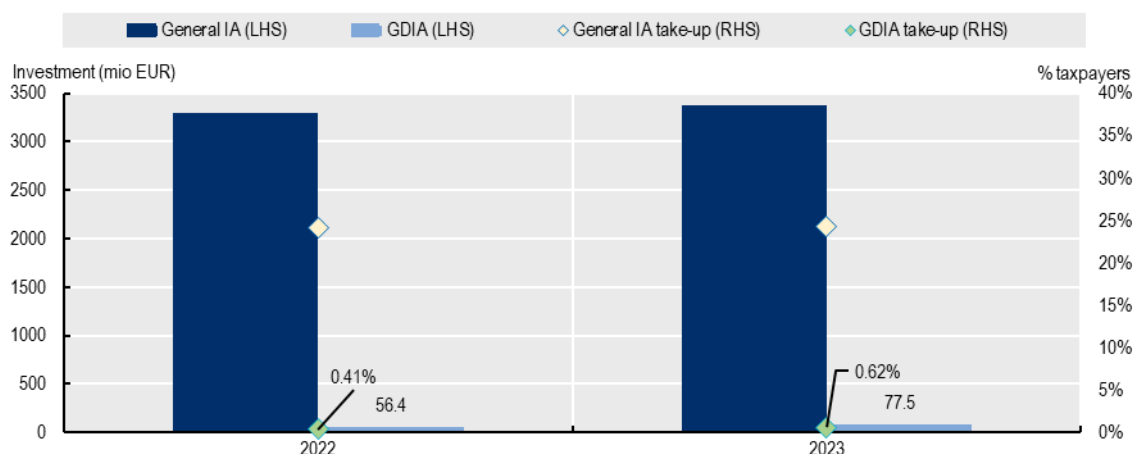
technologies". This targeting approach is broad and could be reformed to make sure technologies included in the list are actually those that are in need of support to break even.

Besides the GDIA, Slovenia has a more general investment allowance (herein the general IA, which existence preceded the GDIA) which is very similar in design but differs from the GDIA in the targeting. The general IA also provides a 40% deduction of qualifying investment costs immediately from the tax base, on top of the regular schedule of fiscal depreciation. Eligible investments include all types of tangible and intangible assets, excluding furniture, office equipment (except computer equipment), and motor vehicles (except hybrid or electrical cars and buses, and trucks or buses meeting emission requirements) (Republic of Slovenia, 2022^[30]).

The co-existence of the general IA alongside the GDIA is likely to reduce the additional impact of the GDIA for two main reasons. Firstly, the general IA offers the same degree of tax deduction as the GDIA. Secondly, there seems to be considerable overlap between the assets eligible for the two investment allowances. Eligible assets for the general IA are broadly defined, and many fixed assets under the GDIA would have already been eligible for the general IA. All else equal, there is no tax advantage conferred to green investments, and there even was an advantage in terms of flexibility of the general IA over the GDIA until 2025. These observations may go some way to explaining the extremely low take-up of the GDIA observed in its first two years of operation. Only 0.4% of all taxpayers in 2022 and 0.6% in 2023 used the GDIA, compared to around 25% of taxpayers using the general IA in each year (Figure 3). The total investment claimed under the GDIA (EUR 78 million) was worth just over 2% of that under the general IA (EUR 3 373 million) in 2023. It will be worth observing whether the recent change in the carry-over provision of the GDIA removing the tax advantage of the IA over the GDIA can help increase take up going forward, although the fact that the GDIA still does not have a tax advantage over the IA makes this unlikely.

Figure 3. So far, use of the GDIA is dwarfed by the general investment allowance

Total claimed investment, percentage of firms claiming the general investment allowance and the GDIA



Note: Figure shows data sourced from CIT returns in Slovenia. Total claimed investment is in nominal euros. Take-up is measured as the percentage of taxpayers claiming any positive amount of the corresponding allowance.

Source: Authors' illustration based on analysis provided by the Ministry of Finance.

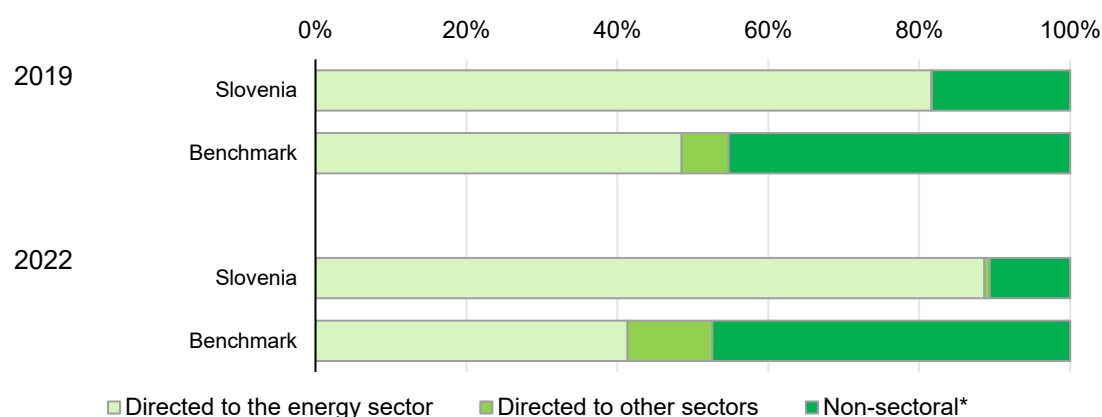
Reforming other green industrial policy instruments

Like the GDIA, grants and financial instruments targeting green projects can complement carbon pricing and incentivise firms to invest into green projects. However, there are downsides to these instruments, which are costly and may distort competition.

In 2022, 89% of the expenditure on “green” grants and reported tax expenditures for businesses in Slovenia supported the energy sector, representing 0.27% of GDP (Figure 4). This is more than other countries in the QulS database¹² (41% on average). Moreover, this share has increased in Slovenia since 2019, while it has decreased in other countries. The largest grant is “Support for electricity produced from renewable energy sources” and add “Other grants support the production of electricity by cogeneration plants”. Electricity production accounts for 22% of Slovenia’s GHG, and the decarbonisation of industry will require electrification. Hence, increasing the production of green electricity is necessary. However, renewables are mostly competitive on electricity markets and cogeneration emits greenhouse gas, so this focus on the energy sector might not be the most efficient use of limited public funds. Moreover, there seems to be an overlap in the support firms can receive from the GDIA for their investment costs and from green grants for their operational costs on the same projects.

Figure 4. Most of Slovenia’s green grants and tax expenditures are directed to the energy sector

Sectoral composition of structural green industrial policy expenditure, in terms of expenditure share (%) of total domestic expenditure on green grants and tax expenditures, 2022 vs 2019



Note: Reading example: in 2022, 90% of Slovenia’s expenditure on structural and green grants or tax expenditures was spent on policy instruments dedicated to greening the energy sector. Both the numerator and denominator include European support but exclude Covid support.

* “Non-sectoral” refers to policies that are not targeted to a specific sector.

Source: OECD calculations based on the QulS database. (Criscuolo et al., 2023^[31]).

Indeed, a further 22% of Slovenia’s GHG are due to the industry sector but, until recently, there were very few programmes targeting the decarbonisation of the manufacturing sector and these were typically not attributed following a competitive merit-based selection. The volume of grant schemes for industrial decarbonisation varies from year to year, linked to European funding, and these schemes (e.g. Eco Fund) are available for short-term projects, preventing firms from making long-term plans. In this context, the new 2024 support scheme for decarbonisation of industry (“Javni Razpis URE in razogljčenje v industriji”) introduced by the Ministry of Economy, Tourism and Sport through the Spirit agency is most welcome (EUR 21 million/year for 2025 and 2026). The budget comes from a NextGen/ RePower facility from the European Union. The stated objective of the public call is to support at least 22 companies for two-year projects focusing on energy-efficiency, electrification/introduction of renewable energy sources or hydrogen, or energy storage. However, the call appears to have been undersubscribed, maybe because of a lack of visibility on future funding and the complexity of state aid rules (General Block Exemption Rules - Aid for environmental protection) and of REPowerEU conditions.

An evaluation of this first call will be necessary to propose specific improvements, but several options are available for reform. Having two competitive calls for large projects, one for electricity and one for industrial decarbonisation, in addition to ad-hoc competitive calls for smaller projects (Eco Fund) seems ineffective because there are fixed costs to every call for projects and having separate calls generates less merit-

based competition. The potential overlap with the GDIA is also concerning. Slovenia could merge all the calls into one, having firms compete on marginal cost of abatement, while maintaining several tiers to support both mature technologies and riskier ones. An inspiring example is the Netherlands' SDE++ programme.

Alternatively, to reduce the cost of support to firms, Slovenia could develop its support through financial instruments such as loans or guarantees targeting decarbonisation projects. There are several small loan programmes available to firms at SID Banka and the Eco Fund, but they appear to have been undersubscribed, perhaps because the conditions are not favourable enough. Blended finance instruments (combining repayable and non-repayable elements) could help. It could also be that firms or their owners find green investments too risky. The introduction of the "SID green" lending instrument by SID Banka, bundled with the EIF's Sustainability Guarantee, is an exciting development to address these concerns.

Slovenia could also exploit the opportunities offered by centralised European funds for the green transition, especially regarding innovative projects through instruments such as the Important Projects of Common European Interest by conditioning part of the budget of domestic instruments on participation in such programmes. As of 2025, only one small project related to the use of hydrogen has been approved.

Recommendations on green development

To improve efficiency and effectiveness, increase the level of (or gradually phase out) reduced carbon tax rates and exemptions, particularly for coal.

Improve the predictability of the carbon price:

- Setting a trajectory over 5 or 10 years for the carbon tax can enhance certainty for investors and planning for firms, thus helping preserve competitiveness.
- A price floor for the ETS price could be considered (e.g. the UK, Netherlands).

Improve the design of the Green and Digital Investment Allowance (GDIA)

- Reconsider GDIA targeting approach to make sure technologies included in the current list are actually those that are in need of support to break even.
- Reconsider overlap of GDIA with the general investment allowance (IA). Reform options include (1) Phasing out the IA; (2) Expanding the relative generosity of the GDIA.

Consider increasing the volume of support for green projects outside of the energy sector.

- This could be funded by the reduction of support to the energy sector, as renewables are mostly competitive on electricity markets and cogeneration emits greenhouse gas.

Increase predictability of funding.

- Slovenia should allow firms to apply with longer investment projects and give firms an indication of future fund availability, regardless of European funds, which should be used as complements.

Consider merging the support scheme for clean electricity and the support scheme(s) for industrial decarbonisation into a single competition for carbon abatement projects.

- Reserving funding for less mature technologies is important, e.g. the Netherlands' SDE++

Consider reducing the overlap between different types of green support.

- Clarify if green projects can be eligible to multiple instruments and think about whether this overlap of support is necessary, especially for mature technologies such as renewables.

4 Reform options for creative development

Innovation is the engine of productivity growth in developed economies (Grossman and Helpman, 1994^[32]). Moreover, 35% of the global reductions in GHG needed to achieve the Net Zero objective by 2050 will require technologies that are still under development (IEA, 2023^[33]). In this context, positioning the "creative" dimension as one of the three central pillars of the Slovenian Industrial Strategy aligns with the broader goals of enhancing productivity and advancing "green" development. There are also important synergies with the "smart" dimension of the strategy. This section provides recommendations to incentivise research, development and innovation activities of existing firms and the creation of new firms.

Several institutions participate in Slovenia's innovation and entrepreneurship policies via strategies, instruments and incentives, but ultimately expenditure leans on entrepreneurship rather than innovation. In terms of expenditure, Slovenia spends 0.30% of GDP on grants targeting SMEs, more than twice the QuIS benchmark countries even when including both grants and tax expenditures (0.15% on average), but these grants do not necessarily focus on the creative aspect. The volume of financial instruments specifically targeting SMEs is only 0.07% of GDP in Slovenia, compared to 0.25% of GDP in other QuIS countries on average. Furthermore, Slovenia spends less than other countries in terms of grants and tax expenditures targeting R&D (0.20% of GDP vs 0.30% of GDP for the QuIS benchmark countries on average in 2022). This difference is driven by a smaller volume of tax expenditures (0.10% of GDP in Slovenia vs 0.20% in other countries on average), while the volume of R&D grants is similar to the QuIS benchmark (0.10% of GDP in Slovenia vs 0.08% of GDP in other countries). The volume of financial instruments specifically targeting R&D is small, similarly to other countries.

Reforming the design of R&D grants and the R&D tax allowance

Slovenia has a relatively generous tax incentive for R&D expenditure. Almost all OECD countries have at least one tax incentive for R&D expenditures (OECD, 2024b^[34]) and the evidence largely supports their effectiveness (OECD, 2023^[35]). The only tax incentive targeting R&D in Slovenia is the R&D investment tax allowance, which provides a 100% additional deduction of the tax base for eligible expenditures, up to a maximum of 63% of the tax base (this ceiling combines other allowances, and the loss carryover provisions). Given the relatively low CIT rate (19% in 2023, but 22% for 2024-2028) and accounting for the R&D tax allowance, Slovenia has one of the lowest effective average tax rates (EATRs) for R&D investments in the OECD. Furthermore, the country has an implied tax subsidy of 0.21 for the R&D expenditures of large, profitable firms, ranking in the top third of the OECD distribution, above the average of the European Union and the OECD.¹³

The R&D tax allowance is one of Slovenia's largest tax expenditures, and Slovenia's largest instrument targeting R&D. It represented a tax expenditure of EUR 55 million or 0.11% of GDP in 2021, which is close to the OECD average (it is lower than the QuIS average because the QuIS sample includes some of the most generous countries, such as France and the United Kingdom). The total amount of R&D expenditures qualifying for tax relief were EUR 292 million, i.e. less than 29% of the total amount of business

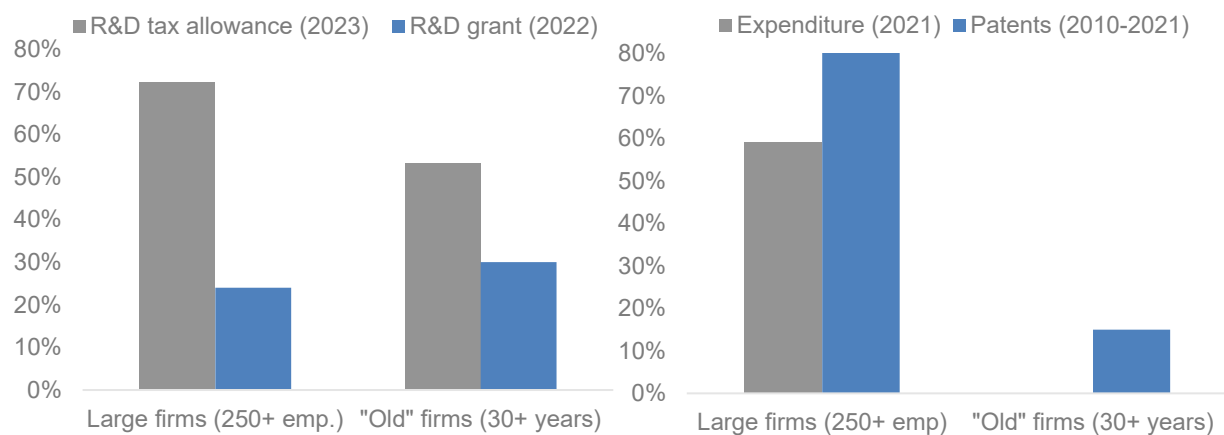
expenditures on R&D (BERD) in 2022 (more than EUR 1 billion), as reported by firms in Slovenia's national business R&D survey. While this may seem rather low and could be higher, Slovenia is not an exception in that respect (OECD, 2023, p. 43^[36]).

The R&D tax allowance is mostly taken up by larger and more established firms. 72% of the tax expenditure generated by the R&D tax allowance went to firms with more than 250 employees in 2023 (Figure 5, left panel). This is common across the OECD, as large firms account for most R&D expenditure overall – but only for 59% in Slovenia, suggesting an inefficiency. Moreover, the evidence suggests that R&D incentives are most effective for small firms (OECD, 2023^[35]). In addition, 53% of the tax expenditure is attributable to firms that have been operating for more than 30 years (Figure 5, left panel). This could be problematic, as older firms only account for 15% of Slovenian patents. The lower relative take-up of the R&D tax allowance by younger firms could contribute to the fact that younger firms face a higher average tax rate than older firms.¹⁴ This finding is not unique to Slovenia but could resonate more in Slovenia as the density of startups and especially innovative startups is low and the Slovenian Industrial Strategy places a special emphasis on startups.

To our knowledge, the R&D tax allowance has never been evaluated quantitatively. It would be important to evaluate its effectiveness, its value for money and the causes of the relatively low take-up, especially by young firms. Several options could be considered to address this concern and increase effectiveness, but their implications must be carefully weighted. Increasing refundability could increase take-up by young firms which are more likely to make losses, and therefore cannot benefit from the (non-refundable) allowance. However, increasing refundability is costly and can create tax planning opportunities¹⁵, so it should be accompanied by other design features such as conditionality for the refund (on firm size, on a minimum level of expenditure, on other tax bases, etc.) and a cap.

Figure 5. Large and established firms benefit more from the R&D allowance than small/young firms, who benefit more from grants.

Share of large and old firms in volume.



Source: Ministry of finance (tax allowance) and Ministry of Economy, Tourism and Sport (grant), OECD BERD (expenditure, not available by age) and OECD STI Microdata Lab (patents).

Slovenia also spends a lot on R&D grants, and they seem to work well. Slovenia spends almost the same amount on R&D grants (0.09% of GDP) as on R&D tax incentives. There are several calls for project administered by the Ministry of Economy, Tourism and Sport, the business agency SPIRIT or the innovation agency ARIS. Most calls for projects happen every year, do not target specific themes and seek

applications for two-year projects with budgets up to EUR 300 000. Two recent evaluation studies found that these grants had a positive impact on firms, both in terms of research output and in terms of value added (Insitute for Economic Research, 2023^[37]; Crivellaro and Granato, 2023^[38]).

In 2022, 75% of the volume of grants has been distributed to small firms (Figure 5, right panel), which seems like a sensible focus. This may be driven by the fact that grants are capped at EUR 300 000, a rather small amount for research projects, and only cover labour costs. A recent evaluation study found that the impact of “pilot demos” projects was higher for firms with low or negative profits (Insitute for Economic Research, 2023^[37]), which is often the case of innovative startups. Crivellaro and Granato (2023^[38]) show that the positive results of the grants, identified through a difference-in-differences, are driven by small firms including very small firms (less than 5 employees). Finally, the literature suggests that R&D grants are best suited for radical innovation, as opposed to tax incentives which may be best suited for incremental evaluation. Patents filed by small or young firms tend to be more radical and more original than patents filed by larger firms. Taken together, these observations confirm that the high take-up of R&D grants by small and young firms is sensible to maximise the impact of public funds on innovation.

Increasing the cap on grants could help firms do even more ambitious research projects, but it is costly. The Institute for Economic Research (2023^[37]) found that the impact of the research grants for projects of Technology Readiness Level 3 to 6 and 6 to 9 tended to be larger for firms with more employees. Moreover, Crivellaro and Granato (2023^[38]) found that the impact increased with the amount of aid receiving by firms. Raising the cap on grant amounts has several downsides. It potentially increases the total cost of each call for R&D projects. If the total budget is maintained constant, then it potentially decreases the number of firms or projects who will benefit each time, decreasing the diversity of projects funded and therefore the creative potential of the R&D grants. Moreover, larger grants have a higher administrative cost, including because they no longer fall under the “de minimis” rule but need to be approved through the General Block Exemption Rules of the European Union.

Other options going in the direction of increased ambition include increasing the length of the projects and making the grants more flexible in terms of the type of costs covered. Both the limited duration and the limited eligibility of costs might explain the lack of demand for larger grants in previous calls.¹⁶ Given the suggested changes in the design features of the calls for R&D projects in Slovenia, the new call for “Gravity and Strategic projects” organised by ARIS in 2024, with grants up to EUR 3 million over three years, is most welcome. It will be important to properly evaluate this call and compare it to other schemes in order to validate or not the new design features.

Entrepreneurship

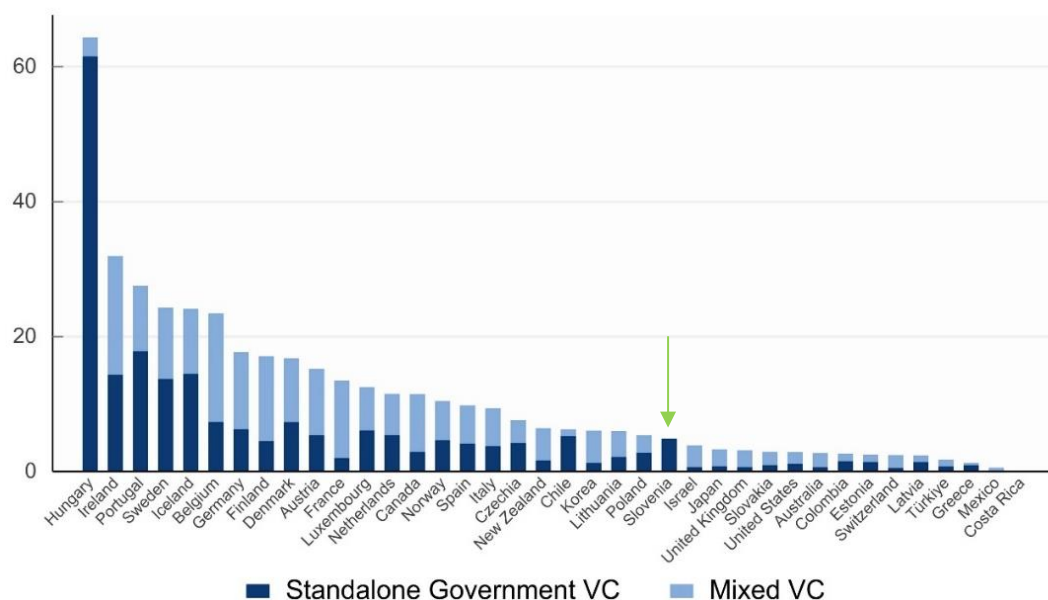
Slovenia made significant efforts to promote entrepreneurship through the SPIRIT agency, the Slovenian Enterprise Fund (SEF) and the Ministry of Economy, Tourism, and Sport, with more than EUR 100 million in budget including European funds. Regarding startups specifically, the [Slovenian Startup Strategy](#) is an important complement to the SIS. The largest policy instrument identified is the “*Promoting Entrepreneurship*” grant, with around EUR 90 million allocated in 2022. This initiative aimed to foster entrepreneurial activity by addressing the barriers - both internal and external - those potential entrepreneurs faced. It included mentoring and training opportunities and helped entrepreneurs access resources. Although it is one of the largest industrial policy grant programmes, to our knowledge there has not been a quantitative evaluation of its impact yet, which should be addressed in the future. In 2023, the programme only achieved EUR 19.3 million in implementation, or 63% of the planned budget which was already lower than the 2022 expenditure. A key reason for this shortfall was the slower disbursement of financial incentives under European cohesion funds, which were realised at only 49% of their planned amount (SPIRIT, 2023^[39]). This highlighted a need for more efficient coordination with European programmes in the future.

Following the initial creation phase, businesses need financing to be able to invest and grow. Small and young firms face more difficulties in securing financing than larger and older firms, as banks and investors lack information about future growth prospects. A first step is to encourage private investment with structural policies detailed below including in terms of corporate income taxation and capital markets. Another avenue for support is financial instruments, including loans, guarantees and venture capital. In Slovenia, the public development bank SID Banka has developed a range of financing solutions, but some of them are undersubscribed. This could be due to a lack of demand linked to the relatively low level of entrepreneurship. SID Banka could also consider running a quantitative or qualitative evaluation to identify which design features can explain the low take-up. For instance, perhaps the loans are too large, too small, or not generous enough compared to the offers of commercial banks. Complex processes might also create too high access costs for companies.

There is scope for increasing government venture capital in Slovenia. Government venture capital is quite low in Slovenia: it represents only 5% of all venture capital deals (Figure 6). This is a missed opportunity since the supply of venture capital is low overall and government venture capital can be effective. In a cross-country study, Berger, Dechezleprêtre and Fadic (2024^[40]) show that government venture capital can be especially effective when government entities were working jointly with private investors (described as “mixed” in Figure 6). However, in Slovenia all the government venture capital deals were standalone in the past. Effectiveness could be improved by leveraging private investors, either Slovenian or foreign, with good track records in the VC industry. Such programmes could be phased in progressively to develop the domestic supply of investors.

Figure 6. Slovenia provides little government venture capital and no mixed venture capital

Government Venture Capital deals (percentage of all VC deals, %) across OECD member countries, 2000-2022



Note: Standalone Government VC (govVC) are deals where only GovVC investors participate, Mixed VC are deals where both Government and Private VC investors take part. This does not include fund of funds. See Berger, Dechezleprêtre and Fadic (2024^[40]) for details.

Government intervention is particularly relevant for young enterprises targeting the green transition. Recognising the importance of sustainability, the SEF recently introduced incentives (grants) for green startups to further promote the development of eco-friendly technologies and sustainable business solutions. Beyond grants, channelling financial instruments towards the green transition appears relevant.

Berger, Dechezleprêtre and Fadic (2024^[40]) also found that government venture capital was especially relevant for areas that are less targeted by traditional private investors, such as the green transition. This is important for Slovenia as private venture capital has generated few deals for green startups, attracting only 0.01% of GDP worth of investment over 2017-2021 compared 0.3% for OECD member countries and 0.4% for Small European benchmark countries.

Government-sponsored financial instruments also have risks, including crowding out of private investment and, as for grants and tax expenditures, fiscal costs and efficiency concerns. These will need to be monitored in the context of an evaluation of a deepening of the instruments cited above.

Recommendations for creative development

Evaluate the R&D tax allowance; consider increasing its generosity for small and young firms.

- The R&D tax allowance is rather generous, but it is mostly used by larger and older firms. Slovenia should run a quantitative evaluation of the R&D tax allowance to gain more insight into its impact and the reasons for the low take-up of small and young firms.
- Options for reform include, increasing refundability, increasing the number of years the incentive can be carried over, increasing the joint cap of 63% of the tax base for all allowances and the loss carryovers (or removing the inclusion of loss carryovers from the calculation), increasing the rate for small or young firms. All these options are costly and should be carefully weighted and designed to prevent excess spending.

Increase the size and flexibility of R&D grants for more radical innovation.

- Most R&D calls for projects have set a maximum at EUR 300 000 for two years, which is not enough for radically innovative projects – which are theoretically the target of grants, as opposed to tax incentives.
- Slovenia should consider increasing the monetary cap, the duration of projects, and allow for the inclusion of capital expenditure in the project costs. Grant administrators could also take advantage of applications submitted and rated by the EU's Horizon programme.

Think about the additionality of loans and grants for SMEs

- Slovenia should perform a quantitative evaluation of its entrepreneurship programmes.
- Further reductions of bureaucratisation could also increase entrepreneurship and innovation.

Increase government venture capital by developing mixed government venture capital.

- Slovenia should consider increasing its involvement in venture capital, including by co-investing with private venture capital firms to leverage their knowledge and expertise.

Incentivise creative development in the areas of the green and digital transition

- Slovenia should consider increasing incentives for green and digital projects both in terms of entrepreneurship and R&D&I, for instance with a higher co-financing rate, a higher cap on expenditures, or reserved funding.

5

Reform options for smart development

The notion of “smart” development spans a wide scope of areas and therefore policies. While digital technologies immediately come to mind, with artificial intelligence as the key technology, it also calls for the development of human intelligence, i.e. the skills of the labour force. Slovenian businesses are less likely to adopt digital technologies than comparable businesses in benchmark countries. While there is an investment gap, this lag in the digital transition may also be attributed to a lower level of skills in Slovenia than elsewhere, particularly digital skills, although the data are limited. The rationale to support the digitalisation of firms needs to be assessed carefully, as firms recoup a large part of their investment in digitalisation. Support to the growth of human capital is perhaps more straightforward but should be well targeted towards business needs.

The results from an international assessment of adult skills ran in 2015 revealed notable gaps in the skills of Slovenia’s workers. The Programme for the International Assessment of Adult Competencies (PIAAC) evaluates adults all over the world in literacy, numeracy, and problem-solving in technology-rich environments. According to the PIAAC (2015) results, 25% of adults in Slovenia score at or below Level 1 in literacy, which is notably higher than the OECD average of 20%. The percentage of adults in Slovenia scoring at or below Level 1 in numeracy stands at 26%, higher than the OECD average of 24%. Digital proficiency is also a critical area. 21% of adults in Slovenia score below Level 1 in problem-solving in technology-rich environments, higher than the OECD average of 15%. While the detailed results point to a good performance of the tertiary education system in providing graduates with the tools they need to navigate the digital transition, they also highlight the need to improve the delivery of digital skills in the secondary education system or in adult education.

The PIAAC 2015 data are relatively old, and the situation could be different today, especially given the improvements in educational attainment observed in the last decade. However, Slovenia did not participate in the 2018–2023 round of the PIAAC survey, resulting in the absence of updated data on adult competencies for this period. According to the Slovenian Institute for Adult Education and the Ministry of Education, this decision was primarily influenced by financial considerations, despite partial co-financing opportunities provided by the European Commission.¹⁷ The lack of recent data constrains Slovenia's ability to monitor trends, evaluate the impact of policy interventions, and benchmark progress against other OECD member countries. This gap may hinder the country's capacity to determine whether its policies are achieving intended outcomes and to make evidence-based adjustments in a timely manner. The government of Slovenia should collect data on adult skills, whether it is part of the PIAAC survey or not, as these data are essential to designing the policies that will contribute to smart development.

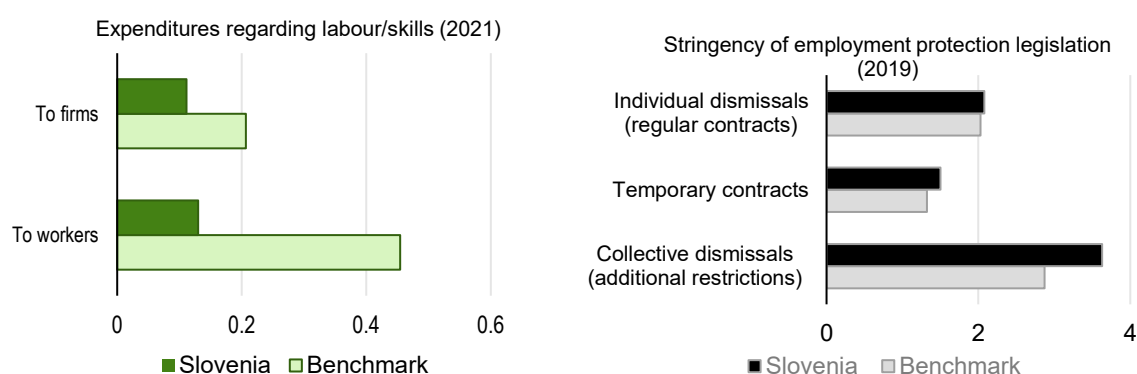
Slovenia’s commitment to skills is not yet reflected in public expenditure

To address the misalignment between the supply and the demand for high-skilled workers and in particular workers with digital skills, Slovenia has set up several programmes but is still spending less than many of its peers in terms of industrial policy. Slovenia spends 0.04% of GDP on industrial policy grants targeting

labour or skills, which is slightly less than the benchmark countries which spend an average 0.06% of GDP on similar grants (Figure 7, left panel). More strikingly, Slovenia spends less than 0.04% of GDP on tax expenditures for businesses targeting labour or skills, which is much less than the benchmark countries which spend 0.17% of GDP on this type of instruments. Slovenia did not have any financial instruments targeting labour or skills in 2022, and this type of instrument was also negligible in benchmark countries (0.007% of GDP).

Industrial policy is not the only way a country can address skills and labour challenges, and Slovenia is spending on these areas through other kinds of policies. Some countries might consider programmes incentivising the workers themselves to train to be substitutes for policy instruments targeting firms to make them invest more in labour or skills. However, it does not appear to be the case in Slovenia. In 2021, Slovenia spent about 0.13% of GDP on active labour-market programmes, considerably less than the benchmark countries which spent an 0.45% of GDP on such programmes, on average (Figure 7 left panel). Although employment protection legislation appears to be slightly more stringent in Slovenia than in other countries (Figure 7, right panel), the difference is quite small except for collective dismissals. This suggests that there is scope to increase public support for workers to acquire skills to help them navigate changes from job to job.

Figure 7. Slovenia spends less on labour/skills industrial policies and active labour-market programmes, despite a relatively average employment protection legislation.



Note: 2021 is the last available year of data on Labour Market Programmes for Ireland and Israel, therefore the figure considers 2021 as the latest available year. The labour market programmes considered were "Public employment services", "Institutional training", "Sheltered and supported employment and rehabilitation" and "Direct job creation", which are the ones directly provided to workers. Passive labour market programmes (e.g. unemployment benefits) are not included since their main goal is to provide benefits to the unemployed and not to the employed. 2019 is the latest available year for the OECD indicators of Employment protection.

Source: OECD calculations based on the OECD Labour Market Programmes database, the OECD indicators of Employment protection and the QULS database.

Slovenia could strengthen its funding of adult education

Support to lifelong learning mostly takes place through instruments that do not fall in the scope of "industrial policy" as they support workers and not firms directly. This makes sense because skills are embodied in workers, who will carry their knowledge from one employer to another. The two policy channels which can address this gap are initial or formal educational programmes and adult education or lifelong learning.

Slovenia demonstrates a relatively high level of educational attainment compared to both small European countries and the OECD. Slovenia has one of the lowest percentages of adults aged 25-64 with less than primary education, at a mere 0.3% in 2022, ranking as the 8th best out of 34 OECD Member countries. Moreover, Slovenia exhibits a strong performance in upper secondary education. 87% of individuals aged

25-64 have completed at least this level of education. This figure significantly exceeds the OECD average of 73% and the small European countries' average of 76%. Slovenia's performance has seen considerable progress in this area, with an increase from 64% in 2014 (compared to the OECD's 63% and the small European countries' 64% for the same year).

Despite the high number of graduates, the labour market for high-skilled workers is tense in Slovenia. According to the OECD Economic Survey of Slovenia (OECD, 2024^[41]), over 40% of businesses reported difficulties in recruiting skilled workers (e.g. ICT skills) in 2022. This is confirmed by a recent report from the Chamber of Commerce and Industry of Slovenia, stating that by 2030, Slovenia will require between 5 000 and 6 000 new ICT professionals each year, while the current educational institutions only produce 1 200 new graduates every year.¹⁸ To address this issue, the Slovenian university system could increase the number of seats for ICT majors, increase the number of ICT or digital courses for non-ICT majors, and try to involve businesses in the design of curricula. This may require increased expenditure, especially regarding teachers or professors.

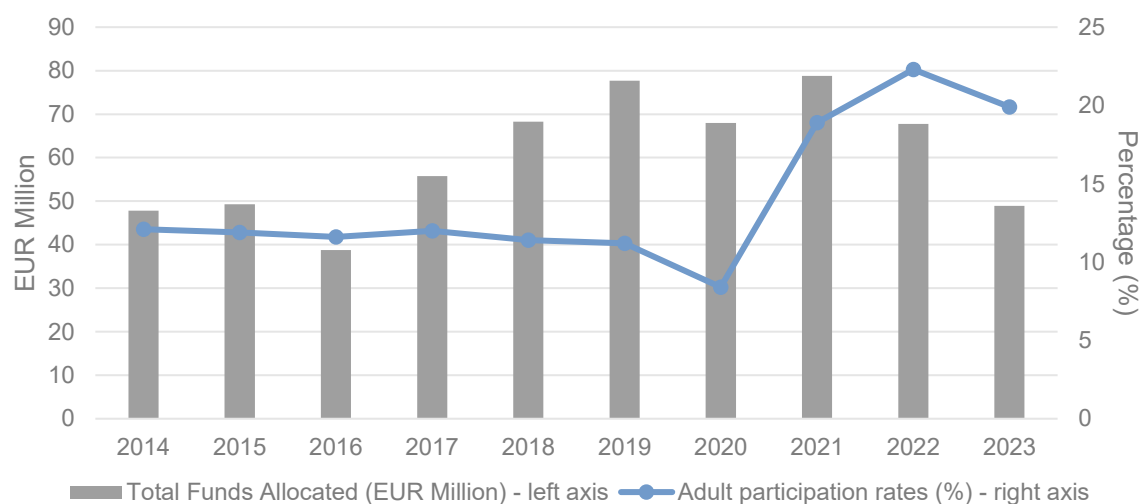
The funding for adult education, a necessary complement to university education, has decreased dramatically in the past few years. Funding for adult education programmes in Slovenia is drawn from both national budgets and European sources.¹⁹ Adult learning programmes funding in Slovenia has generally increased over the years, from EUR 47.8 million in 2014 to a planned EUR 92.4 million in 2024 (Figure 8). However, there have been fluctuations, with a notable decrease in 2023 due to delays in absorbing new European resources. This creates challenges for consistent funding, despite the growing importance of adult learning in the country.

Participation in lifelong learning programmes has also fluctuated in recent years, perhaps as a result of fluctuations in funding. 12% of adults in Slovenia reported participating in lifelong learning programmes in 2014. Participation dropped to 8.4% in 2020 due to the COVID-19 pandemic, and then rebounded to 22.3% in 2022. A similar trend was observed in OECD member countries²⁰ and small European countries, which also experienced a drop in participation rates in 2020 followed by an increase in 2022, possibly due to lockdown policies followed by a surge in the use of online learning. While Slovenia's adult participation rates were promising between 2021 and 2022, a reduction in funding in 2023 contributed to a decrease in participation to 19.9% (Figure 8). Despite this decline, the country's rate was still higher than the OECD average of 16.5% and the small European countries' average of 12.8%. The significant annual variations in funding and participation rates emphasise the need for consistent financial support and the effective implementation of educational programmes.

Increasing the involvement of the business sector at all levels of education is a way to tailor the skills to the labour market needs. Slovenia has been diligent in conducting evaluations of adult training programmes, despite the lack of data on adult skills. The effectiveness of the programmes in terms of employment rate varies, pointing to possible improvements. Slovenia is particularly involved in vocational education and training, which typically combines formal education (in the classroom) and practical training applied to business needs, which can be done inside a company in some cases. The success of these programmes should encourage Slovenia to develop these partnerships with businesses for higher education and for adult education as well. One way to do this would be to provide businesses with an incentive to arrange training for their employees. Greater collaboration between the business sector and the public sector could further benefit Slovenia's innovation eco-system as well.

Figure 8. Adult participation in lifelong learning has risen, despite fluctuations in funding.

Annual Funding for Adult Learning Programmes in Slovenia, EUR Million (left axis) and Adult Participation Rates in Lifelong Learning (25-64 Year Olds), percentage (right axis)



Source: Eurostat - Participation in education and training [Statistics | Eurostat \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1) & Annual Expenditures on Adult Learning in Slovenia: Reports on Annual Adult Education Programmes. Available at: [Digitalna bralnica Archive](https://digitalna.bralnica.si/) | [Andragoški center Republike Slovenije \(acs.si\)](https://acs.si/)

Slovenia's digital policies

In 2022, Slovenia spends 0.006% of GDP on industrial policy grants targeting digitalisation, which is less than the benchmark countries (0.018% on average). The largest is the set of grants for “digital transformation and e-commerce” (*Spodbude za digitalizacijo in e-poslovanje*) worth EUR 33 million in 2022. This programme and other initiatives have been popular. The Institute for Economic Research (2023^[37]) found that the digitalisation and e-commerce programmes benefited 846 firms between 2016 and 2022, each receiving more than EUR 30 000 on average, and found positive effects on size (employment, sales) and R&D (employment, expenditure), especially for larger firms, although the effects on the adoption of digital technology was not measured. Expanding this programme or others may not be necessary, as the rationale for the use of public funds to support digital technology adoption is not obvious. Indeed, firms should recoup the benefits from investment in digital technologies. Moreover, recent examples from other countries such as Canada’s Digital Adoption Programme suggest implementation of large grant programmes can be difficult. Keeping the programmes small may be the best option for Slovenia, while continuing to monitor and evaluate the design. A recent evaluation of Italy’s former “hyper-depreciation” scheme found that the tax incentive had the highest impact for large firms with skilled workers (Calvino et al., 2022^[42]). This finding underlines the complementarity of investment in digitalisation and skills.

The main tax incentive focusing on digital investments in Slovenia is the GDIA (many digital investments can also be covered by the general investment allowance). The GDIA was already discussed above with respect to green investment and the same recommendations apply to its digital component, although with the added caveat that additionality might be lower for digital investments as compared to green investments.

An alternative approach, at a lower cost of public fund, consists in using financial instruments to enable firms in their advanced technological projects. Until 2022, there was no record of financial instruments issued by the Slovenian government to firms for digital projects, but this might change with the introduction of “SID DIGITAL” by SID Banka, an instrument offering loans and guarantees for digital projects endowed

with EUR 28 million in 2023. A similar instrument in Germany, the ERP Digitalisation and Innovation Programme, was found to have a positive impact on innovation activity, jobs and sales (Rammer et al., 2020^[43]).

Recommendations on smart development

- **Collect data on adult skills**

Regular monitoring and assessment of adult skills are essential to inform policy and foster workforce readiness. As Slovenia advances its digital, smart, and green transformation objectives under its Industrial Strategy, participation in international assessments such as PIAAC becomes increasingly critical, with the last deep survey of adult skills dating back to 2014.

- **Increase the supply of digital and flexible workers**

Slovenia could increase the provision of ICT programmes in universities, increase the number of programmes with some ICT/digital components, and monitor the quality of programmes at all levels and intensity of digital fields. Encouraging students to study abroad and attracting foreign workers could more generally help with the skills businesses need in the digital transition. Slovenia could implement targeted policies aimed at increasing female participation at all levels of ICT training and work.

- **Address the declining funding for lifelong learning**

Slovenia should maintain a stable level of funding for programmes supporting adult education. This could be through better coordination with European funds.

- **Increase the collaboration with businesses to train workers.**

To maximise the effectiveness of lifelong learning programmes, the Slovenian government should involve businesses in the design of curricula, for instance leveraging the existing structure of the Slovenian Research and Industry Partnerships or incentivising businesses to arrange trainings for their workers.

- **Reform GDIA to make it more attractive for digital investments or refocus it on green investments.**

Reforming the GDIA (and the general IA) along the lines suggested in the green section could increase take-up and support digital investment. An evaluation will be necessary to measure the additionality of grants and of a reformed GDIA. Increased tax expenditure could compensate a decrease in digital grants. Alternatively, the GDIA could be refocused on green investments to free up resources for skills policies, which have a priori more impact on productivity and growth.

6 Reform options for Slovenia's industrial policy institutions

Analysing the wide array of goals and instruments, stretching across the government, has underlined the necessity to also consider the institutions in place to design this industrial strategy. The project therefore undertook a comparison of the institutions and processes operating in Slovenia with the ones in other European and OECD member countries (Austria, Estonia, Ireland and the United Kingdom) in order to understand what could be improved. The analysis relies on a framework based on the ideal policy cycle, which includes four phases: (1) strategic orientation, (2) policy coordination, (3) policy implementation, (4) evaluation and adaptation. Each phase has been divided into two or three activities (Criscuolo, Guillouet and Lalanne, 2024^[7]).

Regarding **strategic orientation**, the first task of a successful industrial strategy governance is to establish a *diagnosis* of the economy, including its strengths and weaknesses. To achieve this task, the government must have appropriate data, whether at the country level, at the sector level, or at the firm level. The involvement of analytical skills at all stages including at the diagnosis stage can help the government take ownership of data. The government cannot know everything on its own but can increase its capacity by involving the private sector, for example through institutions like national productivity boards.

The second activity is to reach a broad *social and political consensus*, which requires further consultation. Slovenia stands out in two ways with regards to the involvement of the private sector. First, it is the only country of the study where the Chamber of Commerce and Industry delivers most of the analysis for this “diagnosis” phase. Second, Slovenia leverages the Strategic Research and Innovation Partnerships (SRIPs), which were created in the context of the Smart Specialisation Strategy and bring together industry and academia working on similar “missions”.²¹ By contrast, smaller stakeholders such as labour unions and citizens associations appear to be less involved.

The consensus is important to be able to come up with a *narrative* for the industrial strategy – which Slovenia has achieved with the SIS 2021-2030. Slovenia also shows the way to other countries with its list of *indicators* to track the achievements of the strategy.

Policy coordination is often thought to be easier for smaller countries like Slovenia where it may seem feasible to be *coherent and exhaustive*, but it is never an easy task. In fact, Slovenia has a relatively high number of domestic institutions and strategies and depends on European institutions and strategies as well. The SIS discusses the interactions with other strategies, including European ones. Slovenia could benefit from some streamlining of its domestic strategies and instruments.

An industrial strategy can cover a wide range of activities and sectors of the economy and civil society, and therefore be in the scope of several ministries, requiring *horizontal coordination*. Since the 2022 election, the relevant Slovenian ministry's current portfolio is “Economy, Tourism and Sport” while innovation is now part of the Ministry of Higher Education, Science and Innovation. This change may have contributed to the instability of some programmes. A more stable institutional framework should attenuate this instability, but the Slovenian Ministries should coordinate better to take collective decisions more efficiently.

The state's capacity to deliver industrial policy depends on the commitment and *vertical articulation* of bodies at all levels of government. Because of their position in the "supply chain" of industrial policy, agencies have a potentially key role to play in gathering and transmitting information and evidence about the details of design and implementation, including what works or not. Although Slovenia is a small country, it also carries out some regional policies via the Slovenia Regional Development Fund, but the ownership is ultimately national or European, so the coordination issue between the national and the sub-national level is not an intense one. By contrast, Slovenia must coordinate with the supra-national level, as it benefits from the Cohesion Fund and the European Regional Development Fund (for Eastern Slovenia), leading to coordination issues including the delivery of funds as mentioned above.

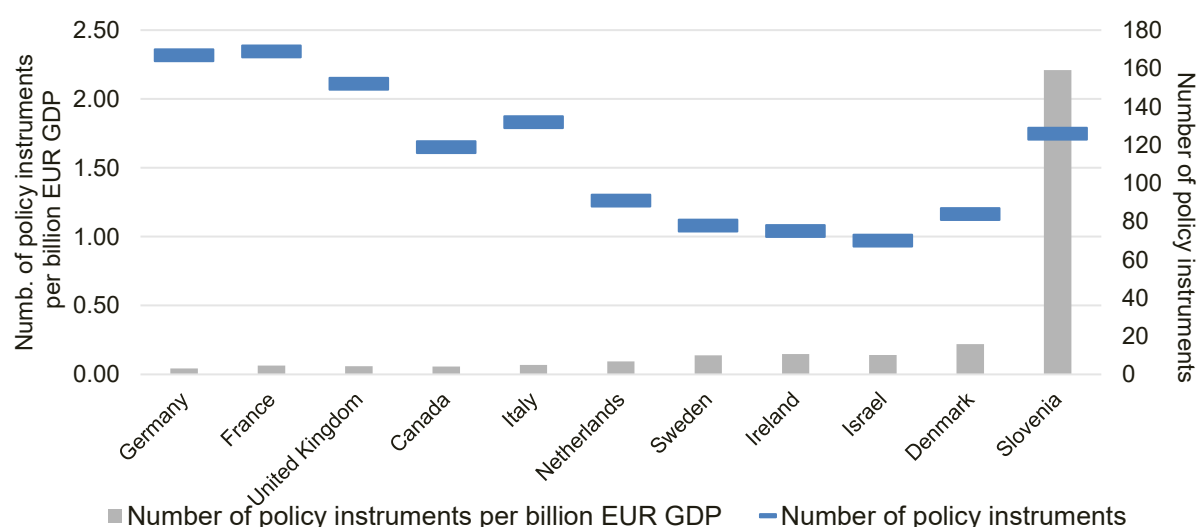
Policy implementation is the key phase where policy intentions can be made into realities. Issues may arise when instruments span the scope of several entities, including at an operational level. In Slovenia, ownership of instruments targeting research, development and innovation activities, for instance, has moved across ministries with the recent attribution of "innovation" activities to the Ministry of Higher Education, Science and Education, even though the Ministry of Economy, Tourism and Sport retains ownership of some R&D instruments. A clearer division of roles could help.

The transformation of policy intentions into realities crucially relies on the capacities of the public stakeholders. In Slovenia, the large number of programmes relative to the country stretches limited resources. The rationalisation of agencies' work could help. Alternatively, formal trainings and informal, cross-institutional trainings could increase effectiveness.

The *rationalisation* of the number of programmes could help with implementation as well. Slovenia stands out for its high density of industrial policy instruments relative to its economic output. Slovenia's total of 126 industrial policy instruments places it in a similar range to larger economies such as Germany (167 instruments), France (169 instruments), and the United Kingdom (152 instruments). However, these countries, with their larger economies, display much lower industrial policy instrument densities relative to their GDP (Germany 0.04 instrument per billion EUR of GDP, France 0.06, and the United Kingdom 0.06) compared with Slovenia (2.21 policy measures per billion EUR of GDP, see Figure 9). While this high ratio reflects a proactive stance in policy design, it is important to consider whether the high number of policy instruments necessarily correlates with better economic outcomes.

Figure 9. Slovenia has a much higher density of policies to GDP than other QULS countries.

Number of policy instruments per billion EUR of GDP (LHS) & Total number of policy instruments (RHS), in 2022



Source: QULS Database

Evaluation and adaptation are essential for the good functioning of the ideal policy cycle. The OECD Review of the Slovenian Industrial Strategy is one example of how a country can undergo an *evaluation* process for the entire strategy. However, this does not preclude the individual, quantitative evaluation of each individual instrument. An evaluation plan should therefore be included in the strategy. Policy evaluation requires yet another set of resources in addition to the ones discussed above for policy implementation, to collect data, implement evaluations and deliver clear conclusion. Hiring external providers, such as academic experts, can be a relevant solution.

The capacity of the state and its bodies *to learn from evaluation activities and adapt* reinforces its capacity to deliver policies. Processes should be in place for policymakers to be publicly informed of the outcomes of policy evaluations, learn from them, and use them to improve policy instruments as needed to achieve policy objectives. This can potentially mean taking into account other considerations than just the evaluation results, such as stability and changing circumstances. In the recent evaluation of Slovenia's instruments for the Smart Specialisation Strategy, there was a launch event, but it is not clear that the evaluation led to a change in the way the different instruments are designed or implemented. It will be interesting to observe how policymakers take ownership of the conclusions of this current investigation.

Recommendations on governance

Slovenia stands out as one of the countries with the best practice in terms of strategic **orientation** and may not issue a new strategy soon. Nevertheless,

1. The indicators chosen in the SIS could benefit from a more frequent updating and monitoring through an online dashboard for example.

Regarding policy **coordination**:

2. Slovenia should adopt a more systematic approach, starting with a market failure and including international benchmarking.
3. Institutional stability, as well as informal dialogue and the reinforcement of formal dialogue institutions such as the Strategic Council should help with horizontal coordination.
4. Slovenia should compensate the cyclicity of EU funding, to avoid the sudden discontinuation of programmes in Slovenia.

Regarding **policy implementation**:

5. Slovenia could benefit from a rationalisation of the number of policy instruments.
6. This rationalisation could also happen at the level of institutions involved. Moreover, processes could be streamlined through cross-institution trainings.

Regarding **evaluation and adaptation** of industrial policies:

7. Slovenia should add an evaluation plan to the SIS so that the main instruments benefit from a rigorous impact evaluation study.
8. Slovenia should set up a process by which the results of evaluation studies are formally pushed to the "owners" of policy instruments, for them to decide on follow-ups.

7 Complementary policies

Despite its already wide scope, the SIS must consider the impact of other policies to be effective, including the corporate tax system and policies affecting investment, together with labour markets.

Corporate tax system

Slovenia's corporate tax system appears aligned with best practices across many dimensions. Corporate taxation can be one lever to stimulate investment, as higher tax rates are generally associated with lower investment levels while targeted incentives can stimulate investment. Slovenia's statutory tax rate (STR) is relatively low. The standard rate of 19% is lower than the OECD and small European benchmark averages but has been temporarily raised to 22% to finance flood relief measures. Considering additional tax system features, the effective tax burden is relatively low in Slovenia. The Effective Average Tax Rate (EATR) calculated for Slovenia in the OECD's Corporate Tax Statistics is 20.9% for 2024. This is close to the median across small European countries of 20.6% while lower than the OECD median (22.0%). At a 19% STR (from 2028 onwards), Slovenia's EATR was 18.0% and therefore considerably lower than both the median for small European and OECD.²²

At the same time, corporate income taxation can contribute to the financing of government budget as an important part of the tax mix. On average across OECD member countries, the CIT contributes around 10% of total tax revenues. In Slovenia, the contribution of the CIT to total tax revenues is significantly lower at 6%, amounting to around EUR 1.3 billion per year. This is the consequence of the relatively low statutory tax rate and generous tax incentives. There could be some room to raise CIT revenue by maintaining the higher statutory tax rate after the flood relief period and reducing the generosity of tax allowances.

Despite a comparably low tax burden, the current level of investment in Slovenia is comparably low implying that the main obstacles for investment are likely to be found outside of the CIT system. The stock of foreign direct investment (FDI) in Slovenia was between 35% and 42% of GDP in recent years (2017-2021). This is lower than the OECD average of around 49.1%, and lower than the average for a comparison group of small European economies, of around 58.0%.

Potential reforms in Slovenia should therefore aim to (i) support corporate tax revenues and (ii) strengthen investment, while (iii) minimising distortions to investment and competition. In Slovenia's current CIT system, distortions in the mix of investment across asset classes or company types may arise e.g. from the tax treatment of financing costs, the design of tax incentives, and loss carryover provisions. A more detailed discussion on these policy goals can be found in the full report (OECD, 2025^[4]).

When considering corporate tax reform in Slovenia, it is important to be aware of the ongoing implementation of the Global Minimum Tax (GMT) in Slovenia and many other jurisdictions as a country's CIT system does not act in isolation. The GMT will raise effective tax rates of large MNEs to 15%, regardless of where they operate. This will impact the effectiveness of some of the tax incentives provided in Slovenia, but also improve Slovenia's relative competitiveness in terms of corporate taxation, facilitating further CIT reform (Hugger et al., 2024^[44]). Indeed, the implementation of the GMT could lower MNEs' incentives to shift profits elsewhere than Slovenia. The GMT could also enable a more level playing field between domestic companies and MNEs.

Capital markets

A well-developed capital market plays a vital role in ensuring diverse and necessary financing options for firms, which strengthens their financial structures and potential for better performance. The Slovenian capital market faces difficulties related with its small size in terms of liquidity, low number of financial instruments, and underdevelopment which may contribute to explaining the low level of private investment (Damijan et al., 2022^[45]). Some ongoing reforms and the development of the European Capital Market Union (CMU) should improve the situation for the Slovenian business sector. Market capitalisation has been below 15% of GDP in Slovenia since 2011, except in 2020 and 2021. It is among the lowest in both the EU and the OECD. The number of issuers that have their securities listed on the Ljubljana Stock Market is decreasing: from 200 in 2000 to only 30 in 2022. Five firms make up almost 80% of the turnover on the Ljubljana Stock exchange. For comparison, in other small economies, the top 10 firms never account for more than 60% of the total market capitalisation.

Several structural and historical factors contribute to the persisting and, to some extent, worsening problem of low market capitalisation. Institutional investors, and insurance companies, which are dominated by state-owned companies, have a limited role. The global financial crisis reduced stock market values, generating losses, which led to the long-term exit of many small investors and high-debt companies. In 2013-2014, several banks were restructured by the state to stabilise the sector, resulting in losses for investors that had bought shares. The privatisation wave of 2014-2016 could have generated more activity but several companies were purchased by foreign and/or domestic strategic investors, which stayed away from the Ljubljana stock market, decreasing the number of issuers. On the other hand, some segments exhibited growth, such as alternative investment funds and domestic mutual funds, which could be encouraged more.

As a result, Slovenia faces significant challenges in securing sufficient funding whether through private equity or debt which is discussed in the preceding sections of this report. Firms have to rely more on self-financing and bank credits (European Investment Bank, 2025^[12]). However, the banking sector is not suitable for financing risky and innovative firms with know-how and intangible assets but limited collateral. The Slovenian Capital Market Development Strategy 2023-2030 aims to change the situation by focusing on digitalisation, SME participation, increase in the volume of trading in the bonds segment, and promotion of financial education, all of which are highly related to the SIS.

Labour markets

The labour market is an essential element of economic activity, and it faces serious challenges in Slovenia with labour and skill shortages in several sectors. Slovenia's labour productivity, at USD 74 895 per person employed in 2022, has grown by 12% since 2012 but still lags behind the OECD average (USD 90 386).

The increasing employment rate has compensated the ageing demographic. The country's ageing population, in the context of a generous retirement system, is driving down the size of the working-age population.²³ However, Slovenia's employment rate has increased over the past decade, reaching 56.4% in 2023, up from 51.5% in 2013. A key driver of this improvement has been rising female labour market participation. The female employment rate increased from 46% in 2013 to 51.8% in 2023, narrowing the employment gap. However, Slovenia's total employment rate (56.4%) remains below the OECD and the small European benchmark averages (58% and 58.9%).

Gender equality in the labour market has improved, but challenges remain. Slovenian women remain underrepresented in high-skill and leadership positions, with the share of women in managerial roles declining from 40.3% in 2012 to 33.2% in 2022. Second earners, especially those transitioning from part-time to full-time work, face steep marginal effective tax rates due to various features of the personal income tax and the family benefits system (OECD, 2024^[41]), which may discourage female labour participation.

more. Reforms of personal income taxation and child benefits could help. Enhancing female participation, particularly in STEM and ICT fields, could also play a critical role in mitigating Slovenia's skills shortages.

One of the contributing factors to the slightly low employment rate and the labour market shortages may be the tight housing market, especially the lack of affordable rental units, which prevents residential and therefore worker mobility. The other contributing factor is skills. Skills shortages are a growing concern in Slovenia, particularly in digital and business process skills. In 2022, 40% of businesses reported difficulties in recruiting skilled workers, with digital skills in high demand. Only 50% of the Slovenian population had basic digital skills in 2023, below the EU average of 54%. The shortage of highly skilled workers is further compounded by Slovenia's relatively flat earnings structure (before tax) which reduces incentives for individuals to pursue higher education or take on highly skilled roles. Furthermore, Slovenia's tax burden on labour remains high, with a marginal tax wedge of 43.3% for single workers earning the average wage in 2023, the 7th highest among OECD member countries. The tax wedge is lower for non-single workers but still among the highest in the OECD. This discourages high-skilled talent, especially potential immigrants, and constrains business growth.

Finally, despite the positive track records of Active Labour Market Policies (ALMPs), funding has decreased significantly recently. Funding for ALMPs in Slovenia went from EUR 56.1 million in 2022 to EUR 34.6 million in 2023. Participation in ALMP has also declined, with only 10 000 individuals participating in 2023, compared to 21 396 in 2021. This is concerning in the context of a tight labour market.

Recommendations on complementary policies

The CIT system can support investment.

- CIT revenues could be raised by maintaining the higher statutory tax rate after the flood relief period and reducing the generosity of the tax allowances (e.g. general investment allowance).
- Additional revenues raised could be used to support investment, e.g. the generosity of loss carryover provisions could be increased, while the interest deductibility could be restricted.
- Measures favouring more established or asset-intensive business models or older and larger firms could be reduced to level the playing field in competition between different firm types.

Increase labour market participation and attract foreign workers by e.g. reducing labour taxes, support skill development and encourage greater participation of women in STEM/ICT fields.

- Reduced labour taxes could encourage employment (OECD, 2024^[41]). There could be temporary tax reliefs to workers moving to Slovenia (see the example of Italy²⁴).
- Support skill programmes for mid-career workers and the unemployed, focusing on digital skills. Develop dialogue between the private sector and educational institutions.
- Encourage girls to study science by highlighting role models in the STEM and ICT sectors and by improving the quality of career guidance.

Stimulate capital markets to support business dynamics, innovation and productivity growth

- Consider partial listings of state-owned enterprises to boost capital markets and continue privatisation efforts particularly in inherently competitive sectors such as tourism.
- Digital platforms could help improve access to finance.

See OECD (2022^[46]) and OECD (2024^[41]), especially table 2.8, table 3.2 for recommendations.

8

Lessons for industrial strategies

The Review of the Slovenian Industrial Strategy offers a comprehensive assessment of Slovenia's policy instruments aimed at achieving the SIS 2021-2030 goals for green, creative, and smart development. Many countries are discussing industrial strategies in response to the productivity slowdown, the green and digital transition, and global supply chain disruptions. In this process, they can gain valuable insights from each other's experiences.

Slovenia's business sector has unique characteristics, including a large manufacturing base with several energy-intensive industries and a high number of small firms. Accordingly, this analysis provides policy recommendations tailored to the design of domestic policy instruments. However, Slovenian firms face the same challenge as many others: achieving the green transition while remaining competitive and preparing for the next wave of technologies. The three pillars—green, creative, and smart—capture this challenge well, though rising fragility concerns may warrant the addition of a resilience pillar.

A key lesson from Slovenia's experience is the need for a flexible, two-sided approach to supporting firms in the green transition. Policymakers must tailor support to both the energy sector and energy-intensive industries, as their constraints differ. Carbon pricing plays a crucial role in aligning business incentives with the social cost of carbon. To drive the transition, carbon prices should be standardized across fuels and rise predictably over time. Simultaneously, investment support is essential for maintaining competitiveness in both the short and long term, as demonstrated by the latest NECP. Additionally, research and development in clean technologies remains a critical factor (Anderson et al., 2021^[20]).

Addressing climate change requires creativity, and another key lesson is the necessity—despite its complexity—of a multifaceted approach to innovation and knowledge diffusion. Industrial policy instruments, such as tax incentives, grants, and government venture capital, each have benefits and drawbacks. Meanwhile, broader framework policies—covering tax systems, labour markets, and capital markets—must be aligned. One particularly pressing issue is skills: labour shortages may be preventing Slovenia from fully establishing itself as a leader in knowledge-based industries.

As demonstrated by the complexity of policies supporting the green transition and innovation, industrial strategies require coordination and strategic planning. The Review examines a broad set of policy areas, from taxation and labour markets to housing, gender, and infrastructure, all of which can contribute to industrial success if government agencies collaborate effectively. Additionally, the report identifies areas where Slovenia could better use evidence to refine its policies, such as skills data and R&D tax allowance evaluations. Coordination, evaluation, and adaptation are key to effective industrial strategy governance (Criscuolo, Guillouet and Lalanne, 2024^[7]).

Finally, the Review highlights the importance of the European level. This is particularly relevant for Slovenia, which benefits from the Cohesion Fund aimed at reducing economic and social disparities. The report underscores the need for Slovenia to reduce its reliance on EU funding to avoid gaps between seven-year funding cycles. At the same time, Slovenia could play a greater role in strategic initiatives like Important Projects of Common European Interest. Given growing concerns about resilience, the EU may offer the optimal platform for policymakers to support the business sector in tackling future global challenges.

Endnotes

¹ The last available year for the OECD's Inter Country Input Output data, which are needed to construct the exposure indices "Foreign Market Risks" and "Foreign Input Risks", is 2020. We use 2019 to avoid reflecting changes due to the COVID-19 pandemic. More information on how we compute these indices is available in the report.

² [SiStat Database](#)

³ See the latest update of Slovenia's National Energy and Climate Plan (NECP), which envisions two scenarios for 2030: one with nuclear energy and one with 100% renewables. energetika-portal.si/fileadmin/dokumenti/publikacije/nepn/dokumenti/nepn2024_final_dec2024.pdf

⁴ In the analysis that follows, eight industries are classified as energy-intensive: first non-metallic minerals, basic metals, chemicals, paper, wood, rubber and plastics following EU nomenclature, to which fabricated metals and food and beverages are added as they are relevant for Slovenia.

⁵ The ratio between an economy's share of exports in a sector to the global share of that sector.

⁶ This statement is made by opposition to regulations (e.g. standards), which would incentivise businesses to adopt a technology, but not necessarily to continue abating carbon emissions once they have met the standard.

⁷ Average over 1 January 2024 to 28 October 2024, using allowance price data from <https://icapcarbonaction.com/en/ets-prices>.

⁸ These average tax rates combine fuel excise and carbon tax rates and exclude emissions that are not covered by a tax (about 13%).

⁹ Surrendered permits: for compliance, the value of surrendered permits should correspond to the emissions reported and verified by the installations under the EU ETS.

¹⁰ See <https://www.energetika-portal.si/nc/novica/n/povisanje-okoljske-dajatve-za-fosilna-goriva/> for more information on this recent reform.

¹¹ "Misc." groups together industrial subsectors that each represent less than 3% of total CO₂ emissions from energy use in the industry sector.

¹² The "Quantifying Industrial Strategies" or QuIS project measures industrial strategies across OECD countries through harmonised data on industrial policy expenditures, their composition, their mode of delivery, and the characteristics of their beneficiaries. Only the monetary value of direct transfers to

privately owned businesses are considered, but these may take the form of tax incentives, grants, loans, guarantees and venture capital. As of 2024, participating countries include Canada, Denmark, France, Germany, Ireland, Israel, Italy, the Netherlands, Slovenia, Sweden, the UK.

¹³ Implied R&D tax subsidy rates are defined as 1 minus the B-Index, a measure of the before-tax income needed by a “representative” firm to break even on one additional monetary unit of R&D outlay (Warda, 2021^[47]) (OECD, 2023^[49]) The more generous the tax provisions for R&D, the lower the before-tax breakeven economic return required by firms and the higher the implied marginal R&D tax subsidy. (Appelt, Galindo-Rueda and González Cabral, 2019^[48])

¹⁴ Data sourced from the Ministry of Finance.

¹⁵ If the refund is too generous; it could pay off more to go into a loss, creating a tax planning opportunity.

¹⁶ Discussions with policy officers brought up the fact that in a previous edition of the R&D calls for projects, firms were allowed to apply for larger grants (up to EUR 500 000) but few did and not all of them spent the money in the time allotted.

¹⁷ Slovenian Court of Audit. (2022), *Audit Report on Lifelong Learning*. Available at: [Revizijsko poročilo: Vseživljenjsko učenje v Republiki Sloveniji s poudarkom na odraslih](#)

¹⁸ Chamber of Commerce of Slovenia (2023), *Interview: We are advanced and competitive in terms of knowledge*. Available at: [Po znanju smo napredni in konkurenčni.pdf \(gzs.si\)](#)

¹⁹ Andragoški center Republike Slovenije (2023), *Letni programme izobraževanja odraslih 2023: Poročilo o uresničevanju | Annual Adult Education Programme 2023: Implementation Report*. Available at: <https://www.acs.si/digitalna-bralnica/letni-program-izobrazevanja-odraslih-2023-porocilo-o-uresnicevanju/>

²⁰ Note: For adult participation rates, data was available for only 26 of the 38 OECD member countries. As a result, the OECD average has been calculated based on the data from these 26 members.

²¹ “A mission-oriented innovation policy is a co-ordinated package of policy and regulatory measures tailored specifically to mobilise science, technology and innovation in order to address well-defined objectives related to a societal challenge, in a defined timeframe. These measures possibly span different stages of the innovation cycle from research to demonstration and market deployment, mix supply-push and demand-pull instruments, and cut across various policy fields, sectors and disciplines.” (Larrue, 2021^[50]).

²² Section 3.1 of the full report provides further details on the calculation of the forward-looking effective tax rate measures. Besides the EATR, the forward-looking framework also proposes an effective *marginal* tax rate (EMTR). It measures the tax component of the cost of capital. Slovenia’s EMTR as reported in OECD (2024^[2]) is also relatively low compared to its peers.

²³ As of 2025, a reform of the pension system currently under negotiation, which aims to raise the minimum retirement age, and incentivise workers to contribute for a longer period, should increase the size of the workforce.

²⁴ [Tax relief for workers relocating to Italy \("lavoratori impatriati"\) — University of Bologna](#)

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