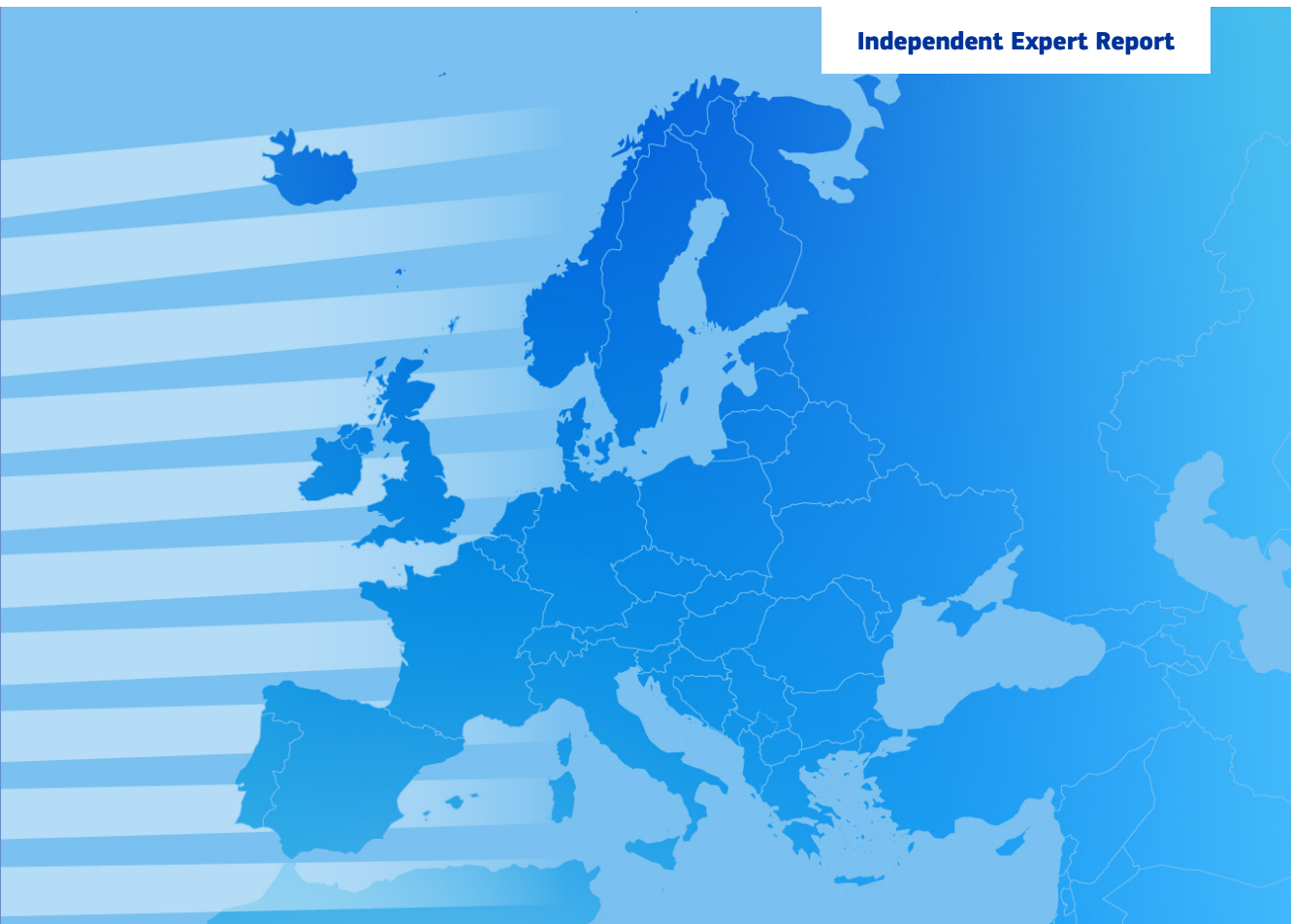
European Commission

Research and Innovation

European Innovation Scoreboard

2025

Independent Expert Report



European Innovation Scoreboard 2025

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European Innovation Scoreboard 2025

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2025

Directorate-General for Research and Innovation
Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs

FOREWORD

The European Innovation Scoreboard (EIS) has become a reference. It offers insights into where the EU and its Member States stand in terms of innovation performance. It reflects recent achievements and gives indications where further efforts are needed.

The 2025 edition documents the progress that Europe has achieved, as evidenced by the 12.6 percentage points increase in our innovation capacity since 2018. And while geographical differences remain, it is encouraging to see European innovation accelerating in all Member States and presenting fresh opportunities for us to grow stronger together.

Europe's future prosperity will critically depend on our ability to innovate. Research and innovation are key to boost productivity and competitiveness, drive sustainability and safeguard Europe's economic security. Innovation is a top priority for the Commission, alongside our commitment to fighting climate change and strengthening resilience. Through the Competitiveness Compass – the key policy document of the Commission – we are actively guiding policy efforts where they matter most to create meaningful impact.

That is why we are launching ambitious initiatives like the Startups and Scaleups Strategy and enhancing the Horizon Europe Programme. These initiatives are designed to boost productivity, promote sustainability and ensure a secure and thriving economy.

The Annual Single Market and Competitiveness Report highlights areas to improve — such as increasing R&D investment, expanding access to growth capital for startups and accelerating digital adoption. We are addressing these challenges with the Single Market Strategy, aiming to make it simpler, stronger and seamless. On the talent side, our Start-Up and Scale-Up Strategy and Choose Europe for Science initiatives are bringing Europe's brightest minds together and attracting new talent. Looking ahead, the future EU Innovation Act promises to build on this momentum by using the EIS as a benchmark to modernise research and innovation across the Union.

Finally, resilience is the foundation of competitiveness and innovation. Addressing supply chain dependencies, strengthening economic security and enhancing industrial resilience in critical sectors are essential for EU businesses to thrive in a rapidly evolving global landscape. This year's Scoreboard introduces new insights on how European businesses are strengthening their resilience, a sign of Europe's adaptability and determination.

This report is a powerful tool and a call for action to boost our innovation performance. Let us work together to translate its insights into action, ensuring that innovation remains at the heart of Europe's response to today's challenges, and a cornerstone of our shared future.

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Startups, Research &
Innovation

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1.1 A quarter of a century of tracking trends in innovation performance

This year is the 25th anniversary of the European Innovation Scoreboard (EIS), first published in 2001 (following a pilot edition in 2000). Over the past quarter of a century, the EIS has become the central tool for monitoring innovation performance and supporting evidence-based policymaking across the European Union (EU) as well as for neighbouring countries and with respect to the EU's global (partners and) competitors. It helps stakeholders assess areas in which they need to concentrate their efforts to boost innovation performance, considering the national socio-economic context, which is captured by a complementary set of structural indicators to help interpret the results.

Over the last decades, the EIS indicator framework has evolved to better reflect the factors influencing innovation performance, the changing socio-economic and geopolitical context, and the corresponding policy responses. Based on a revision process undertaken in late 2024 and early 2025, the EIS 2025 applies a revised indicator framework to the one used for 2021-2024. Five indicators were updated to align with new data and evolving EU R&I policy priorities. These include two digitalisation indicators and measures of external high-tech dependence, CO_2 productivity, and labour productivity.

All performance scores described in this report are relative to that of the EU in 2018 and in 2025, facilitating the tracking of progress and trends and enabling policymakers to identify specific areas requiring attention through strategies and programmes at national level.

1.2 Europe's innovation performance remains strong, but the growth has been slowing down

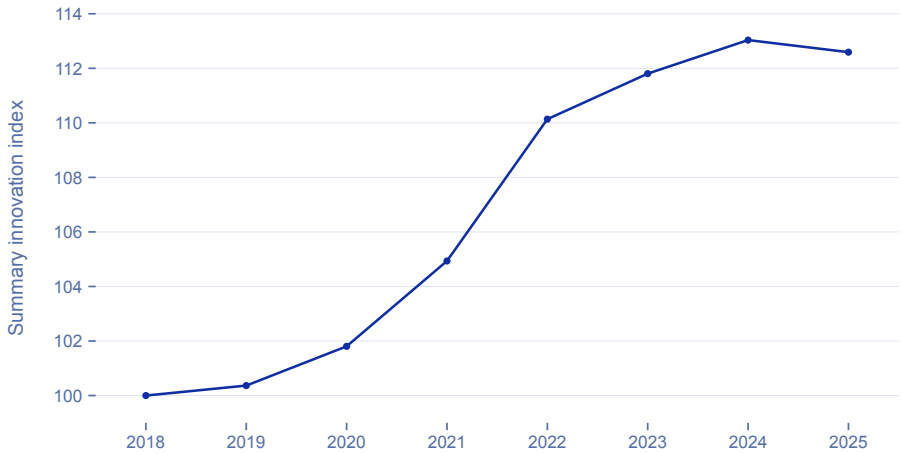
Since 2018, the EU's innovation performance has increased by 12.6%-points

All countries within the EU have increased their innovation performance from the base year of 2018; nonetheless, the scale of these increases varies widely, from Luxembourg at +0.9%-points to Estonia at +30.0%-points. The innovation performance of 14 countries has increased more significantly compared to the EU. Conversely, 13 countries have had a smaller increase in their innovation performance in comparison to the EU.

No significant change to the EU's innovation performance since 2024

The EU's annual innovation performance has declined marginally at a rate of -0.4%-points from 2024 to 2025, continuing **a trend of relative stability** observed over the past three years. Thirteen Member States increased their score in comparison to last year, Malta and Luxembourg the most by +7.6%-points and +5.0%-points, respectively. However, the score of 14 members decreased more than that of the EU, with the most significant declines seen in Czechia (-8.4%-points), and Cyprus (-14.6%-points).

Figure 1: Change in performance of the EU over time

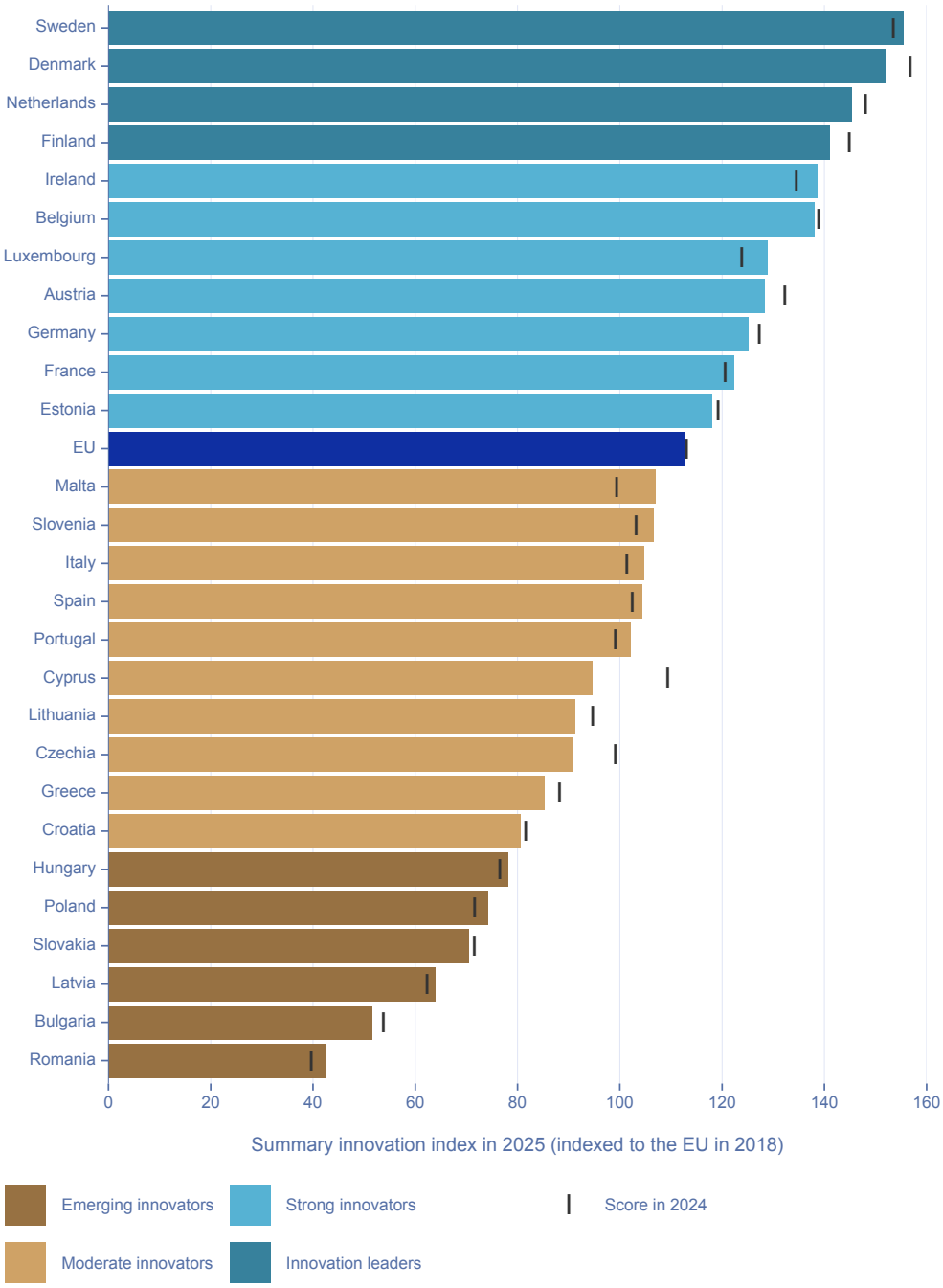


A persistent innovation gap across Europe despite a slight reduction in disparities

Based on their performance relative to the EU average in 2025, the EU27 Member States fall into four different performance groups. In performance order, Sweden, Denmark, the Netherlands, and Finland are **Innovation Leaders** with innovation performance above 125% of the EU average. Ireland, Belgium, Luxembourg, Austria, Germany, France and Estonia perform above the EU average and are **Strong Innovators**. Malta, Slovenia, Italy, Spain, Portugal, Cyprus, Lithuania, Czechia, Greece and Croatia are **Moderate Innovators** with performance below the EU average. Hungary, Poland, Slovakia, Latvia, Bulgaria, and Romania are **Emerging Innovators** with performance below 70% of the EU average.

The analysis of innovation performance across EU27 Member States **reveals a moderate reduction in performance disparities from 2018 to 2025**, suggesting slight convergence at the EU level. However, divergence persists within specific performance groups. Innovation Leaders show growing disparities, driven by Denmark and Sweden pulling ahead. The Strong and Moderate Innovators were both homogeneous, however recently there has been a renewed divergence due to faster improvements in certain countries. Similarly, the gaps between Emerging Innovators have slightly increased, as some countries advance more quickly than others.

Figure 2: Innovation performance of the EU27 Member States in 2025, indexed to the EU in 2018



Note: All performance scores are relative to that of the EU in 2018. Coloured bars show countries' performance in 2025, using the most recent data for 32 indicators. The vertical bars show performance in 2024, using the next most recent data.

1.3 Performance within the EU – Sweden in the top spot, Ireland and Croatia on the rise

Sweden returns to the top spot of EU innovators

Sweden regains its position as the most innovative Member State, ahead of Denmark, which had been the leading EU Member State from 2020 to 2024. Sweden has increased its score by 12.9%-points in comparison to 2018, and by 2.0%-points in the last year. Sweden ranks first in eight of the 32 EIS indicators, including *R&D expenditure in the business sector*, *Cloud computing in enterprises*, and *Production-based CO_2 productivity*.

Ireland moves up to top the strong innovators group

Ireland ranks top of the Strong Innovators group in 2025, although only just ahead of Belgium by 0.5%-points. Ireland's performance has grown by 13.3%-points from 2018, and by 4.1%-points in the last year. Ireland has been on a steady upward trajectory since 2020. Indicators significantly contributing to Ireland's performance growth since 2018 include *Cloud computing in enterprises*, *Production-based CO_2 productivity*, and *Innovative SMEs collaborating with others*.

Changes in performance groups: Croatia moves up, while Cyprus and Hungary drop

Croatia has improved its innovation performance by 19.4%-points from 2018 to 2025, moving up from the Emerging Innovators group to the Moderate Innovators group. The top three indicators contributing to this improvement over the past year are *Innovation expenditures per person employed*, *Cloud computing in enterprises*, and *New doctorate graduates*.

Cyprus has dropped from the Strong Innovators to the Moderate Innovators performance group. While the Cypriot score increased by 17.6%-points since 2018, it fell by 14.6%-points in the last year. This outcome can be attributed to large drops in several indicators, notably *Innovative SMEs collaborating with others*, *SMEs introducing business process innovations*, and *Employment in innovative enterprises*.

Hungary has dropped from the Moderate Innovators to the Emerging Innovators performance group, despite increasing its score by 16.2%-points since 2018, and by 1.7%-points since 2024. In comparison to last year, Hungary recorded a strong performance in *Cloud*

computing in enterprises. However, *Non-R&D innovation expenditure* and *Venture capital expenditures* decreased by around 20.0%-points.

1.4 Performance of the EU's neighbouring countries and global competitors

Switzerland is the most innovative European country, the UK becomes a Leader

An extended analysis covering the EU27 and 12 other European countries finds that Switzerland is, for the eighth year in a row, the most innovative European country due to improving performance on several indicators, notably *Venture capital expenditures*, *Sales of new-to-market and new-to-firm innovations*, and *Population involved in lifelong learning*. The United Kingdom has moved up a group to become an Innovation Leader and is now ranked 5th amongst European countries; this is driven by strong increases in *Venture capital expenditure*, *High-speed internet access* and *Cloud computing*.

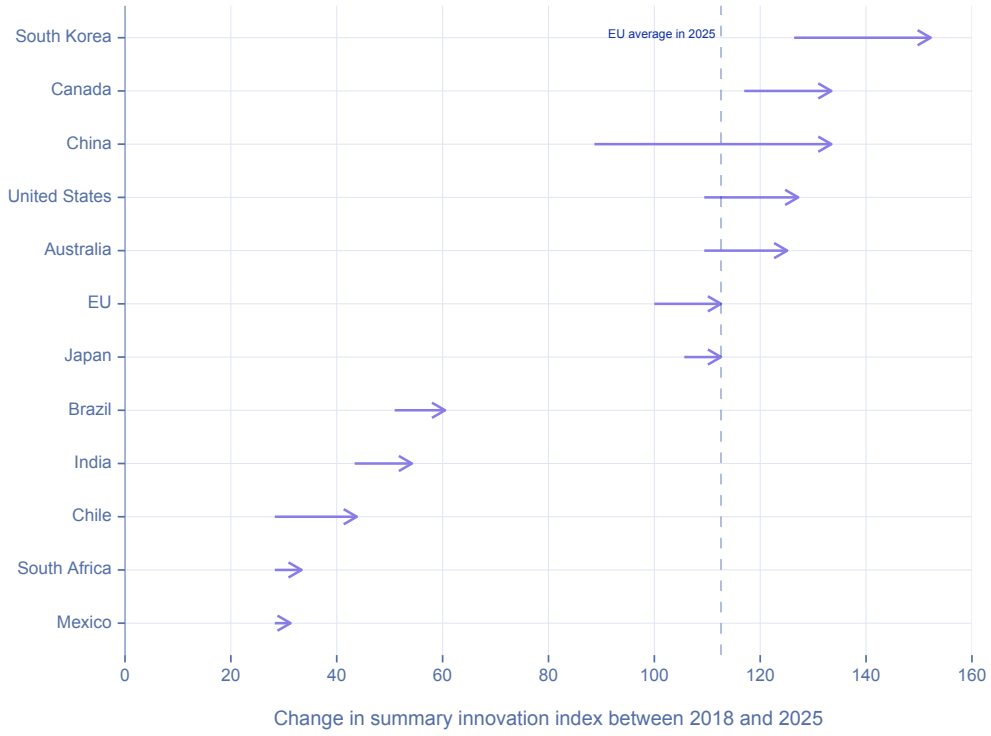
Sustained progress for the majority of the Western Balkan countries

Eight neighbouring countries are in the group of emerging innovators. An improvement in innovation performance from 2024 to 2025 is observed for most of the Western Balkan accession countries, namely Albania (+4.4%-points), Montenegro (+3.1%-points), Bosnia & Herzegovina (+3.0%-points) and Serbia (+2.3%-points). Serbia has the strongest growth in the group since 2018 (+10.9% points), followed by North Macedonia (+9.2%-points).

China has overtaken the EU and USA and is fast catching South Korea in 2025

South Korea remains the most innovative global competitor in 2025, outperforming the EU by 35.2%-points. Four other competitors, Canada, China, the United States and Australia lead the EU. Compared to EIS 2024, China has overtaken the EU and the US and moved into equal second place globally. Since 2018, China has increased the most its innovation performance (+44.7%-points), followed by South Korea (+25.8-%points). China's performance improvement can be partly explained by new data becoming available for 2017-2022 for *Direct and indirect government support of business R&D*, leading to a large upward shift.

Figure 3: Innovation performance change from 2018 to 2025 – EU versus global competitors



Note: Performance change is measured as the difference between 2025 and 2018 scores, relative to that of the EU in 2018. Due to limited data availability for global competitors, scores are calculated using a smaller set of indicators.

1.5 The EIS: best-available data and a robust and replicable methodology

Data for the EIS is sourced primarily from Eurostat and other international statistical providers, with input from national statistical offices where needed. The Scoreboard team works closely with data providers to ensure the data included is as up to date and robust as possible. Since the 2024 edition, the data collection and calculation process for the EIS has been automated. The 2025 summary innovation index was calculated using the COINr package developed by the European Commission's Competence Centre for Composite Indicators and Scoreboards. The approach provides a highly replicable and easy to follow data pipeline that feeds into the COINr package and automatically provides the main outputs of the EIS. Moreover, the European Commission's Joint Research Centre audited the statistical robustness of the SII composite indicator to ensure transparency and reliability.

2. INTRODUCING THE EUROPEAN INNOVATION SCOREBOARD

2.1 Innovation as a driver of competitiveness, sustainability and resilience

The year 2025 marks the **25th anniversary of the European Innovation Scoreboard**, first published in 2001 (following a pilot edition in 2000). Over the past quarter of a century, the EIS has become the central tool for monitoring innovation performance and supporting evidence-based policymaking across the European Union (EU) as well as for neighbouring countries and with respect to our global (partners and) competitors. This milestone offers an opportunity to reflect not only on the progress made, but also on the changing role of innovation in addressing Europe's evolving strategic challenges.

In a world marked by rapid technological change, mounting geopolitical tensions, and accelerating environmental and demographic transitions, **innovation is a strategic imperative for the EU**. It is not only a key driver of productivity and global competitiveness, but also a core enabler of the EU's twin green and digital transitions, strategic autonomy, and long-term resilience. The capacity to generate, adopt and scale new ideas – in business, the public sector and society – will determine Europe's ability to safeguard its values, address structural challenges, and seize new opportunities in an increasingly multipolar world.

Europe's innovation imperative is shaped by a set of deeply interconnected challenges. Geopolitical volatility and global power competition have exposed Europe's strategic dependencies in critical technologies, raw materials and supply chains – from semiconductors to clean energy systems. The climate and environmental crisis demands urgent breakthroughs in energy efficiency, sustainable mobility, circularity and nature-based solutions. The pandemic underlined the importance of strengths in health innovation to react rapidly to protect well-being. Demographic pressures, skills mismatches, and uneven digital readiness hold back innovation diffusion, especially among SMEs. Meanwhile, global competition in frontier technologies is intensifying, with Europe at risk of being left behind competitors despite strong scientific performance in fields such as artificial intelligence, quantum computing or biotechnologies[1]. Lastly, the current geopolitical climate has refocused attention on Europe's defence and security leading to a reinforced attention to dual-use technologies and innovations that can safeguard our future[2].

On the one hand, innovation policy has evolved little over the last decades, there has been a consistent attention given to boost SME innovation and co-operation, to improve intellectual property management and knowledge transfer from Europe's universities and research centres, to increase access to finance, notably venture capital, supporting the scaling of Europe's start-ups, etc. On the other hand, **innovation policy is increasingly positioned as a cross-cutting instrument to deliver on Europe's strategic priorities**, reflecting

1 See: Eulaerts, O., Grabowska, M. and Bergamini, M., Weak signals in science and technologies 2024 – Technologies at an early stage of development that could impact our future, Publications Office of the European Union, 2025, https://data.europa.eu/doi/10.2760/6571994

2 See: European Commission: Directorate-General for Research and Innovation, *Making the most of EU research and innovation investments – Rethinking dual use*, Publications Office of the European Union, 2025, https://data.europa.eu/doi/10.2777/6637451

a shift from addressing only market failures to a transformative innovation policy approach. Innovation policy is now expected not only to boost competitiveness by closing the innovation gap, as called for by the Competitiveness Compass[3], but also to reorient innovation systems to address societal and industrial challenges and enable deep, structural change. The Clean Industrial Deal[4] seeks to foster decarbonisation of energy intensive sectors and boost the cleantech sector. The Horizon Europe Missions are mobilising innovation to accelerate systemic transformations in areas such as climate-neutral cities, healthy soils, oceans and waters, and cancer[5]. At the same time, the New European Innovation Agenda (2022)[6] aimed to scale up deep tech and foster interconnected innovation ecosystems and the 2025 EU Startup and Scaleup Strategy[7], through instrument such as the European Innovation Council[8], improves conditions for startups and scaleups through access to finance, talent and public procurement. The Strategic Technologies for Europe Platform (STEP) seeks to focus funding from 11 European programmes towards digital and deep-tech innovation, clean and resource-efficient technologies and biotechnologies[9]. Strategic autonomy and industrial resilience are increasingly taking a central, with the Chips Act, Critical Raw Materials Act, and industrial alliances working to reduce Europe's external dependencies and strengthen technological capacity[10]. In this context, innovation is a key lever for developing alternatives to scarce inputs, improving resource efficiency, and reinforcing supply chains. The forthcoming European Innovation Act is designed to bolster innovation across the continent by addressing challenges like regulatory fragmentation, limited access to venture capital, and inadequate coordination among Member States.

Responding to this evolving economic, social, environmental geopolitical and policy context, this year's **EIS adopts a revised indicator framework** (presented in more detail in the next section). This framework is adopted by both the EIS and the accompanying Regional Innovation Scoreboard (RIS) 2025. Along with the Eco-Innovation Index (EII, last published in 2024), the two scoreboards make up a suite of tools for assessing innovation performance in Europe. To support the monitoring of the Startup and Scaleup Strategy, a pilot European Start-up Scoreboard (ESS) is being developed in 2025. Several other monitoring platforms contribute, along with the EIS, to supporting innovation policy, including: the EU Industrial R&D Investment Scoreboard[11], ERA Scoreboard and Monitoring Mechanism[12], the Innovation

3 See: https://commission.europa.eu/topics/eu-competitiveness/competitiveness-compass_en

4 See: https://commission.europa.eu/topics/eu-competitiveness/clean-industrial-deal_en

5 See: https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe_en

6 See: https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda_en

7 See: https://commission.europa.eu/news-and-media/news/choose-europe-your-startup-and-scaleup-2025-05-28_en

8 See: https://eic.ec.europa.eu/index_en

9 See: https://strategic-technologies.europa.eu/index_en

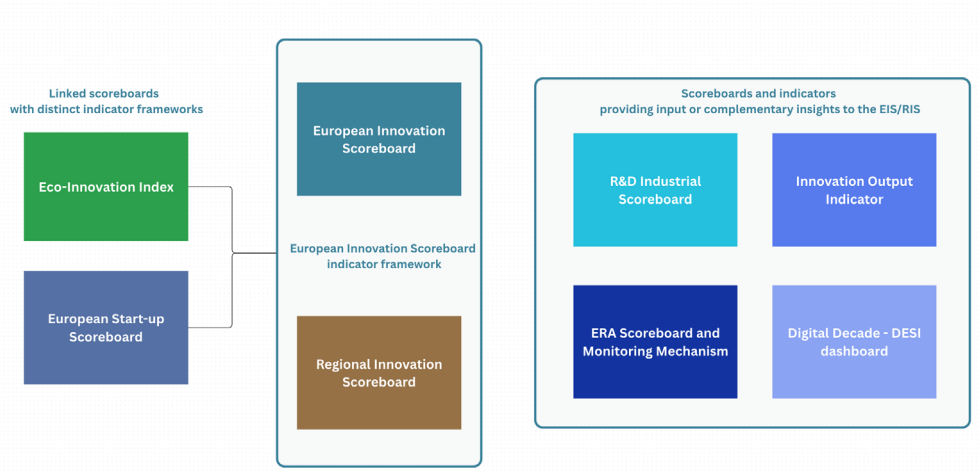
10 See: https://single-market-economy.ec.europa.eu/industry_en

11 See: https://iri.jrc.ec.europa.eu/scoreboard/2024-eu-industrial-rd-investment-scoreboard

12 See: https://european-research-area.ec.europa.eu/era-monitoring

Output Indicator (IOI)[13] and the DESI dashboard for the Digital Decade[14].

Figure 4: The European Innovation Scoreboard and related scoreboards and indicators



Scoreboards, like **the EIS and the RIS, are valuable tools for informing policy monitoring and evaluation** by providing a structured, comparative overview of innovation performance across countries and regions. They enable policymakers to monitor trends, benchmark progress, and identify areas where interventions may be needed. By aggregating a wide range of indicators into accessible composite indices, scoreboards help translate complex innovation landscapes into actionable policy insights and support accountability by tracking outcomes over time

While scoreboards are effective for descriptive benchmarking and highlighting performance gaps, they should not be used alone to establish causality between specific policy interventions and observed outcomes. The indicators and composite scores reflect correlations and associations rather than cause-and-effect relationships.

For example, a country may show improved innovation performance, usually several years after a policy change, but the EIS alone cannot prove that the policy was the direct cause of the improvement, other factors or external influences may have played a role. Thus, while scoreboards are essential for evidence-based policy monitoring and evaluation, they should be **complemented with in-depth analyses to better understand the mechanisms and effectiveness of policy actions**. At European level, reports such as the Science,

13 See: https://op.europa.eu/en/publication-detail/-/publication/923d0196-3133-11f0-8a44-01aa75ed71a1/language-en
14 See: https://digital-decade-desi.digital-strategy.ec.europa.eu/

Research and Innovation Performance of the EU (SRIP[15]), published biennially, build on the output of relevant scoreboards to provide a comprehensive assessment of the state of play.

2.2 How does the EIS measure innovation?

Measuring innovation is a complex process, as it goes far beyond counting the number of new products or business processes that have been introduced on the market or brought into use in society. Innovation activities include all developmental, financial, and commercial efforts undertaken by an organisation to improve its performance. Innovation improves living standards, and boosts long-term competitiveness and sustainable economic development.

"The term 'innovation' can signify both an activity and the outcome of the activity. An innovation is a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)."

Oslo Manual[16]

The EIS considers a wide range of factors that affect innovation. In line with previous editions, the methodological framework of the scoreboard is based on a total of 32 indicators, divided into four main categories and 12 dimensions, to assess the innovation performance of the EU, its Member States and selected third countries (Figure 4).

Framework conditions: Innovation stems from knowledge-based activities, where information and expertise come together to drive progress. The EIS assesses the prevalence of tertiary education and science, technology, engineering and maths (STEM) doctorates, the trend towards international collaboration and dissemination of research results, and the extent of digitalisation, recognising that advanced digital skills and infrastructures are instrumental in accessing information and nurturing innovation.

Investments: Financial resources play a vital role in developing new solutions and facilitating their adoption by the market or firms. The EIS therefore evaluates the investments directed towards R&D and innovation coming from diverse sources such as the public sector, venture capitalists, and businesses. In addition, the EIS assesses the investment made by businesses in their digitalisation through indicators on *Cloud computing* in enterprises and *Employed ICT specialists*, reflecting the growing importance of advanced digital tools and skills in Europe's innovation systems.

Innovation activities: To evaluate a country's innovation activities, the EIS places an

15 See: https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/support-national-research-and-innovation-policy-making/srip-report_en

16 OECD/Eurostat (2018), Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris/Eurostat, Luxembourg, https://doi.org/10.1787/9789264304604-en.

emphasis on small and medium enterprises (SMEs), measuring their introduction of novel products or business processes and the degree to which they collaborate or co-publish across different sectors. As highlighted before, an invention must be successfully commercialised or exploited to be considered an innovation. Therefore, the EIS examines how often companies translate inventions into marketed products or related assets. To gauge the intellectual capital of a country, the EIS also quantifies the number of patents, trademarks, or designs generated by innovators.

Impacts: Lastly, the EIS evaluates the impact of innovation activities on sales and employment, trade, and *Resource and Labour productivity*. It includes indicators such as *Employment in innovative enterprises*, *Sales of new-to-market and new-to-firm innovations*, and the export value of medium- and high-tech products or knowledge-intensive services. To reflect industrial and strategic resilience, the EIS now includes an indicator on high-tech imports from partners outside of the EU27, capturing Member States' reliance on external sources for high-tech goods and services. In addition, the EIS goes beyond purely economic metrics by including environmental and social impacts, assessed through three forms of productivity: *Resource productivity*, *Production-based CO_2* productivity, and *Labour productivity*.

As part of a small-scale revision of the indicator framework for the EIS and RIS, five indicators were updated in 2025[17]. The revision fine-tuned the measurement framework considering newly available data and to better reflect evolving European R&I policy priorities; the new indicators are presented in Figure 4 and described in Box 1.

Box 1: Five new indicators in the 2025 EIS framework

High-speed internet coverage measures how many households have access to ultra-fast internet (via fibre or similar). It shows the quality of a country's digital infrastructure.

Cloud computing assesses the share of businesses using advanced online services like data storage, accounting, or customer management tools. It reflects the extent to which enterprises are adopting more advanced digital technologies.

High-tech imports from outside the EU show how much a country relies on non-EU countries for high-tech products and services. A higher share means greater dependence on external suppliers[18].

17 Reid, A., et al. (2025). European Innovation Scoreboard 2025: Technical report on the revision of the scoreboard methodology. Independent expert report prepared for the European Commission, Directorate-General for Research and Innovation.

18 This indicator has been assigned a negative direction in the index calculation, meaning that lower reliance on high-tech imports from non-EU countries results in a higher score (relative to the EU). This reflects the idea that less dependence indicates greater industrial resilience.

Production-based CO_2 productivity evaluates how much economic value is generated for each unit of CO_2 emitted. Higher scores mean greater efficiency and lower environmental impact.

Labour productivity reflects how much economic value is created for each hour worked. Higher scores reflect greater efficiency and innovation-driven growth.

The EIS draws on extensive data sourced, primarily, from European (Eurostat) and international statistical services and other providers of specialised data (patents, publications, and venture capital). While many indicators are based on data collected at the firm level, the results are aggregated to provide comparable insights at both national and international levels. Eurostat services provided the EIS team support in interpreting statistics[19] derived from the Community Innovation Survey (CIS)[20], as well the Community survey on Information and Communication Technologies (ICT) usage and e-commerce in enterprises[21]. For countries that do not regularly transmit data to Eurostat, notably in the Western Balkans, data is collected directly by the EIS team through cooperating with and support from national statistical offices (NSOs). The EIS team is grateful for the support of Eurostat and all data providers including Invest Europe, national statistical offices, etc.

In addition, the Joint Research Centre (JRC) Competence Centre on Composite Indicators and Scoreboards carries out a statistical audit on the EIS and RIS to provide a statistical assessment of the composite indicators and contribute to improving transparency and reliability of the results. Further explanations on the methodology for collecting and analysing data are found in section 7 of this report and in the EIS Methodology Report[22].

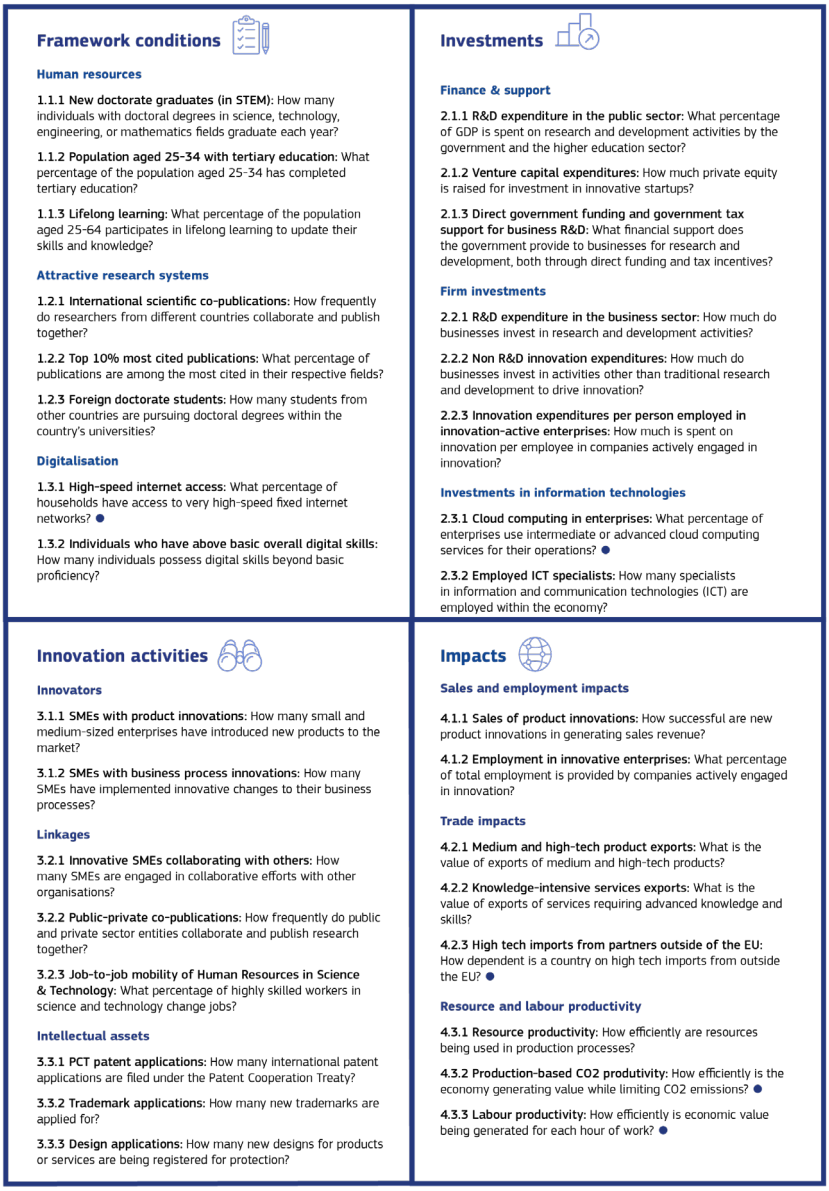
19 See: European Commission: Eurostat, European business statistics methodological manual for statistics on business innovation – 2024 edition, Publications Office of the European Union, 2024, https://data.europa.eu/doi/10.2785/0952308

20 See: https://ec.europa.eu/eurostat/cache/website/cis/library.html

21 See: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Statistics_on_ICT_usage_and_e-commerce_introduced#cite_note-1

22 See: https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard_en

Figure 5: EIS measurement framework and underlying questions addressed by each indicator



Legend
● *New indicator*

2.3 How to interpret the EIS results?

The summary innovation index (SII) provides a single, comparable score that reflects the overall innovation performance of each country. It is calculated as the unweighted average of the 32 indicators, i.e. each indicator is assigned an equal weight. To ensure comparability, scores present performance relative to the EU average rather than absolute values. For example, a score of 110.0 in 2025 indicates that the country is performing 10.0%-points above the EU average in 2018. To assess the innovation performance of a country over time, SII scores are presented relative to the EU score for the baseline year (2018).

A comprehensive understanding of national innovation performance, and its evolution over time, requires the consideration of multiple metrics and contextual factors. Countries are grouped into performance categories (Emerging, Moderate, Strong, and Leader) based on how their SII compares to the EU average in the current year. Country rankings, presented either among EU27 Member States or including neighbouring countries, provide an additional comparative perspective. Strengths and weaknesses are identified by comparing a country's indicator scores to the EU average, highlighting areas of relative advantage or lag. Taken together, and complemented by structural indicators that provide relevant context, these elements should enable a nuanced interpretation of innovation performance within and across countries.

Users are encouraged to consult the interactive online tool[23], explore individual country profiles, and access the underlying data and methodology files to conduct their own analysis or draw tailored insights. Figure 6 below provides further guidance on how to interpret SII values, rankings, reference years, indicator classifications, and available supporting resources.

23 See: https://projects.research-and-innovation.ec.europa.eu/en/statistics/performance-indicators/european-innovation-scoreboard/eis-2025#/

Figure 6: How to use and interpret EIS results

How to assess a country:

- Countries are assessed using the Summary Innovation Index (SII), a composite indicator based on 32 indicators covering various aspects of innovation.
- Based on their SII score relative to the EU average, countries are classified into Innovation Leaders, Strong Innovators, Moderate Innovators, or Emerging Innovators.

Reference years:

- Data can be indexed to the current year (2025) or the baseline year (2018). Always check which is used.
- Indexing to the current year shows performance relative to the 2025 EU average. E.g. Sweden performs at 120.0% of the EU average in 2025.
- Indexing to the baseline year shows performance change over 8 years. E.g. in 2025, Sweden performs at 151.8% of the EU average in 2018. Indexing to the baseline year is especially useful for showing trends in line charts, or changes from year to year.

Indicators:

- The SII is the unweighted average of 32 indicators, grouped into 12 dimensions and 4 pillars, covering key areas like digitalisation, human resources, and intellectual assets.
- Structural indicators provide contextual information, but are not included in the SII calculation.

Rankings:

- Countries are ranked based on their SII score. E.g. Sweden ranks 1st in the EU in 2025; Switzerland ranks 1st overall, including neighbouring countries.
- Each indicator can be ranked among EU Member States and neighbouring countries, showing relative performance.
- Within each country, the top three and bottom three indicators (based on scores) are identified as strengths and weaknesses, highlighting what contributes most positively or negatively to overall performance.

Resources:

- Main report: EU-wide results, trends, and comparisons with global competitors.
- Online tool: Interactive data exploration and analysis.
- Country profiles: In-depth analysis with interpretation.
- Methodology report: Explanation of how data and scores were calculated. Data and replication files are also available.

3. HOW ARE EU27 MEMBER STATES PERFORMING IN TERMS OF INNOVATION?

This section discusses the innovation performance of the 27 EU Member State and then compares the performance of 12 neighbouring European countries.

3.1 What is the composition and characteristics of innovation groups?

Based on their SII in 2025, the EU27 Member States are categorised into four different groups, namely Innovation Leaders, Strong Innovators, Moderate Innovators, and Emerging Innovators. More specifically:

- **Innovation Leaders** are Member States with performance above 125% of the EU average in 2025. This group includes four Member States, ranked by order of performance: Sweden, Denmark, the Netherlands and Finland.

- **Strong Innovators** are Member States with a performance between 100% and 125% of the EU average in 2025. This group includes seven Member States, ranked by order of performance: Ireland, Belgium, Luxembourg, Austria, Germany, France, and Estonia.

- **Moderate Innovators** are Member States with performance between 70% and 100% of the EU average in 2025. This group includes 10 countries, ranked by order of performance: Malta, Slovenia, Italy, Spain, Portugal, Cyprus, Lithuania, Czechia, Greece and Croatia.

- **Emerging Innovators** are Member States that have a performance level below 70% of the EU average in 2025. This group includes six Member States, ranked by order of performance: Hungary, Poland, Slovakia, Latvia, Bulgaria, and Romania.

Three Member States have moved from one performance group to another:

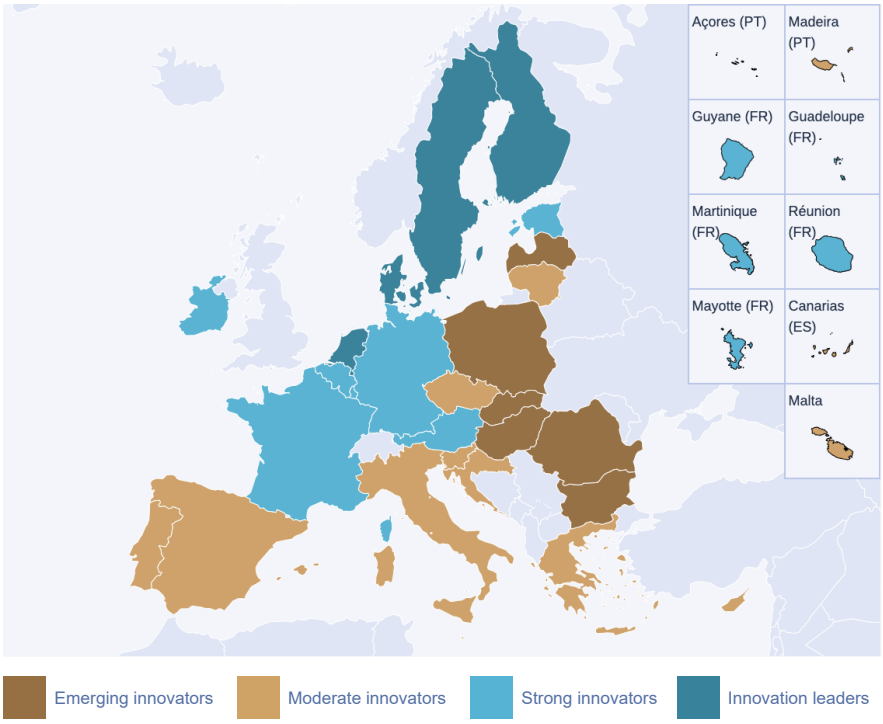
- **Croatia** has improved its innovation performance by 19.4%-points during the period of 2018 to 2025, resulting in its advancement from the Emerging Innovators to the Moderate Innovators performance group. Between 2024 and 2025, Croatia has particularly improved in the dimensions of: *Firm investments* (+35.5%-points); *Investments in information technologies* (+28.7%-points); and *Human resources* (+11.8%-points).

- **Cyprus** has dropped from the Strong Innovators to the moderate innovator's performance group. However, in comparison to 2018 it has still increased its score by 17.6%-points. Cyprus particularly underperformed between 2024 and 2025, and declined in dimensions such as: *Innovators* (-82.0%-points); *Linkages* (-76.8%-points); and *Impact on sales and employment* (-52.5%-points).

- **Hungary** has moved from the Moderate Innovators to the Emerging Innovators group, despite an overall increase in its score of 16.2%-points since the 2018 baseline and a small year-on-year gain of 1.7%-points. Hungary's position has weakened due to year-on-year declines in several dimensions, including *Finance and support* (-21.0%-points), *Innovators* (-10.6%-points), and *Firm investments* (-7.7%-points).

- **Sweden** regains its position as the most innovative Member State, ahead of Denmark which was the leading EU Member State from 2020-2024. Sweden has increased its score by 12.9%-points in comparison to 2018, and 2.0%-points in the last year. While, Ireland has become the leader of the Strong Innovators group in 2025, although only ahead of Belgium by 0.5%-points. Ireland's performance has grown by 13.3%-points from 2018, and 4.1%-points in the last year.

Figure 7: Innovation performance of the EU27 Member States in 2025

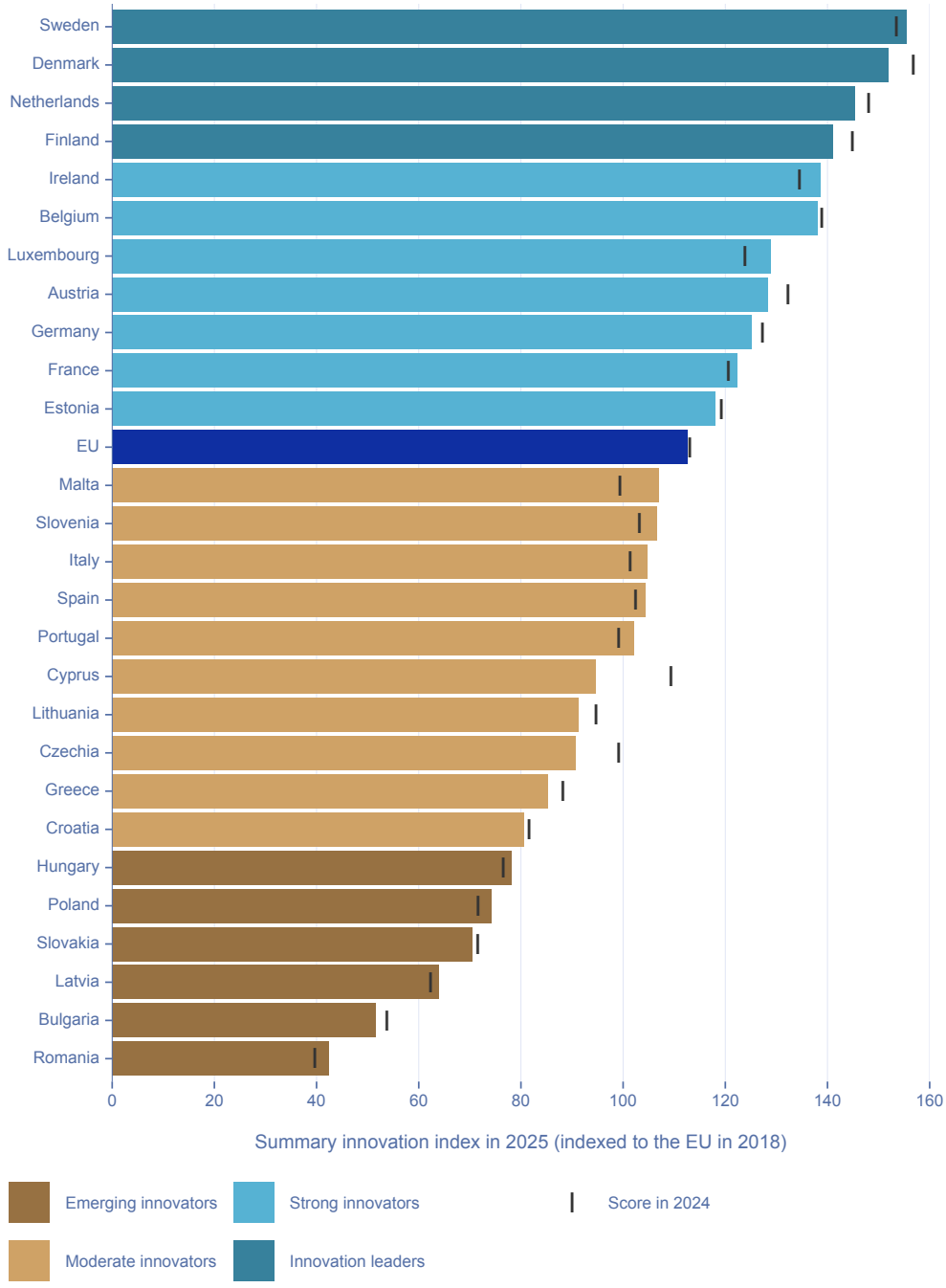


3.2 How do EU27 Member States compare to each other?

Figure 8 shows the scores for the SII for all EU27 Member States in 2025, relative to the EU in 2018 and compares them to their SII score in 2024 (applying the new framework not the EIS 2024 framework). The results show that 11 Member States rank above the EU average and 16 below. Compared to 2024, the ranking in 2025 remains unchanged for 13 Member States while 14 Member States have shifted positions upwards or downwards. Malta shifted upwards by four positions between 2024 and 2025, while Cyprus dropped 5 positions.

Using 2018 as the base year, we see that Malta, Luxembourg, Ireland, Slovenia, Italy, Portugal, Romania, Poland, Sweden, Spain, France, Hungary, and Latvia have increased their innovation performance since 2024. The scores for the remaining Member States decreased or remained stable. The changes range from Malta at +7.6%-points to Cyprus at -14.6%-points. The EU's score declined slightly by 0.4%-points, from 113.0 in 2024 to 112.6 in 2025.

Figure 8: Innovation performance of the EU27 Member States, compared to 2024



Note: All performance scores are relative to that of the EU in 2018. Horizontal coloured bars show countries' performance in 2025, using the most recent data for 32 indicators. The vertical bars show performance in 2024, using the next most recent data.

Compared to 2018, all EU27 Member States improved their innovation performance, with increases ranging from 0.9%-points in Luxembourg to 30.0%-points in Estonia. The EU average stood at +12.6%-points. Several countries recorded notably strong improvements well above the average, including Croatia (+19.4%-points), Poland (+18.0%-points), Cyprus (+17.6%-points), and Lithuania (+17.4%-points), followed closely by Slovenia, Malta, Czechia, Hungary, and Italy, each posting gains of over 15.0%-points.

Several other Member States performed close to or slightly above the EU average, such as Greece (+15.3%-points), Spain (+13.9%-points), Ireland (+13.3%-points), Sweden (+12.9%-points), Denmark (+12.3%-points) and Belgium (+11.7%-points). More moderate progress was observed in Portugal, Finland, Germany, Slovakia, Austria, Romania with increases between 8.0%-points and 9.0%-points. Meanwhile, France (+7.4%-points), Bulgaria (+6.3%-points), Latvia (+4.9%-points), and Luxembourg (+0.9%-points) recorded the smallest improvements since 2018.

Leading in the Strong Innovators – the case of Ireland: Ireland's performance has increased by 13.3%-points between 2018 and 2025 and now ranks as the best performing among the Strong Innovators for the first time. Indicators experiencing an impressive growth of above 100.0%-points from 2018 include *Cloud computing* (+221.5%-points), *High-speed internet access* (+169.2%-points), *Production-based CO_2* productivity (+122.5%-points) and *Innovative SMEs collaborating with others* (+117.7%-points). For *Cloud computing* the government has galvanised this through the Digital Ireland Framework[24], which promotes the adoption of digital technologies across the economy. This is supported by a well-developed cloud infrastructure and the presence of major tech firms like Amazon, Microsoft, and IBM, whose services are widely used by businesses which helps enterprises gain access to *Cloud computing* solutions. High speed internet success can be attributed to the National Broadband Plan which is the Irish Government's €2.7 billion initiative to deliver high-speed broadband to over 560,000 premises nationwide, primarily in rural and underserved areas, with over 125,000 connections completed as of 2025[25].

Change in performance groups – the case of Cyprus: Cyprus has fallen from Strong to Moderate Innovators, despite an overall performance increase of 17.6%- points since 2018. Cyprus' decline is the result of a combination of factors. A key driver was the significant drop in several indicators based on the 2022 Community Innovation Survey (CIS), in particular: Innovative SMEs collaborating with each other (-223.9%-points), SMEs introducing business process innovations (-102%-points), and SMEs introducing product innovations (-61.3%-points). In small economies like Cyprus, CIS results can be sensitive to sampling composition, leading to large year-on-year variations. In addition, the revised

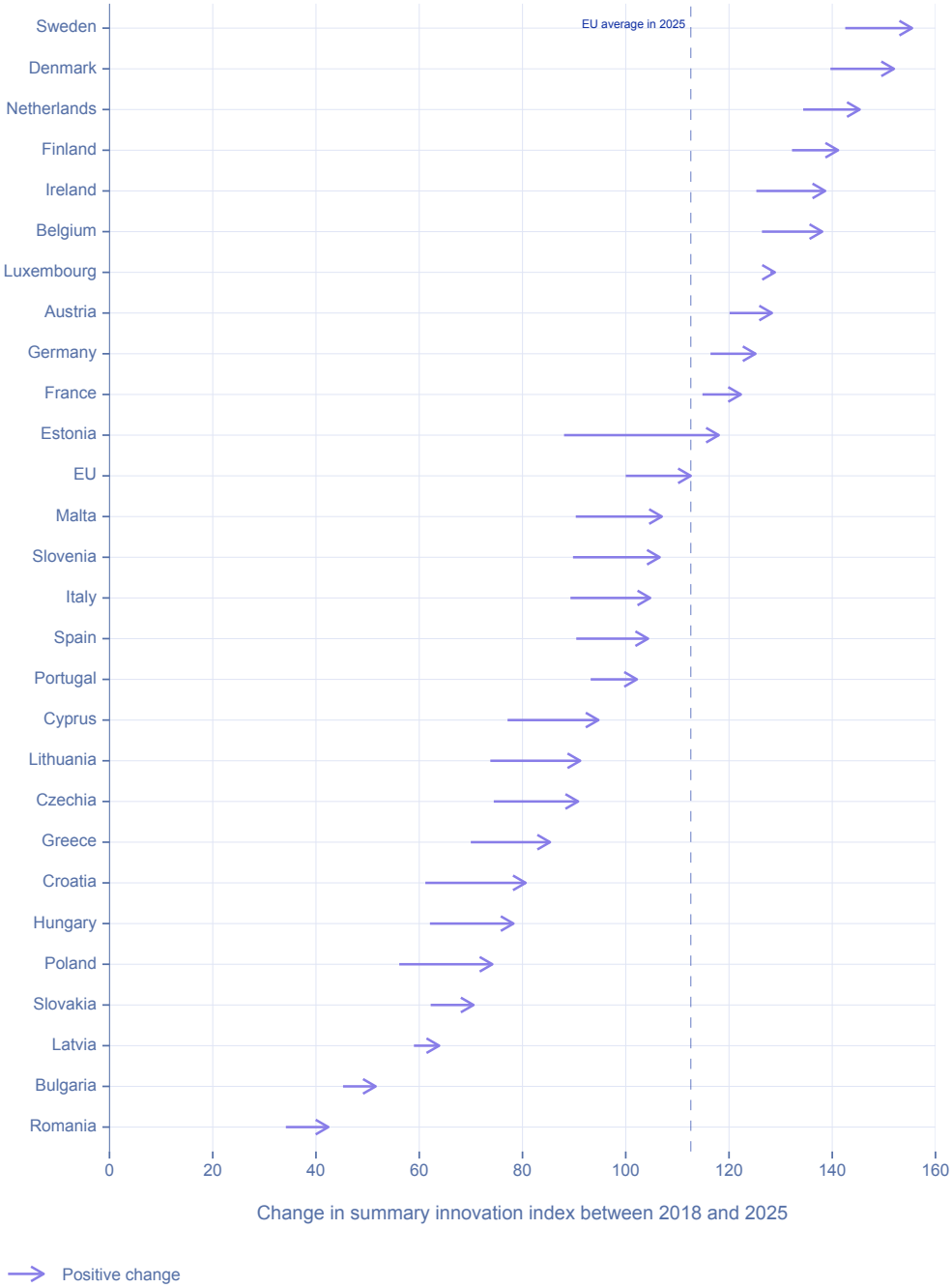
24 https://www.gov.ie/en/department-of-the-taoiseach/publications/harnessing-digital-the-digital-ireland-framework/
25 https://www.gov.ie/en/department-of-culture-communications-and-sport/publications/national-broadband-plan/

measurement framework had a negative, though limited, impact on Cyprus' performance, notably related to the new indicator High-tech imports from partners outside the EU. The country's relatively small market size and geographical location may help explain its reliance on high-tech imports from non-EU partners. Together, these factors led to the significant decline. However, the revision of the measurement framework alone cannot explain the shift in performance group. Cyprus continues to record high gains since 2018, through the successful development of Centres of Excellence via the Horizon 2020 and Horizon Europe "Widening" and "Teaming" programmes. For example, the KIOS Centre of Excellence at the University of Cyprus has obtained over €40 million in EU and national funds (2017–22), while the PHAETHON Energy centre of excellence received €15 million from Horizon Europe and €30 million from government tapping into strategic R&I infrastructure. Additionally, the Cyprus Space Exploration Organisation's Strategic Infrastructure Project, co-funded by the EU and the Research and Innovation Foundation (RIF), was launched in late 2023 to establish a national space research hub.

Drivers of change – the case of Croatia: Croatia's innovation performance has increased by 19.4%-points between 2018 and 2025, moving the country from the Emerging Innovators to the Moderate Innovators group. Indicators showing particularly strong growth since 2018 include *Venture capital expenditures* (+190.4%-points), *Cloud computing* (+184.2%-points), and *Innovation expenditures per person employed* (+84.4%-points). Croatia's progress is aided by a developing startup ecosystem, supported through government-backed initiatives such as the World Bank–financed DIGIT project, which aims to strengthen institutional research capacity, support applied R&D, and accelerate digital transformation across firms. These efforts are complemented by national programmes led by HAMAG-BICRO and the Digital Croatia Strategy 2032, which seek to enhance digitalisation and incentivise private-sector investment in R&D

Drivers of growth – the case of Poland: Poland's innovation performance has improved by 18.0%-points between 2018 and 2025, placing it third in the EU27 in terms of growth over this period. There have been significant improvements in key indicators such as *Cloud computing* (+389.3%-points), *High-speed internet access* (+68.2%-points), and *Government support for business R&D* (+57.0%-points). Poland's improvements in *Firm investments* and *Digitalisation* may be due, in part, to targeted national funding initiatives. The government has launched the Critical Technology Support Fund (PLN 4 billion / ~€1 billion) to support business investments in biotechnology, digital technologies, and resource-efficient innovations. An additional PLN 800 million (~€200 million) has been allocated to the Digital and Environmentally Friendly Transformation Fund, aimed at accelerating the shift towards Industry 4.0 and green technologies. These schemes complement existing programmes such as Ścieżka Smart, which in 2025 alone will provide over PLN 2.3 billion (~€800 million) in funding for R&D and commercialisation projects, including dedicated calls for consortia of companies and research organisations.

Figure 9: Evolution of the innovation performance of the EU27 Member States between 2018 and 2025



Note: Performance change is measured as the difference between 2025 and 2018 scores, relative to that of the EU in 2018.

3.3 How do EU27 Member States differ in innovation dimensions?

This section explores how performance is changing within each pillar and how the EU and EU27 Member States are performing within each pillar.

Human Resources

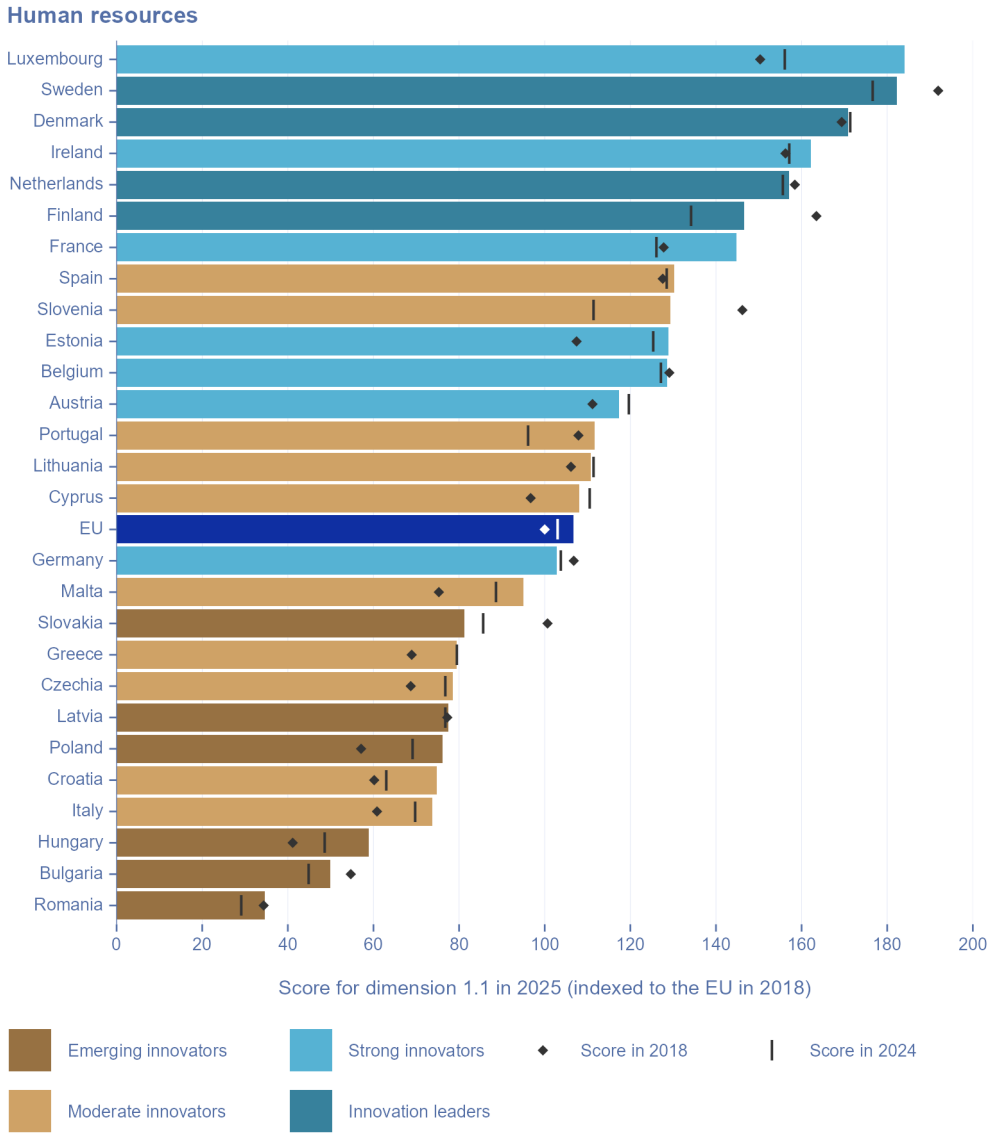
The *Human resources* dimension measures the availability of a high skilled and educated workforce and includes three indicators: *New doctorate graduates, Population with completed tertiary education and Population aged 25-64 involved in lifelong learning activities.*

For this dimension, the best-performing Member States are three Innovation Leaders – Sweden, Denmark and the Netherlands and two Strong Innovators, Luxembourg and Ireland. Luxembourg holds the top position. The bottom five in the *Human resources* dimension consist of two Moderate Innovators (Croatia and Italy) and three Emerging Innovators (Romania, Bulgaria and Hungary). Nevertheless, all five improved their performance since 2024. Croatia stands out with an increase of 11.8%-points.

All Innovation Leaders and Strong Innovators except for Germany exceed the EU average in 2025 on the *Human resources* dimension. Moderate Innovators are equally split, with five above the EU average (Spain, Slovenia, Portugal, Lithuania, Cyprus) and five below it (Malta, Greece, Czechia, Croatia, Italy). Overall, the EU average stands approximately in the middle of the distribution with 15 Member States scoring higher and 12 scoring lower than the EU average.

Compared to 2024 the EU average for the *Human resources* dimension improved by 3.7%-points driven by increased performance by 21 Member States. Luxembourg (+28.0%-points) has experienced the strongest improvement, followed by France (+18.8%-points) and Slovenia (+17.9%-points). Performance decreased for six Member States with strongest declines in Slovakia (-4.4%-points), Cyprus (-2.4%-points) and Austria (-2.4%-points).

Figure 10: Innovation performance of the EU27 Member States in the *Human resources* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

Attractive research systems

The *Attractive research systems* dimension measures the international competitiveness and attractiveness of the national science base by considering the number of *International scientific co-publications, the most cited scientific publications (among the top 10%) and the presence of foreign doctorate students*.

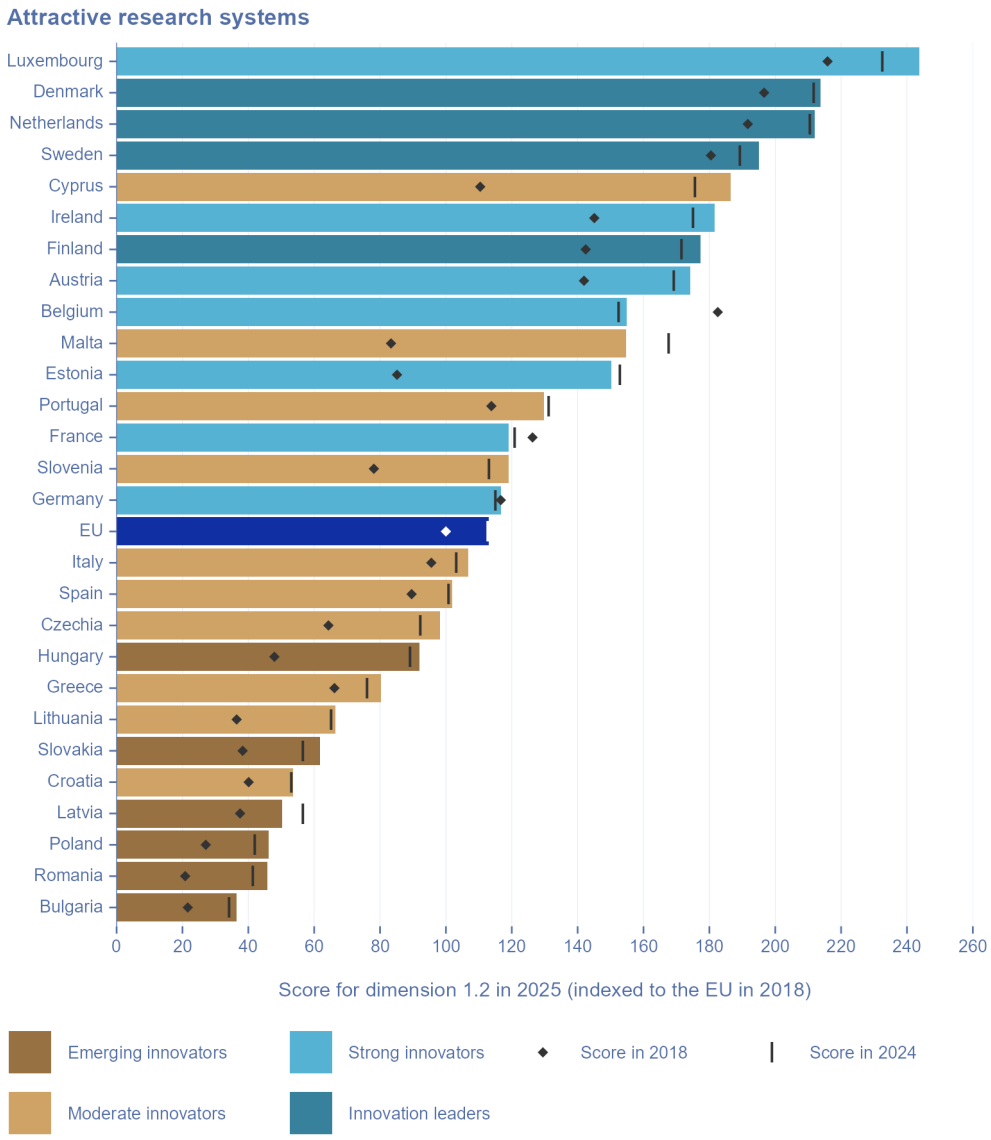
The top five performers are three Innovation Leaders (Denmark, the Netherlands, Sweden), one strong (Luxembourg) and one moderate innovator (Cyprus). The best performing Member State is Luxembourg, followed by Denmark and the Netherlands. Cyprus, a moderate innovator ranks fifth. In contrast, the bottom five Member States include four Emerging Innovators (Latvia, Poland, Romania, Bulgaria) and one Moderate Innovator (Croatia).

More than half of the Member States (15) rank higher than the EU in 2025. All Innovation Leaders and Strong Innovators rank above the EU average. Among the *Moderate Innovators* four rank above the EU average and six below it. Cyprus stands out by ranking fifth just behind Sweden.

Between 2024 and 2025, the EU average for the *Attractive research systems* dimension remained relatively stable with a 0.3%-point increase. The performance has increased for 21 Member States with Luxembourg (+11.2%-points), Cyprus (+10.9%-points) and Ireland (+6.5%-points) experiencing the highest performance growth. Performance has decreased for six Member States with the strongest decline experienced by Malta (-13.0%-points) followed by Latvia (-6.2%-points) and Estonia (-2.6%-points).

Between 2018 and 2025, the EU average improved by 13.0%-points. This increase was driven by improvements in the performance of 25 Member States. Cyprus recorded the highest performance growth (+76.0%-points), followed by Malta (+71.6%-points) and Estonia (+65.1%-points). Performance decreases are recorded for only two Member States, Belgium (-27.6%-points) and France (-7.3%-points).

Figure 11: Innovation performance of the EU27 Member States in the *Attractive research systems* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

Digitalisation

The *Digitalisation* dimension measures the penetration of digital technologies and includes two indicators: *High-speed internet access and Individuals with above basic overall digital skills*. This dimension has been revised by adapting one indicator, namely by replacing Broadband penetration with *High-speed internet access*, which offers a more accurate reflection of digitalisation, although measured at the household level.

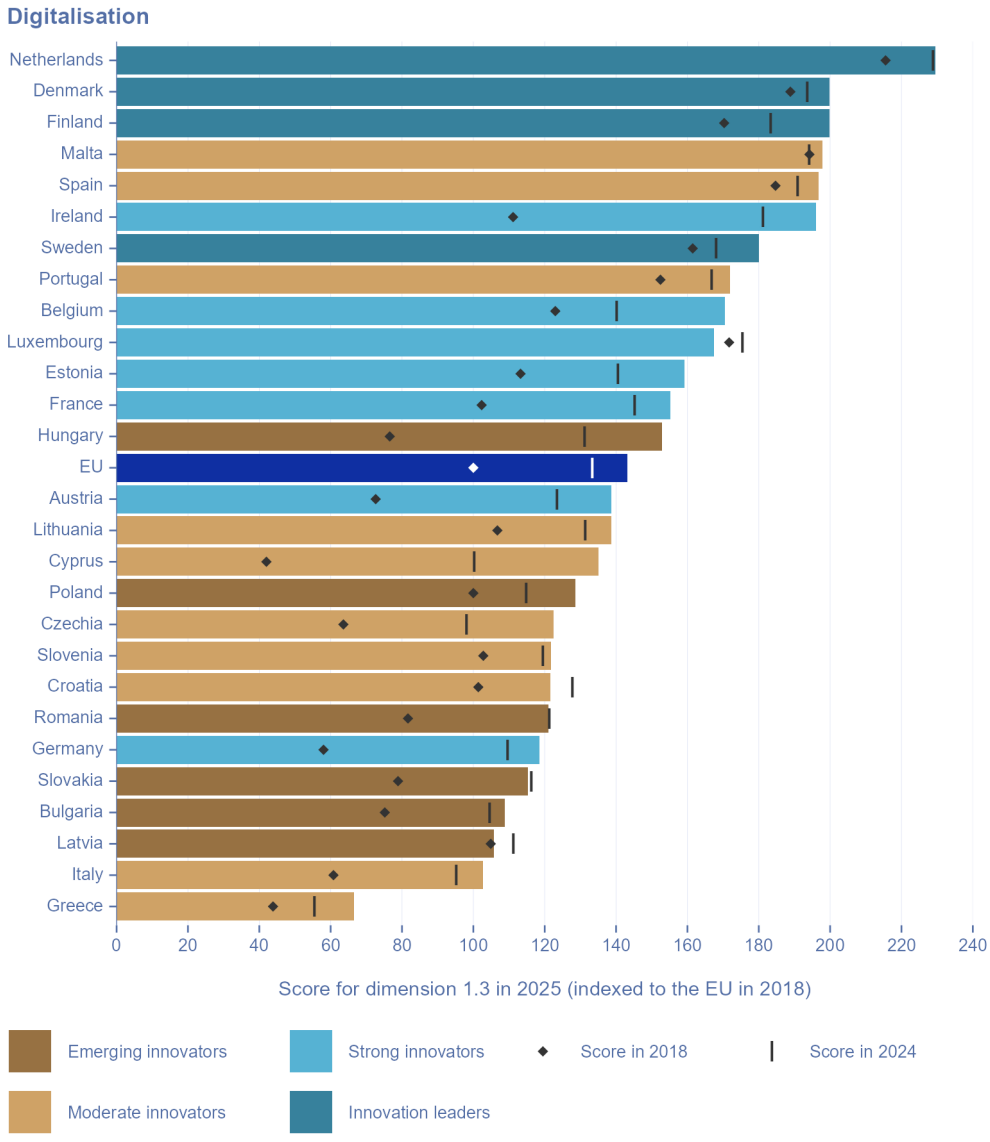
The best performing Member States for this dimension are three Innovation Leaders, the Netherlands, Denmark and Finland, followed by two Moderate Innovators Malta and Spain. At the other end of the scale, Greece and Italy, are ranked at the bottom, below three Emerging Innovators (Latvia, Bulgaria and Slovakia).

All Strong and Leading Innovators perform above the EU average in 2025, except for Austria and Germany. Germany in particular scores below the EU average in both indicators under the dimension of *Digitalisation* but especially in the case of *Individuals who have above basic overall digital skills (at 67.7% of the EU average in 2025)*. Among the Moderate Innovators, three Member States are above the EU average (Malta, Spain and Portugal) and seven (Lithuania, Cyprus, Czechia, Slovenia, Croatia, Italy and Greece) below it. In the case of Emerging Innovators only one Member State, Hungary, ranks above the EU average with all other Member States ranking below it.

In comparison to 2024 the EU average improved by 9.7%-points. This increase was driven by 22 Member States with an improved performance. Among those Cyprus (+34.8%-points), Belgium (+30.4%-points) and Czechia (+24.4%-points) experienced the strongest increase. On the other hand, performance has decreased for five Member States with the strongest decline for Luxembourg (-7.9%-points), Croatia (-6.3%-points) and Latvia (-5.3%-points).

Between 2018 and 2025, the EU average improved by 43.2%-points driven by an improved performance for all Member States but one, Luxembourg (-4.2%-points). The largest performance increases are recorded for Cyprus (+93.0%-points), Ireland (+84.9%-points) and Hungary (+76.3%-points).

Figure 12: Innovation performance of the EU27 Member States in the *Digitalisation* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

Finance and support

The *Finance and support* dimension measures the financing capacity of innovation and includes three indicators: *R&D expenditures in universities and government research organisations, Venture capital expenditures and Direct government funding and tax support for business R&D*.

The best performing Member States are two Strong Innovators, France and Belgium and three Leading Innovators Sweden, Denmark and Finland. The bottom of the ranking includes two Moderate Innovators (Cyprus and Malta) and three Emerging Innovators (Latvia, Bulgaria and Romania). Among the Moderate Innovators Cyprus has experienced a decline compared to 2024.

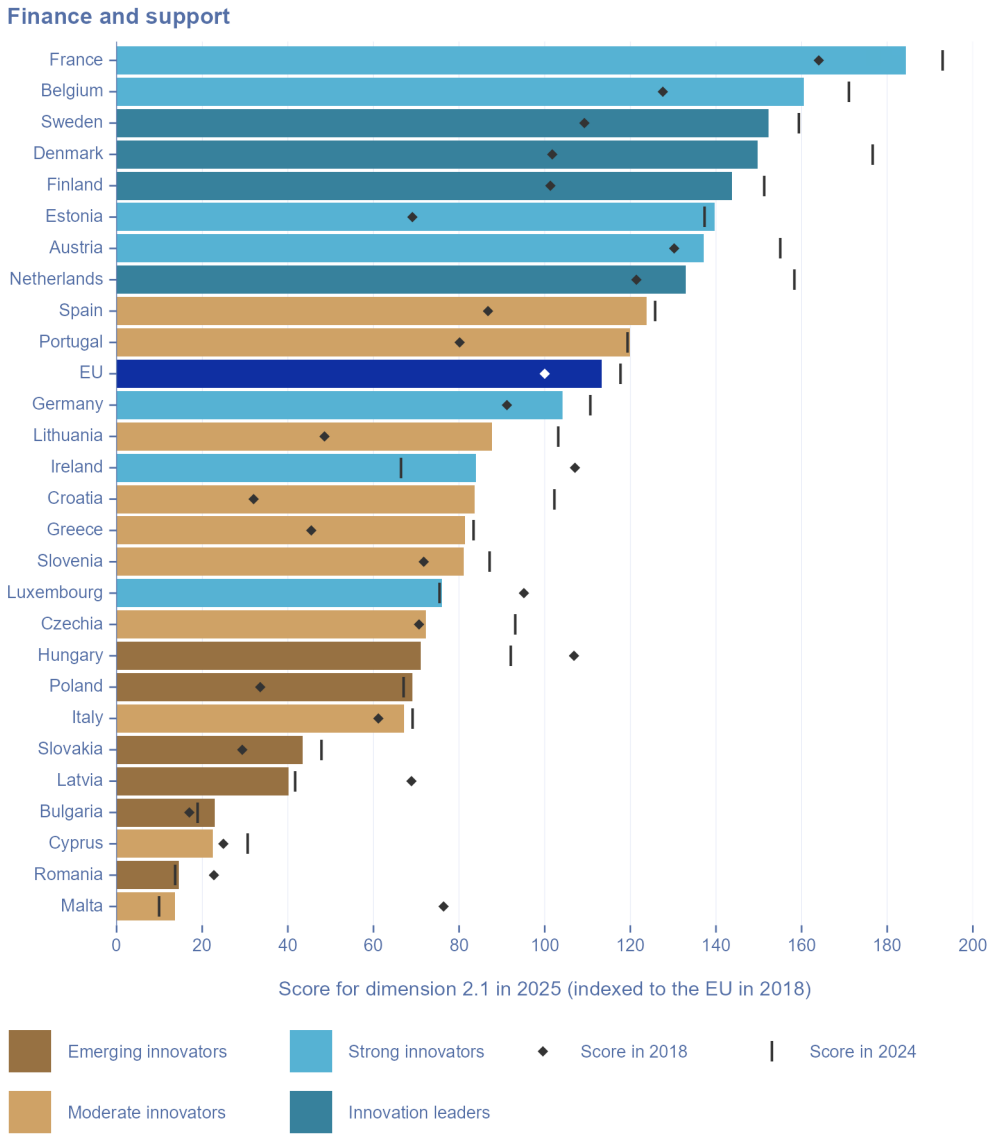
Only 10 Member States are above the EU average with the remaining 17 below the EU average. Among these 10 we find Member States from three performance groups including all Leading Innovators, four Strong Innovators (France, Belgium, Estonia, Austria) and two Modest Innovators (Spain and Portugal).

The EU average in the *Finance and support* dimension declined by 4.4%-points between 2024 and 2025. Between 2024 and 2025, all Leading Innovators performance declined ranging from -26.9%-points for Denmark, followed by the Netherlands with -25.5%-points and Finland and Sweden with -7.5%-points and -7.1%-points, respectively. The decline is driven by *Venture capital expenditures* in the case of all Leading Innovators[26]. Overall, performance improved in only eight Member States, while in the remaining 19 performance declined. Ireland stands out with a growth of 17.4%-points followed by Bulgaria with 4%-points and Malta with 3.8%-points.

Although the EU average in the *Finance and support* dimension declined between 2024 and 2025, compared to the base year of 2018, the EU grew by 13.2%-points. The countries with the most pronounced increases in *Finance and support* since 2018 include Estonia (+70.6%-points), Croatia (+51.7%-points) and Denmark (+47.9%-points). In contrast, Malta (-62.7%-points), Hungary (-35.8%-points) and Latvia (-28.7%-points) experienced notable declines.

26 The *Venture capital expenditures* indicator is defined as private equity raised for investment in companies. Management buyouts, management buy-ins, and venture purchase of quoted shares are excluded. More specifically, buyouts are defined according to Invest Europe as financing provided to acquire a company. A significant amount of borrowed capital may be used to meet the cost of acquisition, typically by purchasing majority or controlling stakes. According to the raw data used for the EIS 2025 edition, total investments have increased but the overall decline in the indicator comes from an increase in buyouts and an increase in GDP.

Figure 13: Innovation performance of the EU27 Member States in the *Finance and support* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

Firm investments

The *Firm investments* dimension measures the innovation expenditures of the private sector and includes the following indicators: *Business R&D expenditures, Non-R&D and innovation expenditures as a percentage of turnover and Innovation expenditures per person employed*[27].

The best performing Member State in 2025 in this dimension is Sweden a Leading Innovator. The top five Member States also include Germany and Belgium, both Strong Innovators with a comparable performance, followed by Malta, a Moderate Innovator and Denmark, a Leading Innovator.

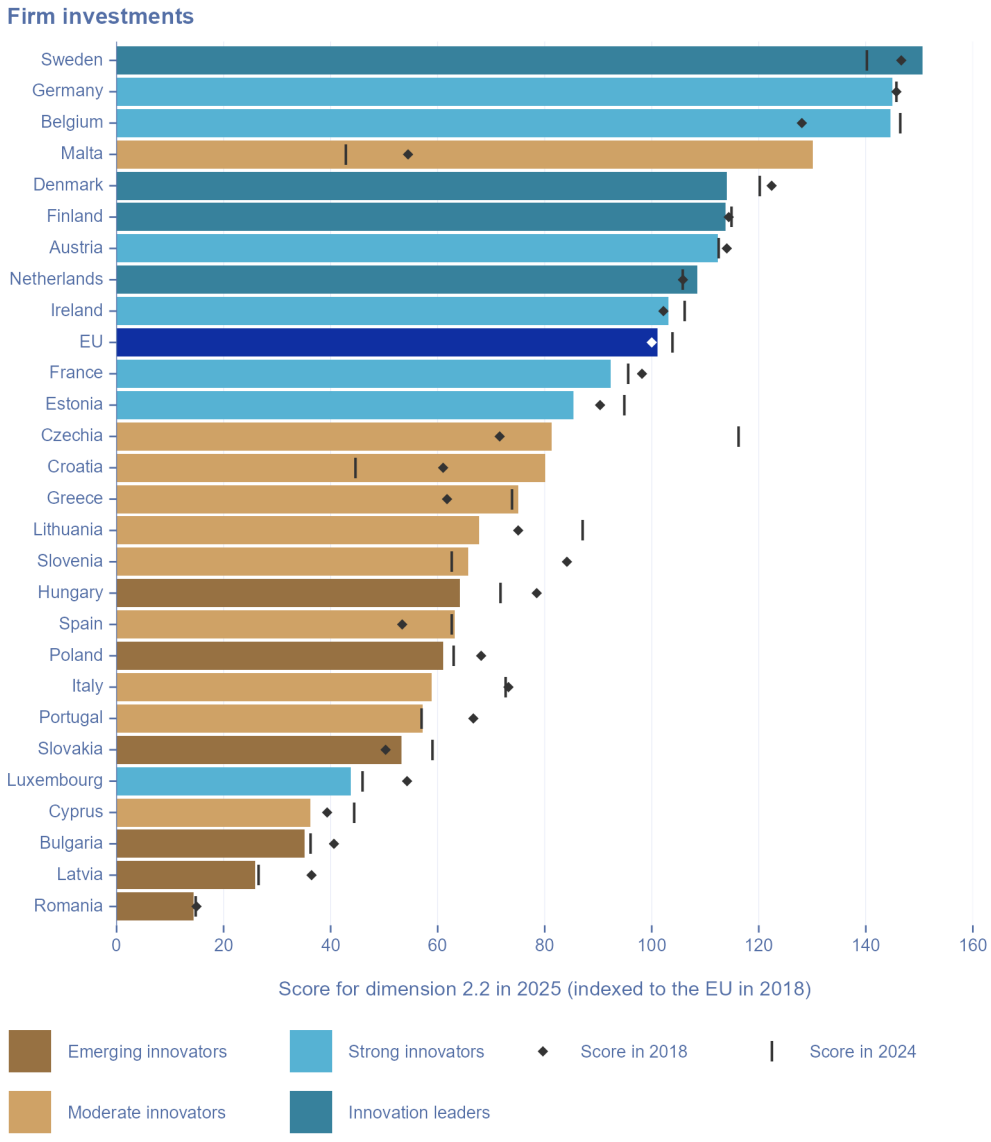
Among the best performers in *Firm investments*, a diverse composition of Member States is observed, representing three different performance groups: Leading, Strong and Moderate Innovators. The Member States ranking at the bottom include a Strong Innovator, Luxembourg, with a score of 43.7, or 57.0%-points below the EU average. Other Member States with a low ranking include a Moderate Innovator, Cyprus, and three Emerging Innovators, Bulgaria, Latvia and Romania.

Among the EU27 Member States, only nine ranked above the EU average in 2025. All Innovation Leaders exceed the EU average in 2025 while among the Strong Innovators, France, Estonia and with a notable distance Luxembourg, rank below the EU average.

Between 2024 and 2025, the EU average declined by 2.7%-points. Most of the EU27 Member States (19) experienced a decline in *Firm investments* with only eight Member States recording growth. Among the Member States experiencing improvement, Malta stands out with a 87.2%-point increase, followed by Croatia (+35.5%-points) and Sweden (+10.4%-points).

27 The latter two indicators are obtained from the CIS survey data in 2022. While they represent the most recent data of the CIS survey conducted every two years, the results are subject to a time lag of three years.

Figure 14: Innovation performance of the EU27 Member States in the *Firm investments* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

The declines in *Firm investments* observed in many EU27 Member States over the past year is also evident when compared to the 2018 baseline. Specifically, 17 Member States experienced a decline, while 10 showed growth in their performance compared to 2018. The largest increases were in Malta with an increase between 2018 and 2025 of 75.6%-points, followed by Croatia with 19.1%-points and Belgium with 16.6%-points.

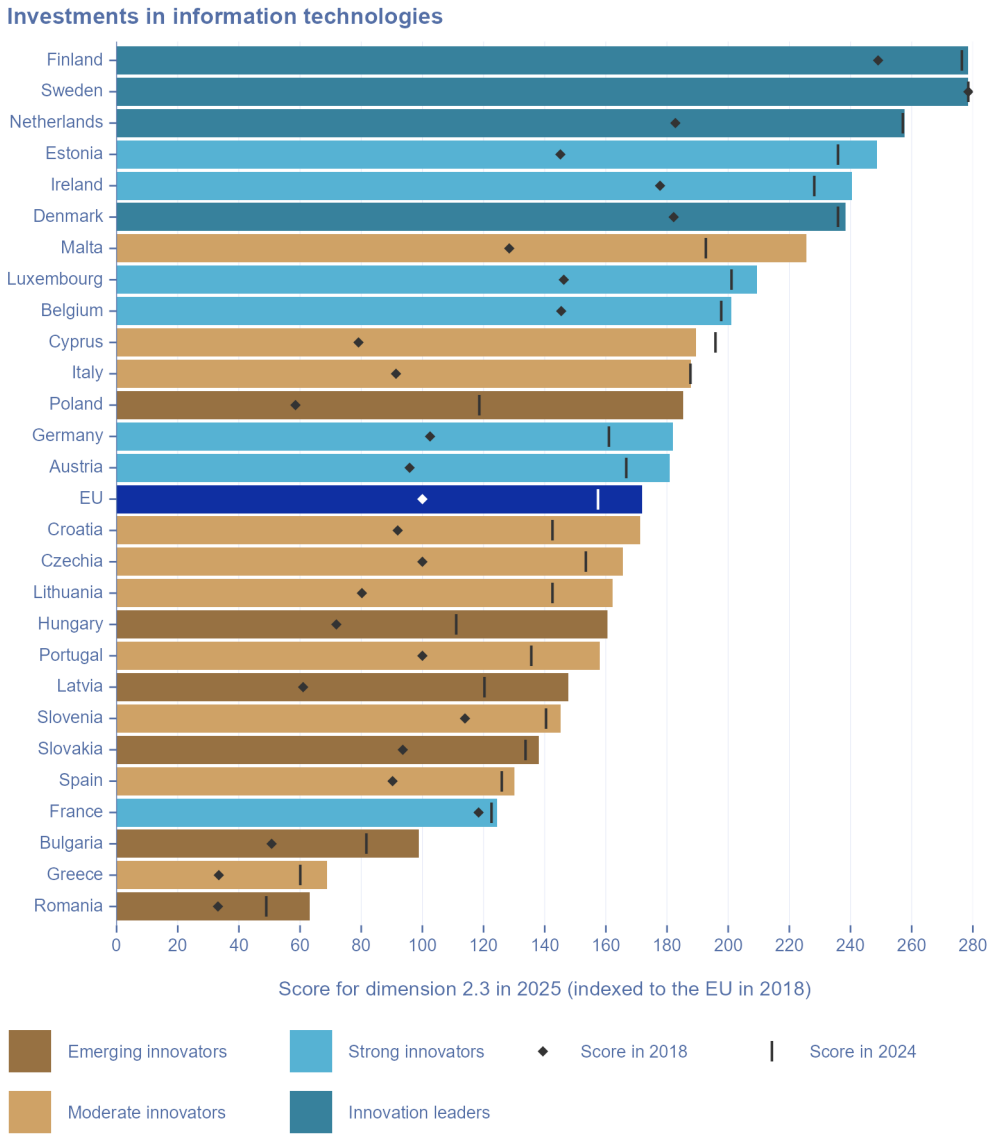
Investments in information technologies

The *Investments in information technologies* dimension captures business uptake of information technologies and includes two indicators: *Cloud Computing* and *Employed ICT specialists*.

In 2025, the top performing Member States in this dimension include three Leading Innovators (Finland, Sweden and the Netherlands), followed by two Strong Innovators (Estonia, Ireland). At the other end of the scale, France, a Strong Innovator, ranks fourth from the bottom. The rest of the Member States with a comparatively low performance include two Moderate Innovators, Greece and Spain, and two Emerging Innovators, Bulgaria and Romania.

All Leading and Strong Innovators perform above the EU average, except for France. Among the Moderate Innovators, three perform above the EU average (Malta, Cyprus and Italy) while seven fall below it. The Emerging Innovators all rank below the EU average, except for Poland, which ranks above it.

Figure 15: Innovation performance of the EU27 Member States in the *Investments in information technologies* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

In comparison to 2024, the EU average has increased by 14.5%-points. This positive result is driven by 26 Member States recording growth with only one exception, Cyprus (-6.4%-points). The Member States with the most notable improvements in their performance include Poland (+66.6%-points), Hungary (+49.3%-points) and Malta (+32.9%-points).

Between 2018, the base year, and 2025 all Member States experienced improvement, with Poland (+126.7%-points), Cyprus (+110.3%-points) and Estonia (+103.6%-points) showing the most significant increases.

Innovators

The *Innovators* dimension reflects SMEs' innovation activities in introducing innovations in products and business processes. It includes two indicators, *SMEs introducing product innovations* and *SMEs introducing business process innovations* from the CIS.

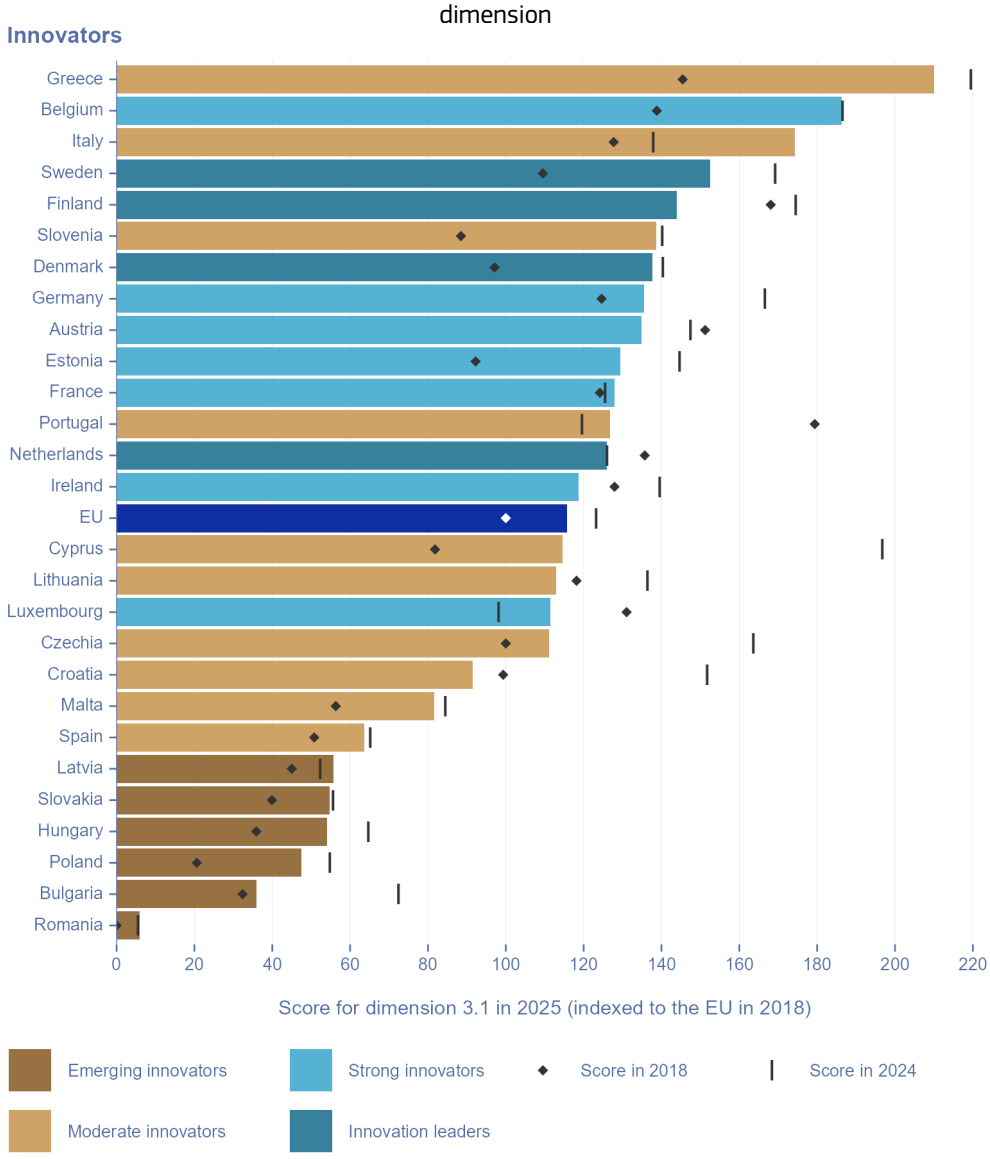
Although its performance decreased between 2024 and 2025, Greece ranks at the top with a score of 181.4 relative to the EU in 2025. Among the top five performers, Greece is joined by one Strong Innovator, Belgium, another Moderate Innovator, Italy, and two Leading Innovators, Sweden and Finland.

Among EU27 Member States, all Leading Innovators and Strong Innovators apart from Luxembourg perform above the EU average in 2025. In total 14 Member State rank above the EU average in 2025.

In comparison to 2024, the EU average declined by -7.5%-points. Only seven Member State's performance increased between 2024 and 2025 most notably Italy (+36.4%-points), Luxembourg (+13.3%-points) and Portugal (+7.3%-points). The largest declines are observed in Cyprus (-82.0%-points), Croatia (-60.1%-points) and Czechia (-52.5%-points).

Over the longer run, compared to 2018, the EU27 has increased its performance by 15.7%-points driven by growth in innovation activities in 19 Member States. Countries contributing the most include Greece (+64.5%-points), followed by Slovenia (+50.1%-points) and Belgium (+47.5%-points). Performance has decreased in eight Member States with the strongest declines in Portugal (-52.5%-points), Finland (-24.2%-points) and Luxembourg (-19.5%-points).

Figure 16: Innovation performance of the EU27 Member States in the *Innovators* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

Linkages

The *Linkages* dimension includes three indicators measuring innovation capabilities by looking at *Collaboration between innovating firms, Research collaboration between the private and public sector, and Job-to-job mobility of Human resources in Science & Technology (HRST).*

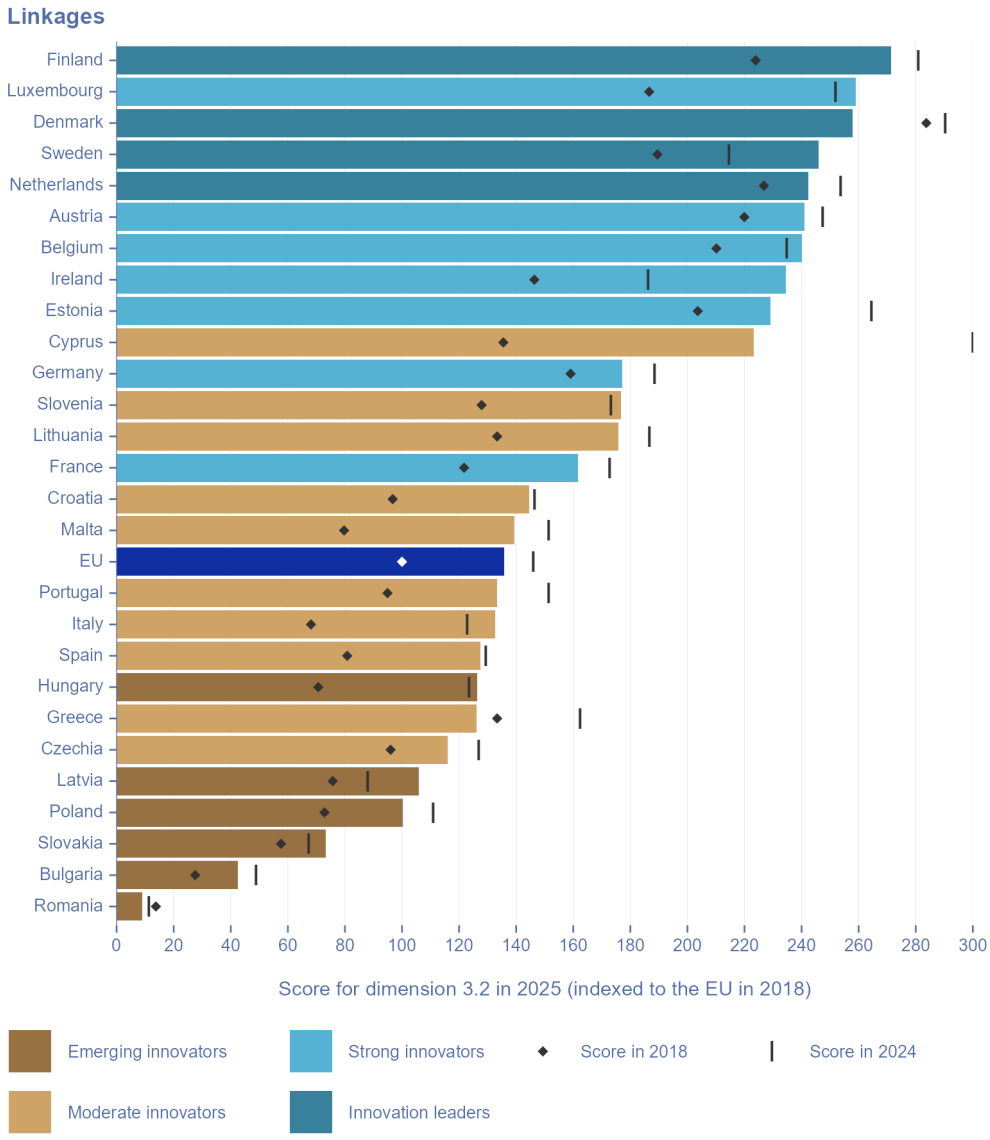
The top performing Member States in the *Linkages* dimension include all Innovation Leaders, led by Finland and a Strong Innovator, Luxembourg. The Member States at the bottom of the rank are all Emerging Innovators.

Overall, most of the Member States rank above the EU average (16) in 2025 including all Leading and Strong Innovators as well as five Moderate Innovators. The 11 Member States below the EU average include five Moderate Innovators and all six Emerging Innovators.

In comparison to 2024, the EU average has declined by -10.1%-points. Only nine Member States record growth, with a majority (18) Member States declining. The Member States with the highest improvements in performance since 2024 include Ireland (+48.2%-points), Sweden (+31.5%-points) and Latvia (+17.8%-points). Notable declines are observed for Cyprus (-76.8%-points), Greece (-36.2%-points) and Estonia (-35.5%-points).

Over the longer run, the EU average improved by 35.9%-points between 2018 and 2025. Most Member States (24) showed improvement among which most notably Ireland (+88.0%-points), Cyprus (+87.7%-points) and Luxembourg (+72.5%-points). The three countries that declined were Denmark (-25.7%-points), Greece (-7.2%-points) and Romania (-4.7%-points).

Figure 17: Innovation performance of the EU27 Member States in the *Linkages* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

Intellectual assets

The *Intellectual assets* dimension captures different aspects of Intellectual Property Rights (IPR), as measured by *Patent Cooperation Treaty patent applications*, *Trademark applications* and *Design applications*.

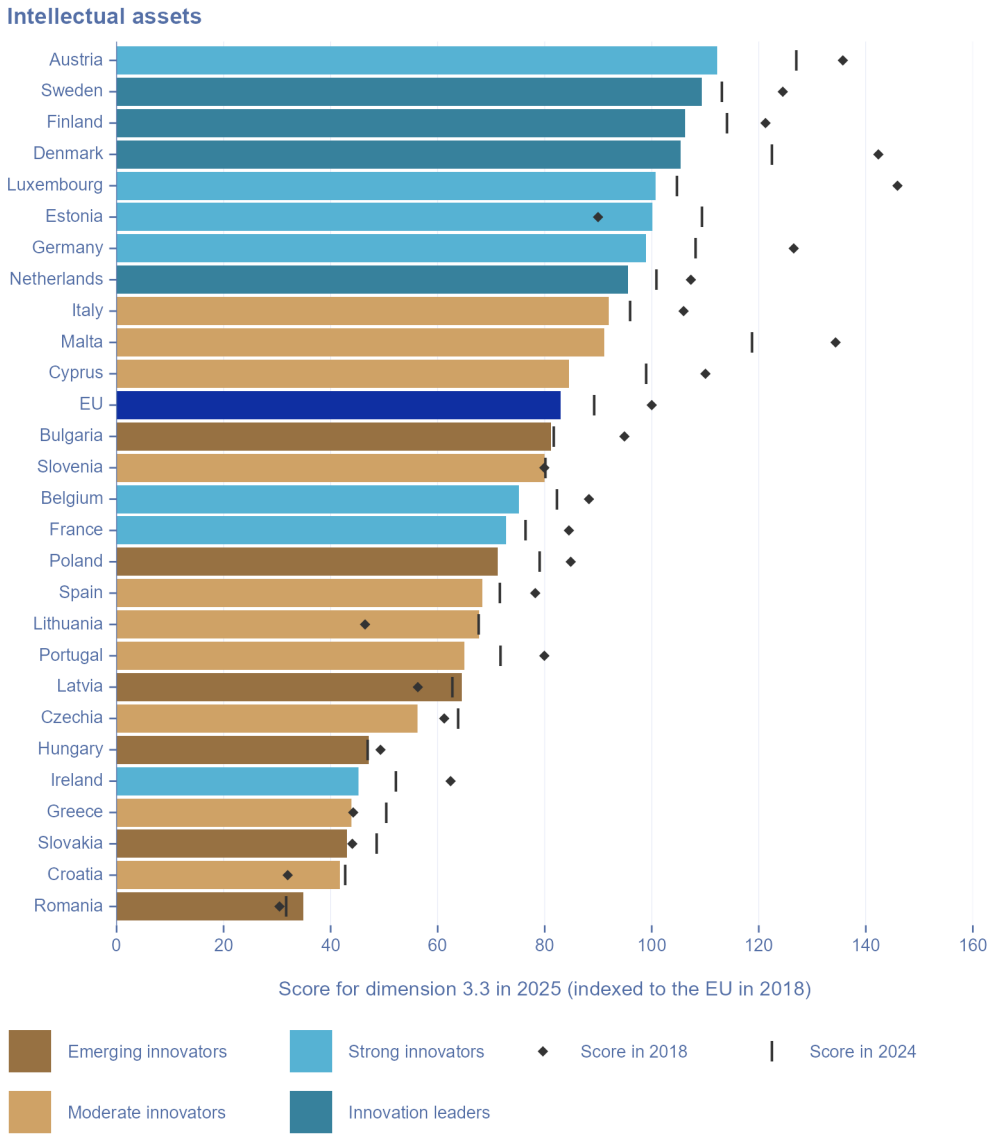
The top five Member States in the *Intellectual assets* dimension are a mix of Leading and Strong Innovators with Austria, a Strong Innovator, in the lead, followed by Innovation Leaders Sweden, Finland, and Denmark, as well as Luxembourg - a Strong Innovator.

More than half of EU27 Member States (16) perform below the EU average in 2025 and 11 above it. All Innovation Leaders exceed the EU average. Among the Strong Innovators, four Member States are above the EU average in 2025 (Austria, Luxembourg, Estonia, Germany) and three below it (Belgium, France and Ireland). Among the Moderate Innovators, three (Italy, Malta, and Cyprus) are above the EU average in 2025 and the majority are below it. The Emerging Innovators are all below the EU average with Bulgaria leading just below the EU average.

The EU27 performance for *Intellectual assets* has declined by -6.3%-points compared to 2024. This result is due to the consistent decline across Member States except for three Member States, namely Hungary (+0.2%-points), Latvia (+1.7%-points) and Romania (+3.2%-points) with increases in their performance in 2025 compared to 2024. The countries experiencing the sharpest decline are Malta (-27.6%-points), Denmark (-17.0%-points) and Austria (-14.8%-points).

Looking back at the base-year of 2018, the decline in performance at the EU level is more pronounced with -17.0%-points. This result is explained by a consistent decline across 21 Member States and only six with an increase in their performance. The Member States with the sharpest declines in *Intellectual assets* since 2018 are Luxembourg (-45.2%-points), Malta (-43.2%) and Denmark(-36.9%-points). Member states recording growth compared to the 2018 base-year include Lithuania (+21.3%-points), Estonia (+10.2%-points) and Croatia (9.7%-points).

Figure 18: Innovation performance of the EU27 Member States in the *Intellectual assets* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

Impact on Sales and Employment

The impact of innovation activities for businesses is measured by the *Sales and employment impacts* dimension that is based on two indicators: *Employment in innovative enterprises and Sales of new-to-market and new-to-firm innovations*.

The label for this dimension was adjusted compared to previous editions of the EIS to better reflect the scope of its indicators (see section 2.2).

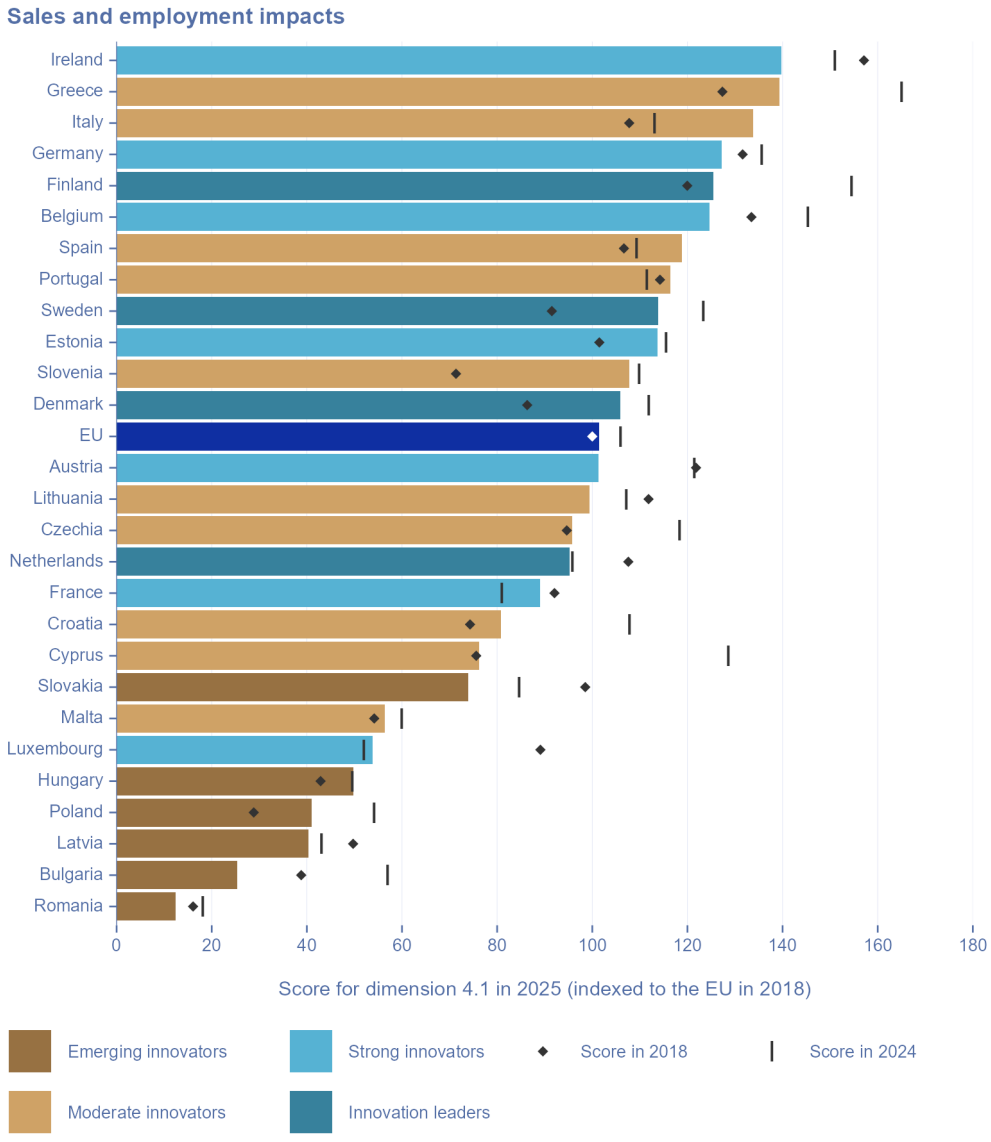
The highest ranked Member States include Leading, Strong and Moderate Innovators. Ireland, a Strong Innovator, is in the lead, followed by Greece and Italy, both Moderate Innovators. Germany as a Strong Innovator and Finland as a Leading Innovator complete the top five Member States.

The composition of countries below and above the EU average in 2025 is varied with a mix of Member States from the different performance groups. Among the Leading Innovators, the Netherlands ranks below the EU average as well as three Strong Innovators (Austria, France and Luxembourg). Emerging Innovators all rank below the EU average.

Compared to 2024, the EU has declined by -4.4%-points. Most Member States (21) experience declines, while only six show growth. The Member States with the sharpest declines include Cyprus (-52.5%-points), Bulgaria (-31.6%-points) and Finland (-29.0%-points). In contrast, the Member States with the highest growth are Italy (+20.7%-points), Spain (+9.6%-points) and France (+8.1%-points).

Between 2018 and 2025, the trend for the EU average is positive with a small growth of 1.5%-points. This result is due to nearly even distribution of changes among Member States, with approximately half showing positive (15) and the other half negative (12) growth. The Member States contributing to growth include Slovenia (+36.4%-points), Italy (+26.1%-points) and Sweden (+22.4%-points). In contrast Luxembourg (-35.3%-points), Slovakia (-24.6%-points) and Austria (-20.5%-points) experienced declines.

Figure 19: Innovation performance of the EU27 Member States in the *Sales and employment impacts* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

Trade impacts

The *Trade impacts* dimension is composed of three indicators: *Exports of medium and high-tech products*, *Knowledge-intensive services exports* and *High-tech imports from outside the EU*.

The label for this dimension has been changed to reflect the inclusion of the indicator *High-tech imports from outside the EU* in the revised EIS framework. The change aims to capture industrial resilience as an integral part of innovation performance and is based on a technical report carried out as part of the EIS 2025[28].

The top performer in the *Trade impacts* dimension is Germany, a Strong Innovator. The top five Member states represent different performance groups, namely Denmark and Sweden as Leading Innovators, Slovenia, a Moderate Innovator and Ireland, a Strong Innovator. The bottom five Member States include predominantly moderate Innovators (Greece, Cyprus, Croatia and Lithuania) and one Emerging Innovator Latvia.

Among the Member States only Germany ranks above the EU average in the dimension of *Trade impacts*. The remaining 26 Member States are all below the EU average. This is explained by *Knowledge-intensive services exports*, for which the EU27 overall performance is close to the top of the ranking[29].

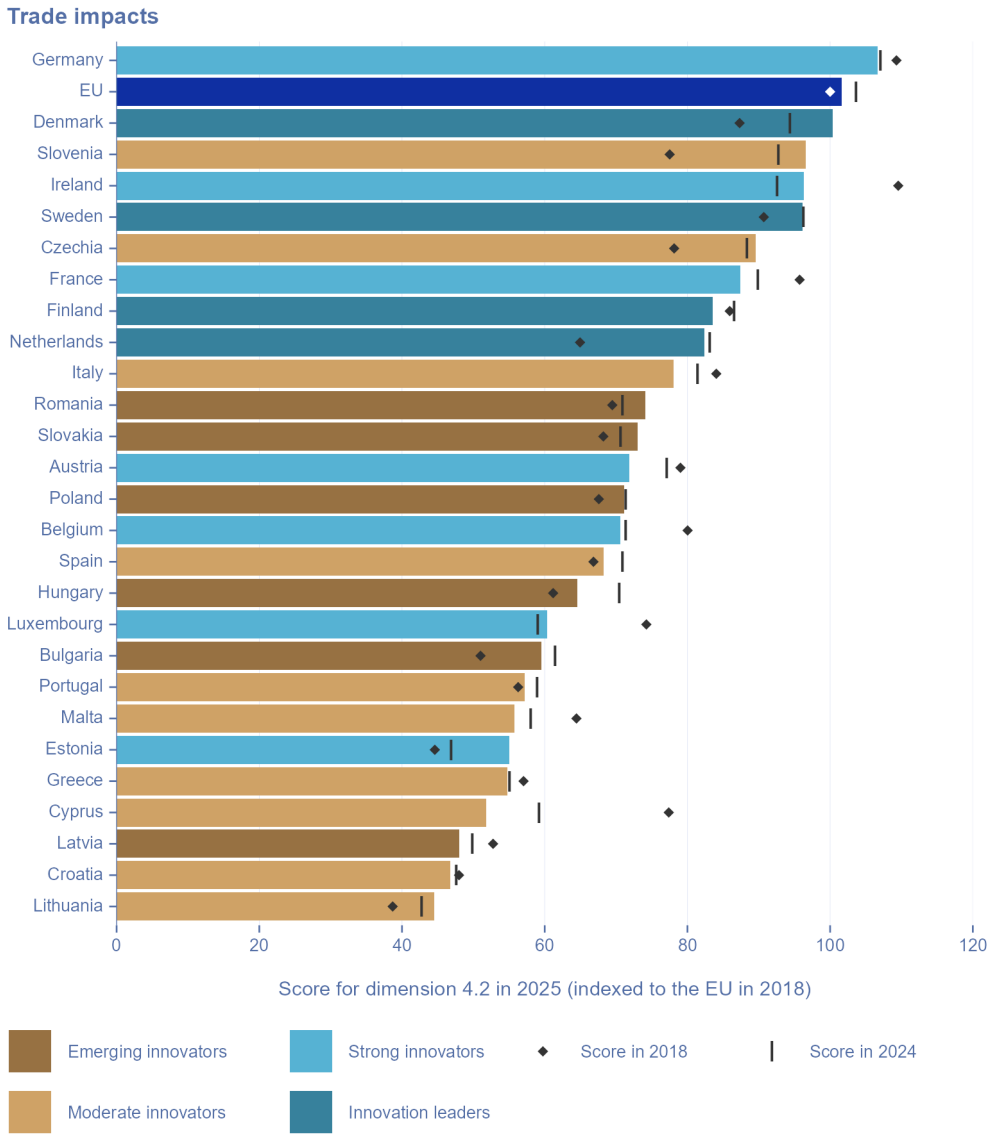
In comparison to 2024, the EU average has declined by 2.0%-points. The countries with the highest growth compared to 2024 are Estonia (+8.2%-points), Denmark (+6.0%-points) and Slovenia (+3.9%-points). The countries with the most notable declines include Cyprus (-7.4%-points), Hungary (-5.9%-points) and Austria (-5.3%-points).

Between 2018 and 2025 the EU average increased by 1.6%-points. The largest increases are recorded for Slovenia (+19.1%-points), the Netherlands (+17.5%-points) and Denmark (+13.1%-points). In contrast most notable declines over the longer periods since 2018 are observed for Cyprus (-25.6%-points), Luxembourg (-13.9%-points) and Ireland (-13.2%-points).

28 Kalanta et al (2025). European Innovation Scoreboard 2025 - Exploratory study on the linkages between innovation and resilience. European Commission (Brussels). DOI: 10.2777/0663803

29 The EU27 score for *Knowledge-intensive services exports* is calculated using extra-EU service exports (consistent with the calculation for global competitors) while scores of EU27 Member States include exports to other EU27 Member States, which may explain why the EU-wide score is relatively higher than might be expected from an average of EU27 Member States.

Figure 20: Innovation performance of the EU27 Member States in the *Trade impacts* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

Resource and Labour productivity

The *Resource and Labour productivity* dimension measures the impact of innovation activity on economic output, decarbonisation of production and resource use. It includes three indicators: *Resource productivity*, *Production-based CO_2 productivity* and *Labour productivity*.

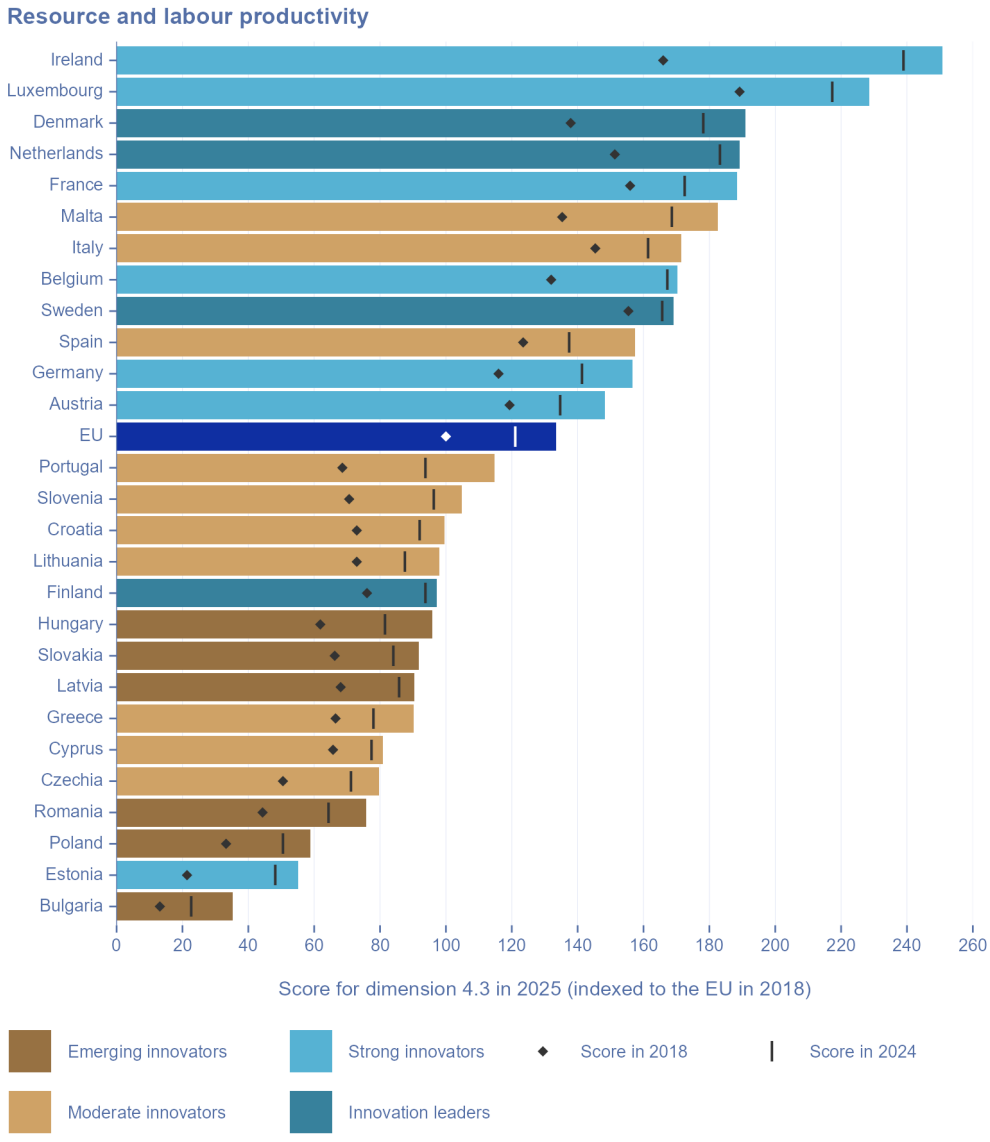
The label for this dimension has been changed (previously Environmental Sustainability) to better reflect the scope of the indicators it includes: 1) two new indicators on productivity have been added, *Production-based CO_2 productivity* and *Labour productivity* and 2) two indicators have been removed, *Air emissions by fine particulates PM2.5 in industry* and *Development of environment related technologies*.

The countries leading in the *Resource and Labour productivity* dimension include three Strong Innovators with Ireland at the top of the ranking followed by Luxembourg. Two leading Innovators follow, Denmark and the Netherlands while France, a Strong Innovator, completes the top five. The bottom five is composed of a mix of Strong (Estonia), Moderate (Czechia) and Emerging (Romania, Poland, Bulgaria) Innovators.

Between 2024 and 2025, the EU average has increased by 12.4%-points. The Member States are nearly evenly divided, with 12 countries above the EU average and 15 below. The majority of the Leading and Strong Innovators are above the EU average with two exceptions: Finland, a Leading Innovator and Estonia, a Strong Innovator.

Compared to 2024, all Member States improved their performance. The strongest growth was experienced by Portugal (+20.9%-points), Spain (+20.1%-points) and France (+16.0%-points). The countries with the most notable positive change compared to 2018 include Ireland (+84.8%-points), Denmark (+53.1%-points) and Malta (+47.2%-points). The Member States which grew the least include Sweden (+13.7%-points), Cyprus (+15.2%-points) and Bulgaria (+21.1%-points).

Figure 21: Innovation performance of the EU27 Member States in the *Resource and Labour productivity* dimension



Note: All performance scores are relative to that of the EU in 2018 for each dimension. Horizontal coloured bars represent countries' performance in 2025, while diamonds and vertical bars indicate their performance in 2018 and 2024, respectively. The colours denote each country's overall performance group based on the 2025 SII.

3.4 How are innovation groups performing in each dimension and over time?

3.4.1 Innovation performance by group and dimension

Despite overall progress, the 2025 data reveal persistent performance gaps between innovation performance groups. The most striking disparities remain between the Moderate and Emerging Innovators, while the gap between Innovation Leaders and Strong Innovators is narrower but still evident in key dimensions. These gaps highlight the challenges many countries face in catching up, particularly in areas such as research excellence, digitalisation, and innovation finance.

In 2025, the average performance difference between the Innovation Leaders and Strong Innovators is 18%-points, 28%-points between the Strong and Moderate Innovators, and 33%-points between the Moderate and Emerging Innovators (see Figure 22).

Looking at performance by dimension, Innovation Leaders maintain the highest average score (136% of 2018 EU average) followed by Strong Innovators (118%), Moderate Innovators (90%) and Emerging Innovators (57%). In most dimensions, each performance group outperforms the performance group below them, however there are two exceptions:

- In *Trade impacts*, Emerging Innovators score slightly higher (87%) than Moderate Innovators (86%)

- In *Resource and Labour productivity*, Strong Innovators outperform Innovation Leaders, scoring 130% versus 123%

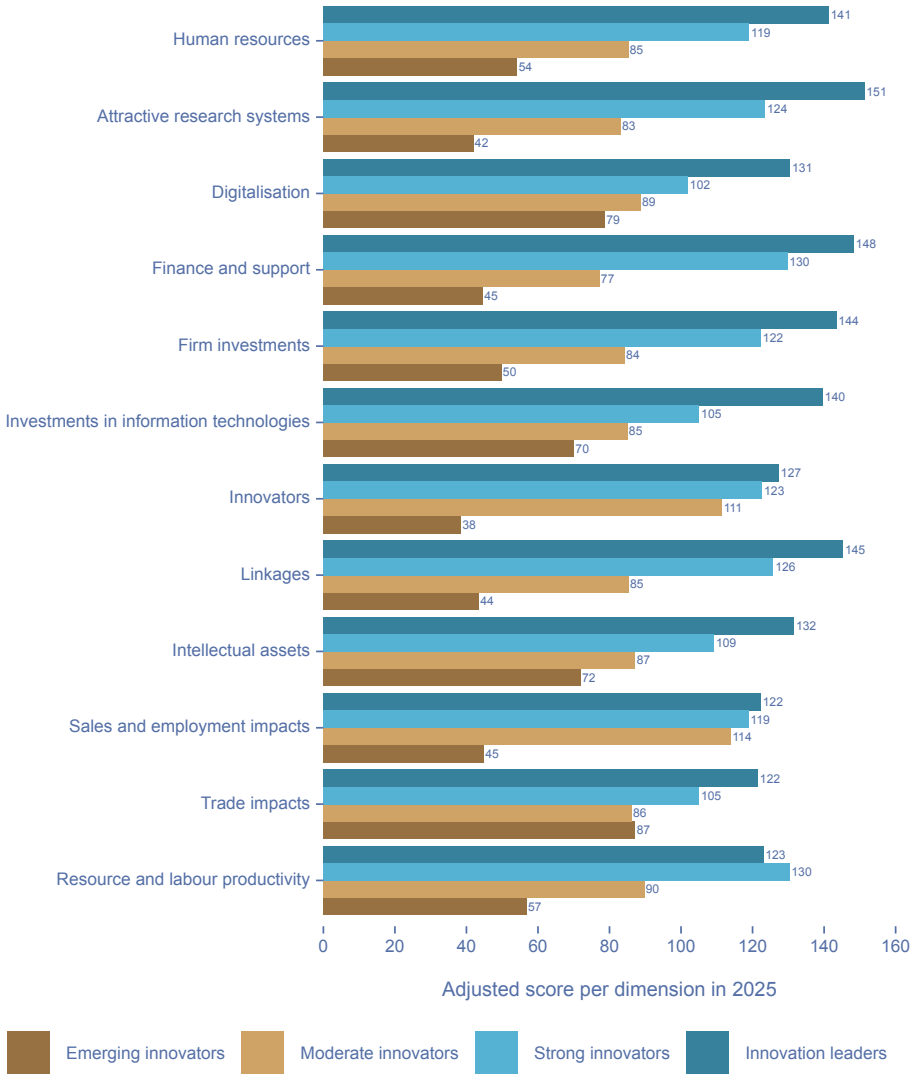
The gap between Innovation Leaders and Strong Innovators is relatively narrow in just two dimensions: such as *Sales and employment impacts* (3%-points) and *Innovators* (4%-points). However, the gap between these two groups is most apparent in three dimensions: *Investment in information technologies* (35%-points), *Digitalisation* (29%-points) and *Attractive research systems* (27%-points). Nonetheless, as previously stated, Strong Innovators also lead in *Resource and Labour productivity*, with a 7%-point advantage over Innovation Leaders.

Between Strong and Moderate Innovators, the smallest gap is seen in *Sales and employment impacts* (5%-points). However, much larger differences exist in: *Finance and support* (53%-points), *Attractive research systems* (41%-points), *Linkages* (41%-points), and *Resource and Labour productivity* (40%-points). The Moderate Innovators group does not outperform Strong Innovators in any dimension.

Finally, Moderate versus Emerging Innovators shows consistently wide gaps. The only exception is *Trade impacts*, where Emerging Innovators score just 1%-point higher. The next closest dimensions, *Digitalisation* (10%-points), *Investments in information technologies*

(15%-points), and *Intellectual assets* (15%-points), still favour Moderate Innovators. The largest gaps are seen in *Innovators* (73%-points), and *Sales and employment impacts* (69%-points), again in favour of Moderate Innovators.

Figure 22: Innovation performance of the innovation groups per dimension



Note: Average scores for each performance group are defined as the unweighted average of the relative-to-EU scores of the Member States within that group. As these unweighted averages do not consider differences in country size, results are not directly comparable. For this reason, average scores for the performance groups have been adjusted such that the unweighted average of the four groups for each dimension equals 100.

3.4.2 Differences in innovation performance over time

All comparisons presented in this section are based on the data published in the 2025 edition. While changes over time are discussed, these reflect the latest available data series and methodological adjustments. As a result, some indicator values may differ from those published in previous editions due to data revisions, updates in statistical sources, or changes in national methodologies. To ensure consistency, all historical comparisons are recalculated using the most recent dataset rather than comparing across editions directly.

Innovation Leaders

In 2025, Sweden (scoring 155.5% of the EU average in 2018) became the top performer in the EU, with consistently strong results since 2018. Denmark (152.0%) follows closely, despite a slight decline from its 2024 peak. The Netherlands (145.3%) and Finland (141.1%) also remained firmly in the top tier, each showing stable and high innovation output over the period.

Innovation Leaders have strengthened their positions through investments in digital technologies and venture capital, alongside improvements in efficiency and sustainability outcomes, although there has been a decline in their performance in *Intellectual assets.*

Since 2018, Innovation Leaders have made notable gains across several dimensions, with the most pronounced improvements seen in *Investments in information technologies*, *Firm investments*, and *Resource and Labour productivity*. In *Investments in information technologies*, the Netherlands (+74.9%-points), Denmark (+56.3%-points), and Finland (+29.5%-points) all recorded substantial increases. Sweden, while showing no change in this area, still holds the highest overall score at 278.6.

In the *Finance and support* dimension, all Innovation Leaders improved their performance, including Denmark (+47.9%-points), Sweden (+43.0%-points), Finland (+42.4%-points), and the Netherlands (+11.5%-points). *Resource and Labour productivity* also saw strong advances, with Denmark (+53.1%-points) again leading, followed by the Netherlands (+37.9%-points), Finland (+21.1%-points), and Sweden (+13.7%-points).

At the more granular indicator level, similar trends emerge, with the most significant improvements concentrated within the previously highlighted dimensions. *Venture capital expenditures* have increased markedly across all four countries, with Sweden (+244.8%-points) and Finland (+205.9%-points) more than tripling their scores since the 2018 baseline. Denmark also came close to tripling its performance (+179.2%-points), while the Netherlands registered a improvement (+50.9%-points). *Cloud computing* in enterprises has seen substantial growth, with the Netherlands (+243.1%-points) and Denmark (+207.5%-points) more than tripling their scores, and Finland (+81.8%-points)

almost doubling. Sweden's score has remained stable since 2018 (and currently stands at 155.9% of the 2025 EU average), although it remains joint top in the EU for this indicator alongside Denmark and Finland. Notable progress is also evident in *Production-based CO_2* productivity, with Denmark more than doubling its score (+116.6%-points), the Netherlands nearly doubling (+86.5%-points), and Finland making strong gains (+64.0%-points). Sweden also improved, albeit more modestly (+16.6%-points).

However, there has been a pronounced decline in the *Intellectual assets* dimension among the Innovation Leaders. Denmark experienced the sharpest drop (–36.9%-points), followed by more moderate decreases in Sweden (–15.1%-points), Finland (–15.0%-points), and the Netherlands (–11.7%-points). This decline has been primarily driven by a significant reduction in *Design applications*, which nearly halved in Denmark (–87.3%-points), and fell considerably in Sweden (–37.6%-points) and Finland (–29.8%-points). The Netherlands saw a more modest decline in this indicator (–5.1%-points).

Box 2: Country level observations of Innovation Leaders

Sweden's innovation performance increased consistently from 2018 to 2023, with a slight dip from 2023 to 2024. However, Sweden has attained their highest score this year at 155.5% of the EU average in 2018 and growth of 12.9%-points.

Denmark experienced year-on-year growth from 2018 to 2023, however a drop of 4.8%-points from 2024 to 2025 has seen them slip from being the leader to a score of 152.0.

The Netherlands maintained steady growth with limited volatility, achieving a peak of 148.2 in 2023. However, in the previous two years there was a slightly decline with respect to the score which settled at 145.3 in 2025.

Finland demonstrated strong improvement between 2018 and 2023. Their quickest increase in score came in the period of 2020 to 2023. However, in the past two years, the scores have declined consecutively and now sit at 141.1.

Figure 23: Performance Innovation Leaders

Note: Performance is relative to that of the EU in 2018. The graph on the left shows the average performance of the Innovation Leaders calculated as the unweighted average of the respective Member States. All vertical scales in Figure 23-Figure 26 span a range of 70.0%-points to allow an easy comparison of the results between the four performance groups.

Strong Innovators

For the Strong Innovators, Ireland (138.6% of the EU average in 2018) now leads the group, while Belgium (138.1%) dropped to second in 2025, closely followed by Luxembourg (128.9%) and Austria (128.3%). Germany (125.1%) and France (122.3%) also remained among the Strong Innovators, maintaining stable high-level performance. Estonia (118.0%) stands out for its upward trajectory, significantly narrowing the gap with leading countries through sustained innovation gains since 2018.

Strong Innovators have seen notable progress in digital and collaborative domains, though performance in *Intellectual assets* has lagged, particularly in design-related outputs.

Since the 2018 baseline, Strong Innovators have made steady progress in adopting digital technologies, with most countries recording notable improvements in *Investments in information technologies*. Estonia leads the group with a 103.6%-point increase, followed by Austria (+85.0%-points), Germany (+79.4%-points), and Luxembourg (+63.2%-points), Ireland (+62.7%-points) and Belgium (+55.7%-points) also posted solid gains, while France (+6.1%-points) showed only marginal improvement over the baseline.

Under the *Digitalisation* dimension, nearly all Strong Innovators recorded substantial advances. Ireland stands out with the highest increase (+84.9%-points), followed by Austria (+66.1%-points), Germany (+60.6%-points), and France (+52.9%-points). Belgium

(+47.6%-points) and Estonia (+45.9%-points) also improved strongly. Luxembourg was the only country to register a decline in this dimension (–4.2%-points).

Linkages improved across the group, with Ireland again leading with an 88%-point increase. Luxembourg (+72.5%-points), France (+39.9%-points), and Belgium (+30.1%-points) also made strong gains. Estonia (+25.4%-points), Austria (+21.0%-points), and Germany (+18.1%-points) posted more moderate improvements, ensuring that all countries advanced in this dimension.

At the more detailed indicator level, the strongest improvements remain concentrated in digital technologies and collaborative linkages. *Cloud computing* in enterprises has surged across the group, with Estonia (+292.9%-points), Germany (+252.0%-points), Austria (+241.2%-points), and Ireland (+221.5%-points) all more than tripling their baseline scores since 2018. Belgium (+190.4%-points) and Luxembourg (+149.3%-points) also recorded major gains, while France showed no change on this indicator, and is at 164.4% of the EU average in 2025.

High-speed internet access similarly improved, with Ireland leading (+169.2%-points), followed by Austria (+156.7%-points) and Germany (+132.1%-points). France (+123.3%-points) and Belgium (+96.7%-points) also doubled in comparison to their baseline or close to doubled. Estonia (+63.9%-points) posted large progress, while Luxembourg saw a modest increase (+13.1%-points).

Public-private co-publications grew significantly in Luxembourg (+222.5%-points), Austria (+123.5%-points). Ireland (+75.9%-points), Belgium (+71.5%-points) and Estonia (+68.4%-points) also greatly strengthened their performance. Germany (+33.7%-points) made modest gains, while France recorded only a slight improvement (+3.1%-points).

However, there has been a decline in the dimension of *Intellectual assets* among the Strong Innovators. Luxembourg experienced the sharpest drop (–45.2%-points), followed by Germany (–27.6%-points), Austria (–23.5%-points), Ireland (-17.2%-points), Belgium (-13.1%-points) and France (–11.7%-points). Estonia was the only nation to increase their score in this dimension at 10.2%-points. Much like the Innovation Leaders, this decline has been primarily driven by a significant reduction in the indicator *Design applications*, Luxembourg recorded the sharpest drop (–77.5%-points), followed by Germany (–57.8%-points) and Austria (–48.4%-points). Moderate decreases were observed in France (–17.7%-points), Belgium (–17.4%-points), and Ireland (–13.0%-points), while Estonia was the only country in the group to improve slightly (+5.4%-points).

Box 3: Country level observations of Strong Innovators

Ireland demonstrated strong upward momentum, moving from 125.3% of the EU average in 2018 to 138.6% in 2025, with sustained growth particularly after 2020.

Belgium consistently improved its score from 126.4 in 2018 to a high of 138.9 in 2024, with only a minor dip in 2025 (reaching 138.1).

Luxembourg fluctuated over the period, peaking in 2019 (130.1), declining through 2024, and recovering to 128.9 in 2025.

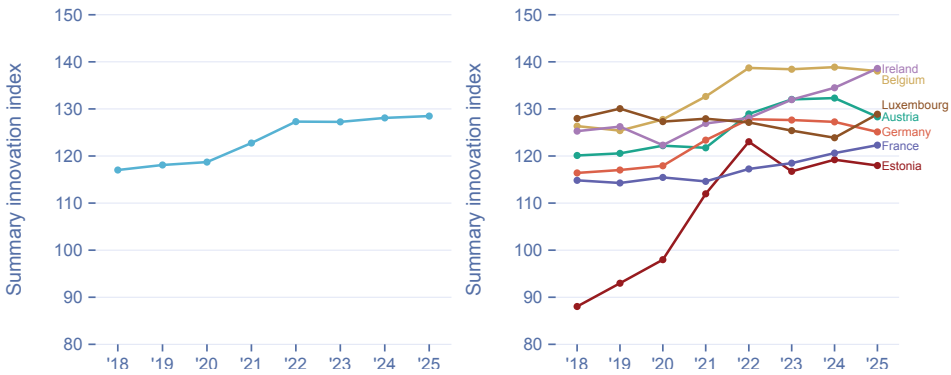
Austria saw gradual improvements in innovation performance from 2018 (120.1) to a peak in 2024 (132.3), followed by a slight decline in 2025 (128.3).

Germany rose from 116.4 in 2018 to 127.8 in 2022, then stabilised around 127 before a slight drop to 125.1 in 2025.

France experienced modest but steady progress, increasing from 114.9 in 2018 to 122.3 in 2025.

Estonia recorded the strongest relative growth, rising from 88.0 in 2018 to 118.0 in 2025, with its largest gains occurring between 2019 and 2022.

Figure 24: Performance of Strong Innovators



Note: Performance is relative to that of the EU in 2018. The graph on the left shows the average performance of the Strong Innovators calculated as the unweighted average of the respective Member States. All vertical scales in Figure 23-Figure 26 span a range of 70.0%-points to allow an easy comparison of the results between the four performance groups.

Moderate Innovators

Among Moderate Innovators, Malta (at 107.0% of the EU average in 2018) and Slovenia (106.6%) led the group in 2025, followed by Italy (104.7%), Spain (104.3%), and Portugal (102.2%), all of which crossed the 100% threshold[30]. All other Member States in the group have declined in performance, with Cyprus (94.7%), in particular, dropping from the Strong Innovators to the Moderate Innovators group; while Lithuania (91.2%), Czechia (90.8%) and Greece (85.3%) scores dropped compared to 2024, Croatia (80.6%) joined this group this year, continuing a gradual upward trend.

Moderate Innovators have made strong progress in *Digitalisation*, *Linkages,* and research attractiveness, though performance in *Intellectual assets* has generally declined.

Since the 2018 baseline, Moderate Innovators made substantial progress in adopting digital technologies, with most countries recording strong improvements in *Investments in information technologies*. Cyprus leads the group with a 110.3%-point increase, followed closely by Malta (+97.2%-points) and Italy (+96.4%-points). Lithuania (+81.9%-points) and Croatia (+79.4%-points) also posted strong gains, while Czechia (+65.5%-points), Portugal (+57.9%-points), and Spain (+39.8%-points) registered more moderate improvements. Greece (+35.4%-points) and Slovenia (+31.2%-points) showed the smallest increases, though both still advanced on their 2018 baselines.

Under the *Linkages* dimension the performance group achieved solid progress, with only one country, Greece, experiencing a decline (–7.2%-points). Cyprus stood out with an 87.7%-point increase, followed by Italy (+64.5%-points), Malta (+59.8%-points), and Slovenia (+48.9%-points). Croatia (+47.8%-points), Spain (+46.7%-points), Lithuania (+42.4%-points), and Portugal (+38.4%-points) also improved significantly. Czechia recorded a smaller gain (+19.9%-points).

All Moderate Innovators improved their performance in *Attractive research systems* since 2018, though the pace of progress varies significantly across countries. Cyprus again tops the dimension with a 76.0%-point improvement, followed closely by Malta (+71.4%-points) and Slovenia (+40.9%-points). Czechia (+33.9%-points) and Lithuania (+29.9%-points) made good progress, while Portugal (+15.9%-points), Greece (+14.1%-points), Croatia (+13.5%-points), and Spain (+12.2%-points) recorded more modest growth. Italy (+11.2%-points) posted the smallest gain in this dimension.

When analysing at the indicator level, strong improvements are concentrated within the previously highlighted dimensions. In *Cloud computing* in enterprises, several countries have

30 These scores are referenced to the 2018 index and are the normalised scores of the countries.

more than quadrupled their baseline scores since 2018, including Italy (+326.9%-points), Malta (+313.9%-points), and Cyprus (+308.8%-points). Czechia (+238.9%-points), Croatia (+184.2%-points), and Lithuania (+178.3%-points) also made substantial gains, while even the lowest scoring countries in this group, such as Greece (+117.9%-points) and Spain (+95.9%-points), saw impressive increases. *Public-private co-publications* have also expanded, particularly in Cyprus (+212%-points), Malta (+124.1%-points), and Slovenia (+79.0%-points), with improvements seen across all countries.

In terms of internationalisation of research, most countries saw growing shares of foreign doctorate students since 2018, led by Malta (+293.8%-points), Cyprus (+137.0%-points), and Slovenia (+84.4%-points). Czechia (+71.4%-points), Portugal (+44.1%-points), and Lithuania (+42.3%-points) also saw steady increases, while Greece (+5.5%-points) and Spain (+29.7%-points) made modest gains. Only two countries, Croatia (+3.8%-points) and Italy (+2.5%-points), recorded small declines.

However, much like the Leading Innovators and Strong Innovators, the Moderate Innovators have also declined in the dimension of *Intellectual assets* by 18.3%-points, one of two dimensions they have fallen in, with the other being *Trade impacts* at only 0.5%-points. *Design applications* was the largest driver of this drop in the *Intellectual assets* dimension. While Lithuania (+21.3%-points) and Croatia (+9.7%-points) had moderate gains since 2018 in that dimension, most countries declined. The sharpest drops in *Design applications* were recorded in Malta (-128.5%-points) and Cyprus (-76.2%-points), followed by Portugal (-41.5%-points) and Italy (-27.1%-points). Other countries, including Czechia (+14.0%-points), Spain (+12.8%-points), Greece (+12.7%-points), and Slovenia (+5.7%-points), also registered moderate decreases, pointing to a general downward trend in the generation or registration of design-related intellectual property in this group.

Box 4: Country level observations of Moderate Innovators

Malta showed steady growth, moving from 90.3% of the EU average in 2018 to 107% in 2025, with a minor dip in 2023.

Slovenia progressed from 89.8 in 2018 to 106.6 in 2025, with a particularly strong performance post-2021.

Italy rose steadily to a high of 107.5 in 2022, then dipped in 2023 before recovering to 104.7 in 2025.

Spain improved from 90.4 in 2018 to 104.3 in 2025, with stable gains from 2021 onward.

Portugal increased from 93.2 in 2018 to 102.2 in 2025, with a brief drop in 2021

(reaching 89.5) before rebounding.

Cyprus recorded a sharp rise between 2020 and 2021 (from 80.3 to 104.6), peaking in 2023 (109.9), before falling to 94.7 in 2025.

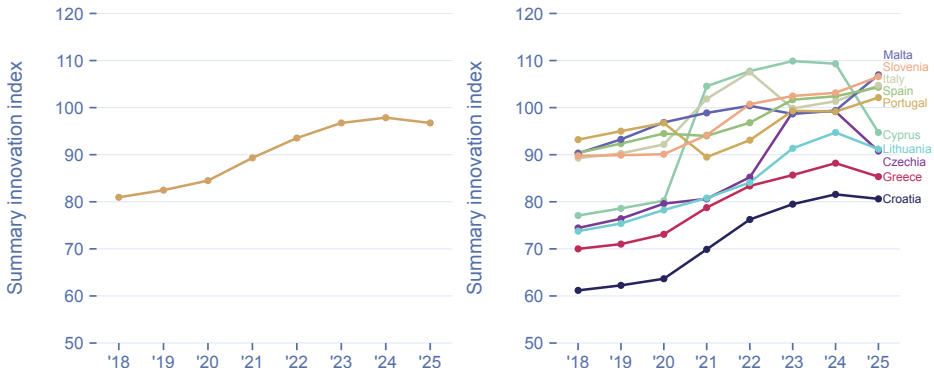
Lithuania improved from 73.8 in 2018 to 94.7 in 2024, with a small decline to 91.2 in 2025.

Czechia increased from 74.4 in 2018 to 99.1 by 2023–2024, followed by a drop to 90.8 in 2025.

Greece experienced consistent growth between 2018 (70.0) and 2024 (88.2), with a slight dip to 85.3 in 2025.

Croatia steadily improved its score from 61.2 in 2018 to a high of 81.6 in 2024, followed by a slight decline in 2025 (reaching 80.6).

Figure 25: Performance Moderate Innovators



Note: Performance is relative to that of the EU in 2018. The graph on the left shows the average performance of the Moderate Innovators calculated as the unweighted average of the respective Member States. All vertical scales in Figure 23-Figure 26 span a range of 70.0%-points to allow an easy comparison of the results between the four performance groups.

Emerging Innovators

In 2025, Hungary (at 78.3% of the EU average in 2018) was the highest-performing emerging innovator and only marginally below the threshold of the moderate innovators, reflecting strong recent momentum. Poland (74.2%) and Slovakia (70.5%) followed closely,

with Latvia (63.9%) maintaining a slower but stable trajectory. Bulgaria (51.6%) showed moderate gains, while Romania (42.4%) remained the lowest-performing country in the EU, despite incremental progress over the period.

Driven by advances in digital technologies and efficiency, Emerging Innovators continue to improve, with only a noteworthy drop in *Non-R&D innovation expenditures* since 2018.

Since the base year of 2018, Emerging Innovators have made notable gains across several dimensions, with the most pronounced improvements seen in *Investments in information technologies*, *Digitalisation* and resource labour and productivity. In *Investments in information technologies*, Poland has more than doubled its score (+126.7%-points), while Hungary (+88.6%-points) and Latvia (+86.6%-points) have almost doubled. Bulgaria (+48.2%-points), Slovakia (+44.6%-points), and Romania (+30.1%-points) have all substantially increased their result.

In the *Digitalisation* dimension, Hungary (+76.3%-points), Romania (+39.4%-points), Slovakia (+36.4%-points), Bulgaria (+33.6%-points), and Poland (+28.5%-points) all markedly improved on this dimension. However, Latvia (+0.9%-points) only marginally improved compared to 2018. *Resource and Labour productivity* also saw strong and convergent advances, with Hungary (+34.0%-points) leading, followed by the Romania (+31.4%-points), and the remaining countries of Poland (+25.5%-points), Slovakia (+25.5%-points), Latvia (+22.4%-points), and Bulgaria (+22.2%-points) all clustering around the same improvements.

At the indicator level, these trends persist across key metrics. *Cloud computing* in enterprises has seen incredible growth, with Poland (+389.3%-points) quintupling in this indicator, along with Hungary (+268.4%-points) and Latvia (+224.5%-points) more than tripling their scores, and Slovakia (+135.5%-points) more than doubling; finally, Romania (+91.1%-points) and Bulgaria (+88.5%-points) also almost their baseline from 2018. *High-speed internet access* improved greatly across all six countries, with Hungary (+136.1%-points) double their baseline from 2018, along with Romania (+88.2%-points) and Slovakia (+77.4%-points) almost doubling; Poland (+68.2%-points) and Latvia (+43.0%-points) also impressed in comparison to 2018. Progress is also evident in *Production-based CO_2* productivity, with Romania (+75.0%-points) making impressive progress here, and Hungary (+58.1%-points), Latvia (+49.5%-points), and Bulgaria (+43.1%-points) making large improvements also; Poland (+37.0%-points) was the worst performer, however still improved markedly.

While no major declines were recorded at the dimension level among Emerging Innovators, a pronounced downward trend is evident across all countries in *Non-R&D innovation expenditures* since 2018. Poland experienced the sharpest decline (-48.5%-points), followed by Latvia (-46.3%-points) and Hungary (-41.9%-points), while Bulgaria (-18.2%-points),

Slovakia (-17.8%-points), and Romania (-14.2%-points) all saw more moderate but consistent drop.

Box 5: Country level observations for Emerging Innovators

Hungary showed strong and continuous progress, rising from 62.1%-of the EU average in 2018 to 78.3% in 2025, with marked gains after 2021.

Poland recorded consistent growth over the period, improving from 56.1 in 2018 to 74.2 in 2025, with notable acceleration after 2022.

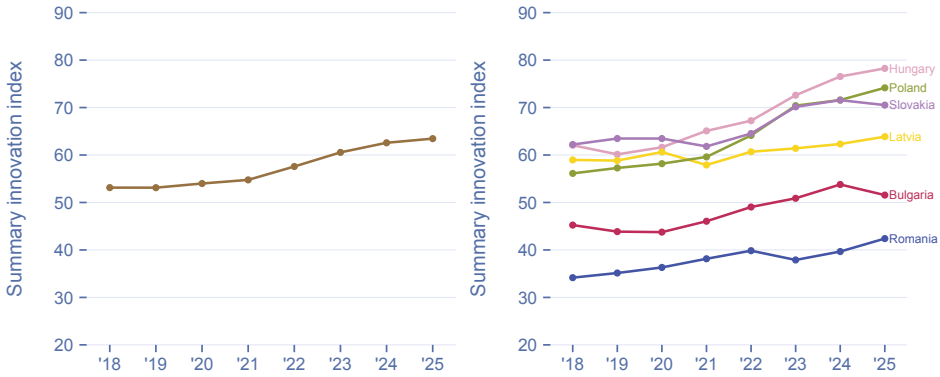
Slovakia moved from 62.2 in 2018 to a high of 71.6 in 2024, before a modest drop to 70.5 in 2025.

Latvia remained relatively stable, increasing gradually from 59.0 in 2018 to 63.9 in 2025, despite a small dip in 2021.

Bulgaria improved steadily from 45.2 in 2018 to a peak of 53.8 in 2024, before a slight decline to 51.6 in 2025.

Romania progressed slowly, rising from 34.2 in 2018 to 42.4 in 2025, despite a slight dip in 2023.

Figure 26: Performance Emerging Innovators



Note: Performance is relative to that of the EU in 2018. The graph on the left shows the average performance of the Emerging Innovators calculated as the unweighted average of the respective Member States. All vertical scales in Figure 23-Figure 26 span a range of 70.0%-points to allow an easy comparison of the results between the four performance groups.

3.4.3 Is there evidence of convergence in innovation performance between EU27 Member States?

To analyse convergence in innovation performance across EU27 Member States and within performance groups, the coefficient of variation was used, calculated as the ratio of the standard deviation of the Summary Innovation Index to its mean. This metric helps determine whether lower-performing countries are catching up to higher-performing ones (indicating convergence), or whether the gap between top and bottom performers is widening (indicating divergence). Understanding this convergence is particularly important for the EU, as it carries significant implications for both economic and social cohesion.

The analysis indicates a moderate positive convergence trend at the EU level over the 2018-2025 period, as shown by a slight, yet consistent, decrease in the coefficient of variation for all EU27 Member States (Figure 27). The highest levels of divergence are observed among countries at the extremes of the performance spectrum, namely the Innovation Leaders and Emerging Innovators, while countries in the middle tiers, such as Strong and Moderate Innovators, exhibit greater internal convergence around the EU average. As a result, it points to lower variation and greater convergence within these middle-tier groups. However, dynamics still take different trends across the performance groups:

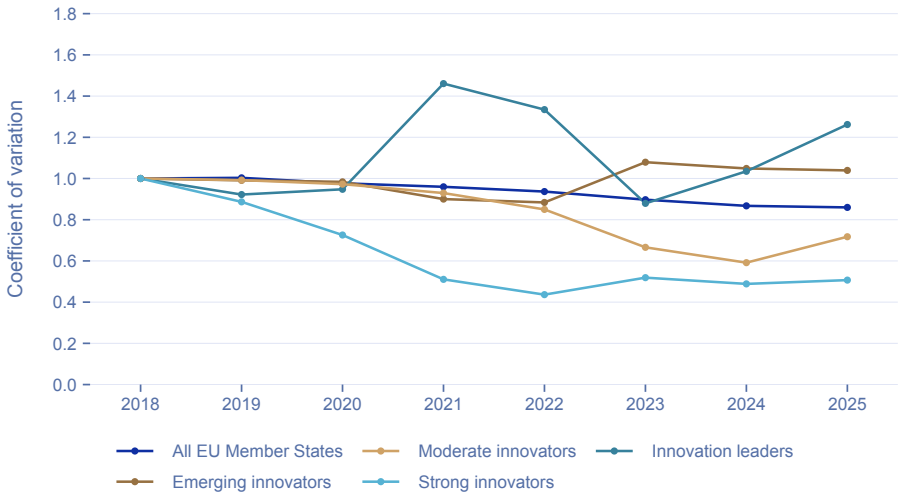
- **Innovation Leaders:** This group displays the highest level of internal divergence. After a phase of convergence from 2021 to 2023, the group has experienced a sharp increase in disparities since 2023. This growing divergence is mainly driven by the continued strong performance of Denmark and Sweden, which are pulling ahead of other Innovation Leaders such as the Netherlands and Finland (Figure 23)**.**

- **Strong Innovators:** Among the four performance groups, Strong Innovators exhibit the most consistent convergence trend. The internal variation within this group declined steadily up to 2022, after which a plateau and slight uptick in divergence is observed. This recent change is partly due to Ireland and Belgium increasing their performance at a faster rate than the rest of the group (Figure 24).

- **Moderate Innovators:** This group shows a similar convergence pattern to the Strong Innovators, but with a more noticeable reversal since 2024. While the group had become increasingly homogeneous over time, divergence has increased in the most recent period. This shift can be attributed to above-average performance improvements in countries like Malta, Slovenia, Spain, and Portugal, which are pulling away from the rest of the group (Figure 25).

- **Emerging Innovators:** This group has seen a marginal increase in divergence since 2018. Although countries such as Croatia, Poland, and Slovakia have significantly improved their innovation performance, others like Romania, Bulgaria, and Latvia have progressed at a much slower pace. As a result, the internal performance gap has widened slightly, limiting convergence within the group (Figure 26).

Figure 27: Convergence in innovation performance



Note: Lines show the coefficient of variation of the summary innovation index. defined as the ratio of the standard deviation to the mean, indexed to 2018.

3.5 How do EU27 Member States perform compared to neighbouring countries?

The innovation performance of the 12 neighbouring (non-EU) European countries (Albania, Bosnia and Herzegovina, Iceland, Moldova, Montenegro, North Macedonia, Norway, Serbia, Switzerland, Türkiye, Ukraine and the United Kingdom) compared with that of the EU27 Member States is examined in this section. The performance progress concerns only the indicators for which data is available as data availability varies across countries. The neighbouring countries are strategic partners for the EU, with a mix of highly advanced economies and economies in transition, some of which are on the path to EU accession.

Four of the neighbouring countries score above the EU average in 2025, namely Switzerland, the UK, Norway, and Iceland. Switzerland ranks first in the enlarged ranking outperforming all EU27 Member States in 2025. However, its innovation performance has seen a slight decline, the country recording a 1.6%-point decrease compared to 2024 and an overall 1.7%-point decrease in performance since 2018. The United Kingdom outperforms 24 EU27 Member States with an improvement of 1.2%-point in 2025 marking a breakthrough into the Innovation Leaders group. The UK's performance reflects a long-standing positive trend with a 12.2%-point increase in performance since 2018[31]. Norway ranks third among Strong Innovators group but registers a 0.9%-point decrease compared to 2024. Performing at 121.6% of the EU average in 2025, it builds on a positive trend since 2018, with a strong 13%-point increase over the period. Finally, Iceland ranks sixth in the Strong Innovators

31 For the United Kingdom, data from 2020 is used, based on an earlier edition of the Community Innovation Survey (CIS).

group in 2025. It outperforms Germany, France and Estonia in the group despite a marginal 0.1%-point decrease in performance compared to 2024.

The other eight neighbouring countries are in the group of Emerging Innovators. Three EU27 Member States are heading the rankings of the group, i.e. Hungary, Poland and Slovakia. Türkiye follows the trio and ranks 4th among Emerging Innovators in 2025, registering a 2.7%-point increase compared to 2024. Albania, Montenegro and Bosnia and Herzegovina have registered the highest growth since 2024 in the group with a 4.4%, 3.1% and 3%-point increase in performance respectively. Serbia ranks 6th in 2025 outperforming Bulgaria and Romania and building on the strongest growth among EU neighbouring countries in the group, with a 10.2%-point increase since 2018. Compared to 2024, Ukraine, North Macedonia and Moldova register a decline of 1.3, 0.8 and 0.03%-points in performance respectively. Finally, Bulgaria and Ukraine record the strongest decline compared to 2024, as Bulgaria's performance decreased by 2.2%-points ranking 32nd and 37th in EIS 2025 respectively.

Figure 28: Innovation performance of the EU27 Member States and neighbouring countries in 2025

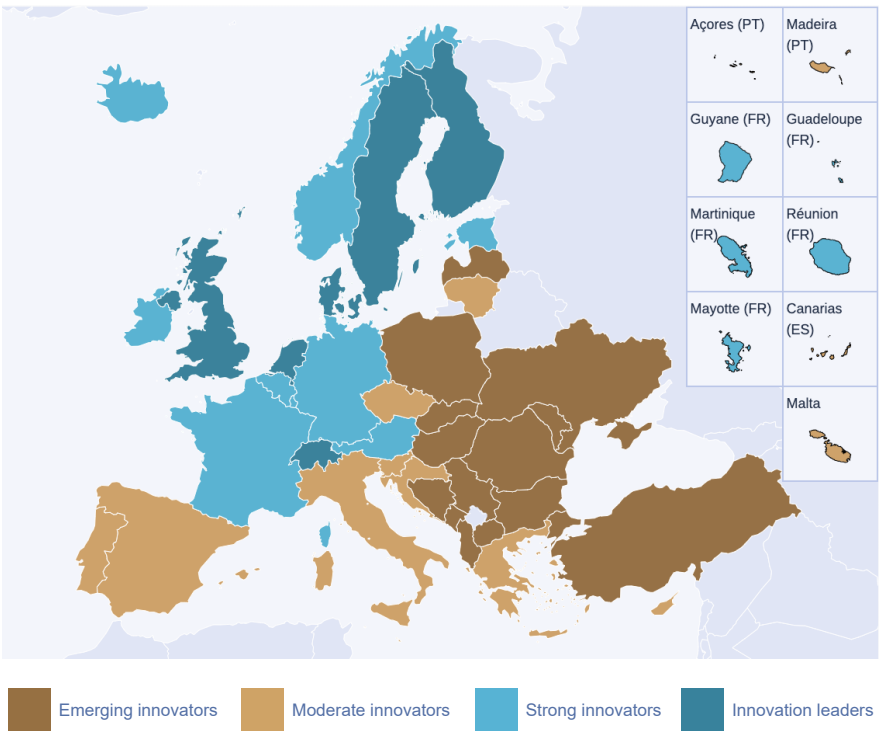
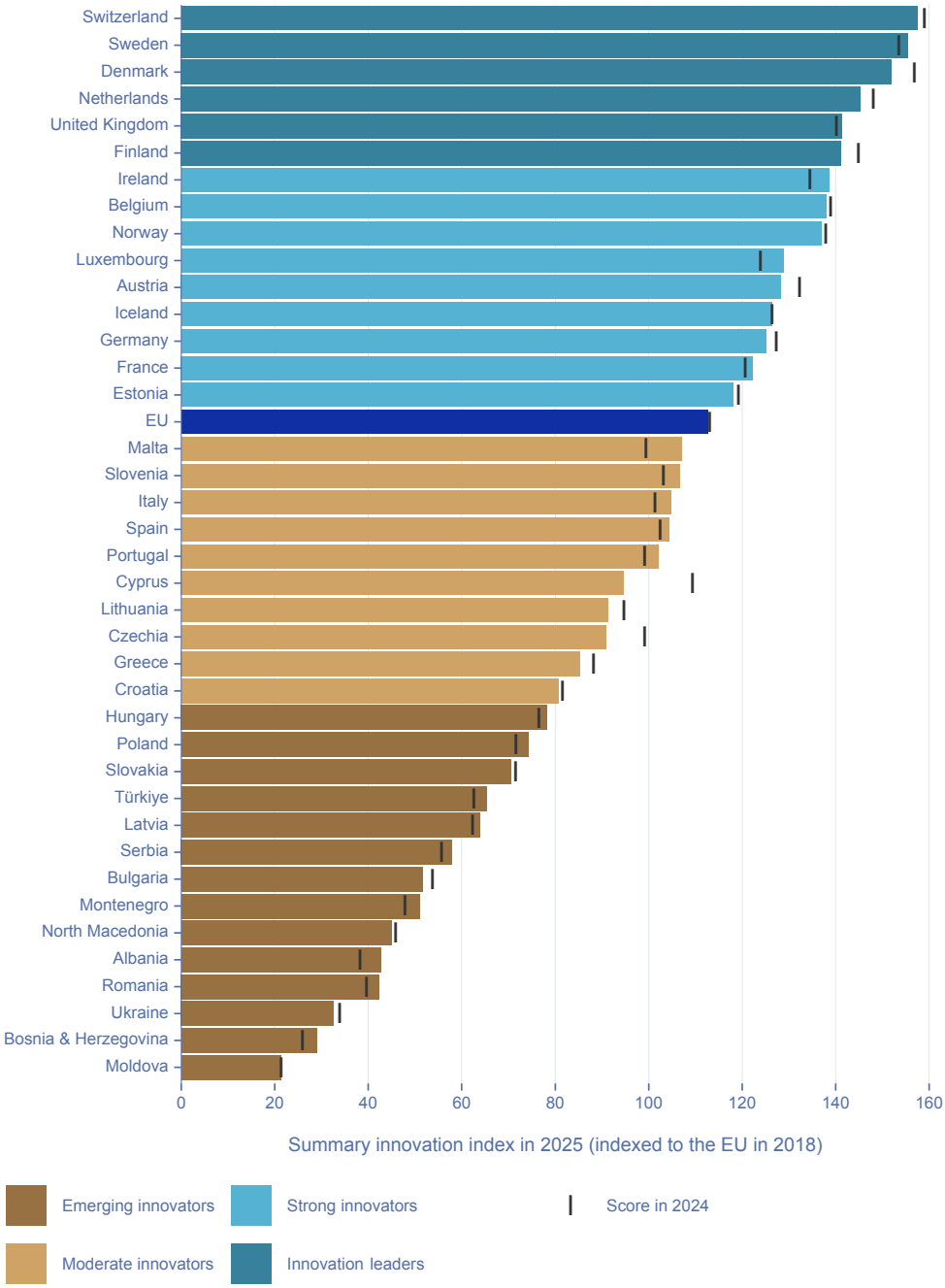
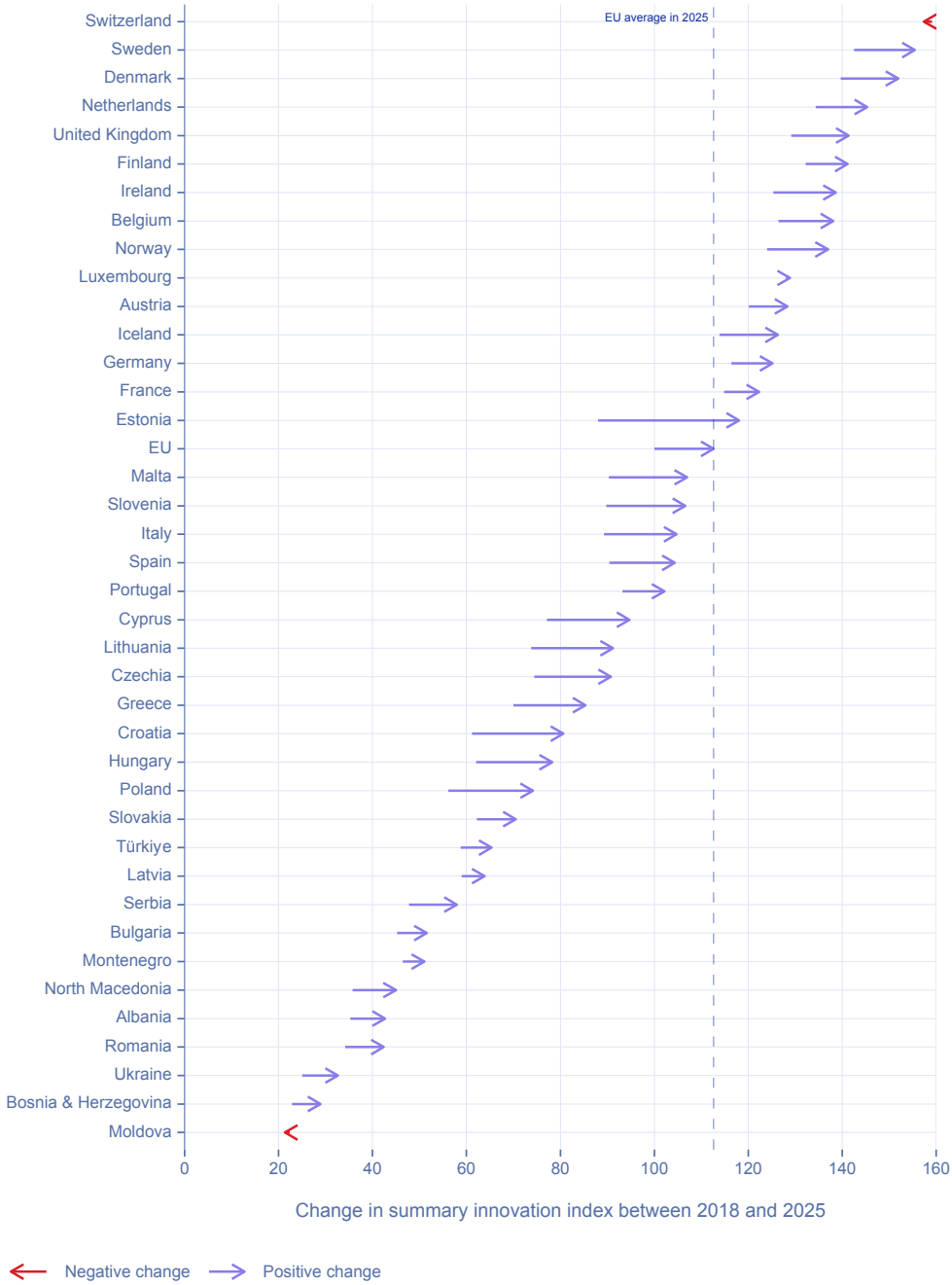


Figure 29: Innovation performance of the EU27 Member States and neighbouring countries (bar chart) (2025 vs 2024)



Note: All performance scores are relative to that of the EU in 2018. Horizontal coloured bars show countries' performance in 2025, using the most recent data for 32 indicators. The vertical bars show performance in 2024, using the next most recent data.

Figure 30: Innovation performance change for the EU27 Member States and neighbouring countries (2025 vs 2018)



Note: Performance change is measured as the difference between 2025 and 2018 scores, relative to that of the EU in 2018.

3.6 What are the strengths and weaknesses of the neighbouring countries compared to the EU?

The findings indicate that eight out of 12 of the EU neighbouring countries perform below 70% of the EU average, despite improvements over 2018-2025 period, notably in terms of their *Attractive research systems* and *Investments in information technologies*. Figure 31 illustrates the performance of EU27 Member States and neighbouring countries in 2025 for all EIS indicators, relative to the EU average performance in the same year. Additional information on trends in performance change as compared to 2018 and 2024 can be found in Annex 1 (Figure 45 and Figure 46). The overview of differences in structural indicators for both neighbouring countries and the EU27 Member States can be found in Annex 2 (Figure 47). This section presents the main developments across the 12 dimensions of the EIS 2025.

On three dimensions, i.e. *Finance and support*, *Firm investments*, and *Trade impacts* dimensions, the EU **neighbouring countries continue to face difficulties**, struggling to mobilise sufficient funding and financial support for innovation activities, while the challenging global context adds to the constraints in trade of innovative products. On *Knowledge-intensive services exports*, only UK and Norway register a performance over 100% from the EU neighbouring countries. On *Exports of medium and high-tech products*, the EU27 Member States are top performing countries, while Switzerland and UK despite being Innovation Leaders perform below 100% of the EU average.

Government support of business R&D remains a challenge in Switzerland and Norway as well as in seven EU neighbouring countries of Emerging Innovators group. At the same time, the UK and Iceland are joined by Türkiye in performing above 125% of EU average on this indicator, outperforming 21 EU27 Member States. However, the UK registered the lowest performance on *R&D expenditure in public sector* among Innovation Leaders with below 70% of the EU average for this indicator in 2025.

R&D and Non-R&D innovation expenditures by firms are constrained across the EU and neighbouring countries reflecting persistent economic volatility amid geopolitical tensions, gaps in talent and skills[32]. For instance, Norway together with Luxembourg registered a below 70% performance of EU average on *R&D expenditure in the business sector* – the lowest results in the category of Strong Innovators. In contrast, North Macedonia performed at above 125% of EU average on *Non-R&D innovation expenditure* by firms in 2025.

Despite challenges across *Finance and support* and *Firm investments* dimensions, the EU neighbouring countries perform relatively similarly to the EU27 Member States on the *Innovators* dimension. Indeed, Serbia, Montenegro and Bosnia and Herzegovina perform above 125% of EU average on *SMEs introducing product innovations*, followed by Albania

32 European Commission (2024), The Draghi Report on EU Competitiveness. Available at: https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en (Accessed: 23 June 2025).

with over 100% performance which exhibits a positive trend on this indicator since 2018. Furthermore, Switzerland, Norway, UK and Iceland register over 100% of EU results on this indicator, joined by 17 EU27 Member States with equivalent performance. The results on *SMEs introducing business process innovations* are slightly worse for the EU neighbouring countries, as Switzerland performs below 70% of EU average together with Moldova. Montenegro leads on this indicator in the Emerging Innovators group and among EU neighbouring countries with 169.9% of EU performance, followed by Serbia with over 154.6% performance in 2025.

EU neighbouring countries, much like the EU27 Member States, have registered an increase in *Investments in information technologies* since 2018. However, challenges persist in *Cloud computing* with EU neighbouring countries performing below 70% on this indicator except for Serbia (78.5%) in the Emerging Innovators group and Norway outperforming five EU27 Member States out of seven on this indicator in the Strong Innovators group.

Areas with significant **room for improvement** for EU neighbouring countries include *Human resources*, coupled with sustained efforts on *Attractive research systems*, as well as *Intellectual assets* and *Resource and Labour productivity*.

On *Human resources*, nine out of 12 EU neighbouring countries lag the EU27 Member States with performance below 70% of EU average on *New doctorate graduates* indicator. In 2025, only Switzerland and the UK lead the way with 125% performance compared to EU average joining the EU27 Member States such as Sweden, Denmark and Finland in Innovation Leaders group.

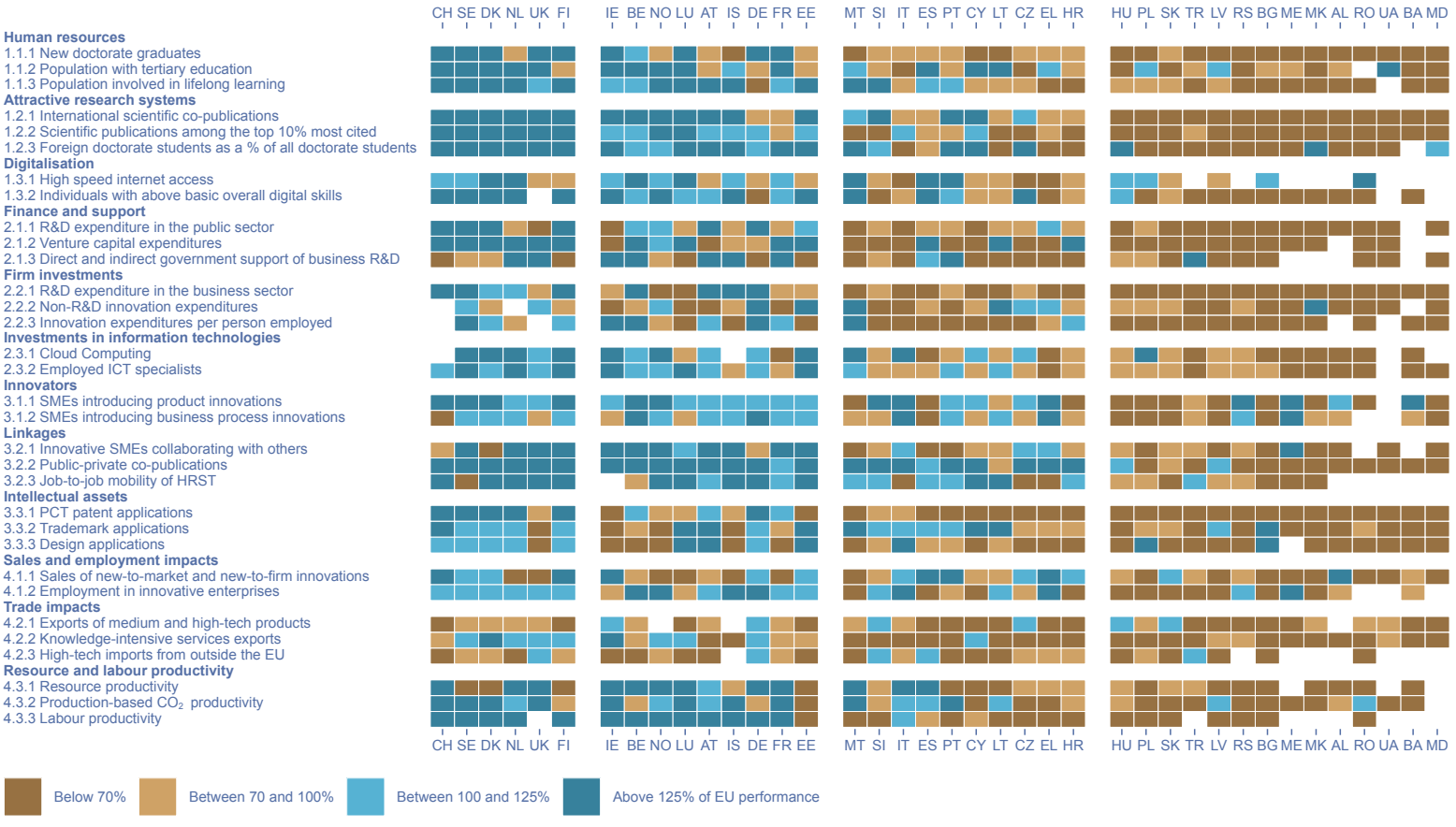
When it comes to *Attractive research systems*, the EU neighbouring countries with better connected and resourced R&D frameworks, such as Switzerland, UK, Norway and Iceland, perform above 100% of EU average on *Scientific publication among the top 10% most cited* indicator. This is not the case for the rest of the EU neighbours which are in the Emerging Innovators group and perform below the 70% EU average on this indicator despite improvements since 2018. The situation is similar for *Foreign doctorate students as a % of all doctorate students* indicator except for North Macedonia with 179.3% and Moldova with 107.7% of EU performance in 2025.

On *Intellectual assets*, the UK performs the lowest in the Innovation Leaders' group across all three indicators of *Patent* (below 100% of EU average), *Trademark* and *Design applications* (both below 70% EU average). Norway and Iceland perform similarly to the rest of the Strong Innovators, and the eight Emerging Innovator countries of EU neighbourhood all register a performance below 70% despite some improvements on *Trademark applications* since 2018. Only Switzerland outperforms EU27 Member States on three indicators in the Innovation Leaders' group with 137.5% of EU average across the dimension, and this despite a negative change in *Trademark* and *Design applications* it registered over 2018-2025 period.

Finally, most of the EU neighbouring countries, except for Switzerland, UK, Norway and Iceland, demonstrate substantial gaps with the EU27 Member States in *Resource and Labour productivity*. Available data on *Resource productivity* shows that Serbia, North Macedonia, Albania, and Bosnia and Herzegovina perform at below 70% EU average on this indicator, while Iceland and Türkiye register 95.7% and 75.6% of the EU average. Six EU neighbouring countries have *Production-based CO_2 productivity* below 70% of the EU average, placing them in the Emerging Innovators group. Only Albania stands out, reaching 94.4% of the EU level in 2025.

> Note: Comparisons with neighbouring countries may have limitations as data availability is lower compared to the EU Member States. Furthermore, the performance of some countries on specific indicators may be more volatile due to their smaller size and should, therefore, be interpreted with caution.

Figure 31: Performance of EU27 Member States and neighbouring countries per indicator in 2025, compared to the EU average in 2025



4. HOW IS THE EU PERFORMING?

This section presents the innovation performance of the EU as a whole and compares it to that of the main global economic competitors.

4.1 Has the EU improved compared to previous years?

The EU innovation performance for 2025 is equal to 112.6% of the EU average in 2018, which means that it has improved by 12.6%-points between 2018 and 2025. There was a slight increase in the EU performance between 2018 and 2021, followed by a period of more rapid growth from 2022 to 2023, and slight increase from 2023 to 2024. Despite a minor decrease from 2024 to 2025 (-0.4%-points), the EU remains on an upward trend in terms of innovation performance.

As a composite index, the 2025 EU innovation score aggregates multiple indicators and dimensions, many of which have evolved unevenly over time.

Between 2024 and 2025, performance for the EU has improved in five dimensions and declined in the remaining seven.

The most significant performance increases are observed in *Investment in information technologies* (+14.5%-points), *Resource and Labour productivity* (+12.4%-points) and *Digitalisation* (+9.7%-points) dimensions.

The growth in the *Investments in information technologies* performance was driven largely by a jump in enterprises using *Cloud computing* which rose by 35.7%-points from 2024 to 2025. Additionally, *ICT specialists* have grown 5.9%-points in the last year.

Within the *Resource and Labour productivity* dimension, the EU has seen positive improvements in two indicators between 2024 and 2025, while the third (*Labour productivity*) stayed the same. The increase in this dimension was largely driven by *Resource productivity* (+16.5%-points), and *Production-based CO_2* productivity (+20.4%-points), while the 3rd indicator remained constant with just 0.4%-points.

The performance increase of the EU in the *Digitalisation* dimension was driven by a notable improvement in the *High-speed internet access* indicator (+17.7%-points), which measures the share of households with a fixed very high-capacity network connection. The EU also witnessed a slight increase in *Individuals with above basic overall digital skills* indicator, up 3.8%-points from last year.

On the other hand, the EU experienced a significant downturn in the *Linkages* dimension (-10.1%-points) since 2024. This is mostly driven by the drop in the *Job-to-job mobility of human resources in science & technology* indicator, which decreased by 23.5%-points between 2024 and 2025. *Public-private co-publications* per million population also slightly declined, falling by -1.2%-points in the same period. The last indicator of the *Linkages*

dimension, the share of *Innovative SMEs collaborating with others* slightly increased by 0.9%-points between 2024 and 2025.

Another dimension that witnessed a considerable decline is the *Innovators* dimension, with a decrease of -7.5%-points between 2024 and 2025. Both the share of *SMEs introducing product innovations* and those introducing *business process innovations* have dropped over the past year. The decline was most pronounced for *SMEs introducing product innovations*, falling by -12.2%-points, while *SMEs introducing business process innovations* decreased to a lesser extent at -3.2%-points.

At the level of individual indicators, the EU performance has since 2024 increased for 13 individual indicators, remained stable for five, four indicators have declined by more than 10.0%-points, and 10 indicators have declined by less than 10.0%-points.

As noted above, the largest year-on-year increases were observed in *Cloud computing* in enterprises (+35.7%-points), *Production-based CO_2* productivity (+20.4%-points), *High-speed internet access* (+17.7%-points), and *Resource productivity* (+16.5%-points), all of which grew by more than 15%-points.

A second group of indicators showed more moderate growth, including *International scientific co-publications* (+8.8%-points), *Population involved in lifelong learning* (+6.7%-points), *Population with tertiary education* (+6.6%-points), *Employed ICT specialists* (+5.9%-points), *Innovation expenditures per person employed* (+4.8%-points), and *Individuals with above basic overall digital skills* (+3.8%-points).

In contrast, *Innovative SMEs collaborating with others* (+0.9%-points) and *Labour productivity* (+0.4%-points) recorded only marginal increases.

The largest declines were recorded in *Venture capital expenditures* (-23.6%-points) and *Job-to-job mobility of HRST* (-23.5%-points). EU venture capital as a share of GDP had already started dropping the previous year, but was only just captured in the EIS since the indicator uses a 3-year rolling average[33]. This was followed by a sharp drop in *Non-R&D innovation expenditures* (-15.6%-points) and *SMEs introducing product innovations* (-12.2%-points), suggesting weakening innovation activity among small and medium-sized enterprises.

Moderate declines were observed in *Trademark applications* (-7.3%-points), *Design applications* (-6.9%-points), and *Exports of medium and high-tech products* (-5.6%-points).

33 The underlying drivers of this drop are as follows: in the latest available year, total investments increased but were compensated by an even larger increase in buyouts. In the year before that, it was driven by a drop in total investments larger than a drop in buyouts. Meanwhile, GDP (the denominator of the indicator) increased, further reducing the final indicator.

Additional decreases were seen in *PCT patent applications* (-4.8%-points), *Employment in innovative enterprises* (-4.4%-points) *Sales of new-to-market and new-to-firm innovations* (-4.1%-points), *Foreign doctorate students as a % of all doctorate students* (-4.1%-points), *SMEs introducing business process innovations* (-3.2%-points), as well as a smaller decline in *Scientific publications among the top 10% most cited* (-1.5%-points), and *Public-private co-publications* (-1.2%-points).

Compared to 2018, performance for the EU has improved in all dimensions, except *Intellectual assets*.

Intellectual assets dimension over the 2018-2025 fell by 31.7%-points, and across all three indicators since the base year. The drop in *Intellectual assets* was mainly driven by *Design applications* (-31.7%-points), while *PCT patent applications* also fell by 12.8%-points, and *Trademark applications* fell modestly by 3.7%-points.

Between 2018 and 2025, the EU has improved its performance the most in the *Investments in information technologies* and *Digitalisation* dimensions.

Regarding the *Investments in information technologies* dimension, the EU's performance has surged by over 71.9%-points since 2018. Since 2018, *Cloud computing* in enterprises has grown by 216.6%-points which is the main driver of the improvement, while *Employed ICT specialists* have grown consistently in the same period by 14.7%-points. In a similar vein, for the *Digitalisation* dimension, one indicator drives the growth of this dimension. *High-speed internet access* has grown 93.4%-points, while *Individuals with above basic overall digital skills* has grown modestly at 3.8%-points.

The EU performance has increased since 2018 for 25 individual indicators and has decreased for seven.

As noted above, the most significant increases since 2018 were observed in *Cloud computing* in enterprises (+216.6%-points), *High-speed internet access* (+93.4%-points), *Production-based CO_2* productivity (+58.1%-points), *Venture capital expenditures* (+45.3%-points), *Job-to-job mobility of HRST* (4+1.2%-points), *Innovative SMEs collaborating with others* +37.9%-points), *Resource productivity* (+37.8%-points), and *International scientific co-publications* (+36.4%-points), all of which grew by more than 35%-points.

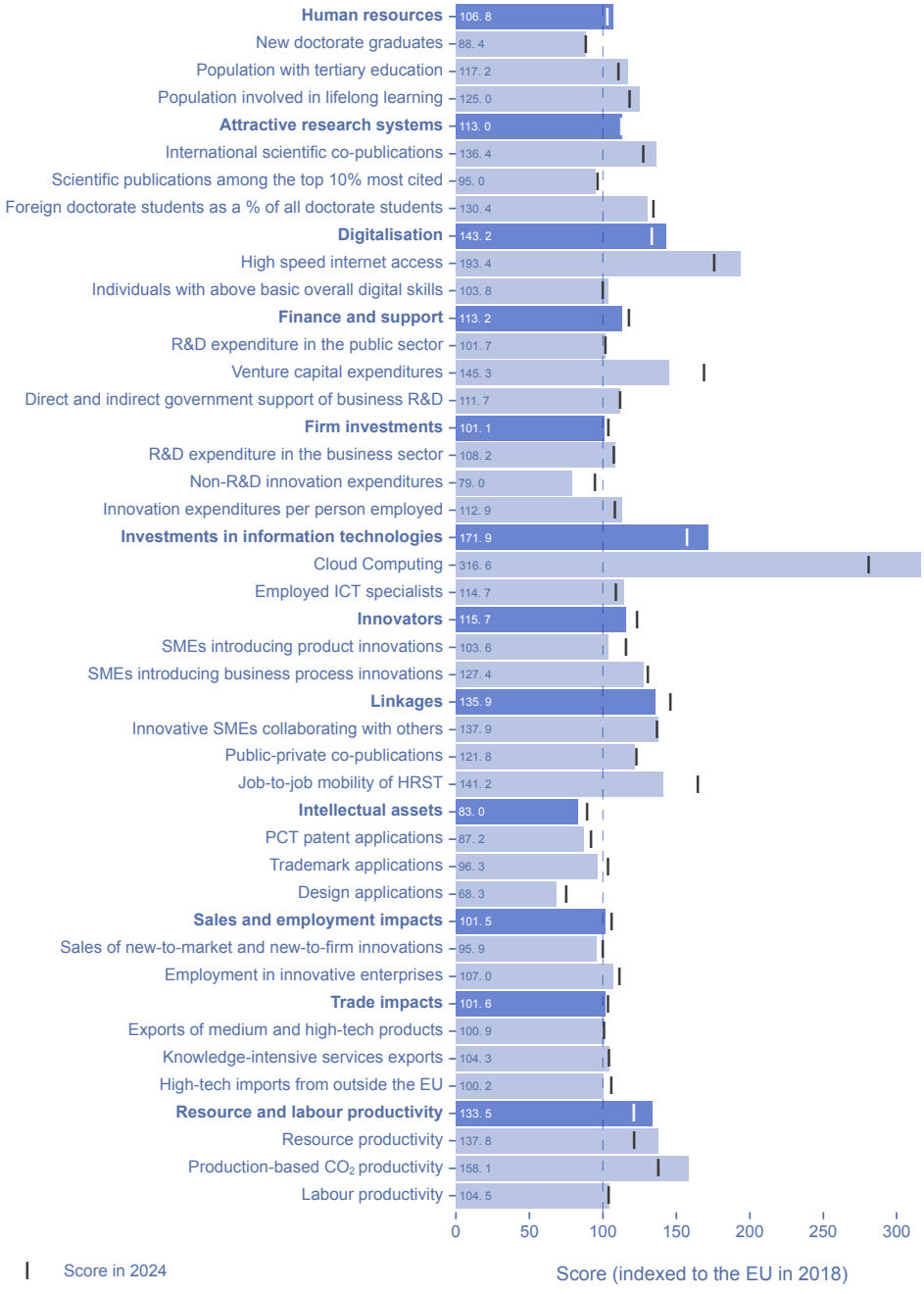
A second group of indicators, including *Foreign doctorate students as a % of all doctorate students* (+30.4%-points), *SMEs introducing business process innovations* (+27.4%-points), *Population involved in lifelong learning* (+25.0%-points), *Public-private co-publications* (+21.8%-points), and *Population with tertiary education* (+17.2%-points), all grew by over 15%-points.

Additional modest gains were seen in *Employed ICT specialists* (+14.7%-points), *Innovation expenditures per person employed* (+12.9%-points), *Direct and indirect government support of business R&D* (+11.7%-points), *R&D expenditure in the business sector* (+8.2%-points), and *Employment in innovative enterprises* (+7.0%-points).

In contrast, some indicators recorded smaller increases, such as *Labour productivity* (+4.5%-points), *Knowledge-intensive services exports* (+4.3%-points), *Individuals with above basic overall digital skills* (+3.8%-points), *SMEs introducing product innovations* (+3.6%-points), *R&D expenditure in the public sector* (+1.7%-points), *Exports of medium and high-tech products* (+0.9%-points), and *High-tech imports from outside the EU* improved minimally (+0.2%-points).

The largest declines were seen in *Design applications* (-31.7%-points), *Non-R&D innovation expenditures* (-21%-points), *PCT patent applications* (-12.8%-points), and *New doctorate graduates* (-11.6%-points). Additional decreases were recorded in *Scientific publications among the top 10% most cited* (-5.0%-points), *Sales of new-to-market and new-to-firm innovations* (-4.1%-points), and *Trademark applications* (-3.7%-points).

Figure 32: Innovation performance of the EU per dimension and indicator



Note: Scores are indexed to the score of the EU in 2018 for each indicator. Dimensions are shown in dark blue while indicators are displayed in light blue.

4.2 How does the EU compare to its global competitors?

In line with the priorities outlined in the Competitiveness Compass[34], the EU is placing a renewed strategic focus on innovation as a core driver of productivity, industrial leadership, and competitiveness. Strengthening Europe's capacity to innovate is essential to ensuring its long-term economic strength, especially in areas such as advanced technologies, clean industries, and digitalisation. As part of this effort, the EIS benchmarks the EU's innovation performance against that of key international competitors from North and South America (Brazil, Canada, Chile, Mexico, and the United States), Asia (China, India, Japan, and South Korea), Oceania (Australia), and Africa (South Africa). Due to limited data availability for the global competitors compared to European countries, a more restricted set of 17 indicators has been used for calculating the SII (see methodology report).

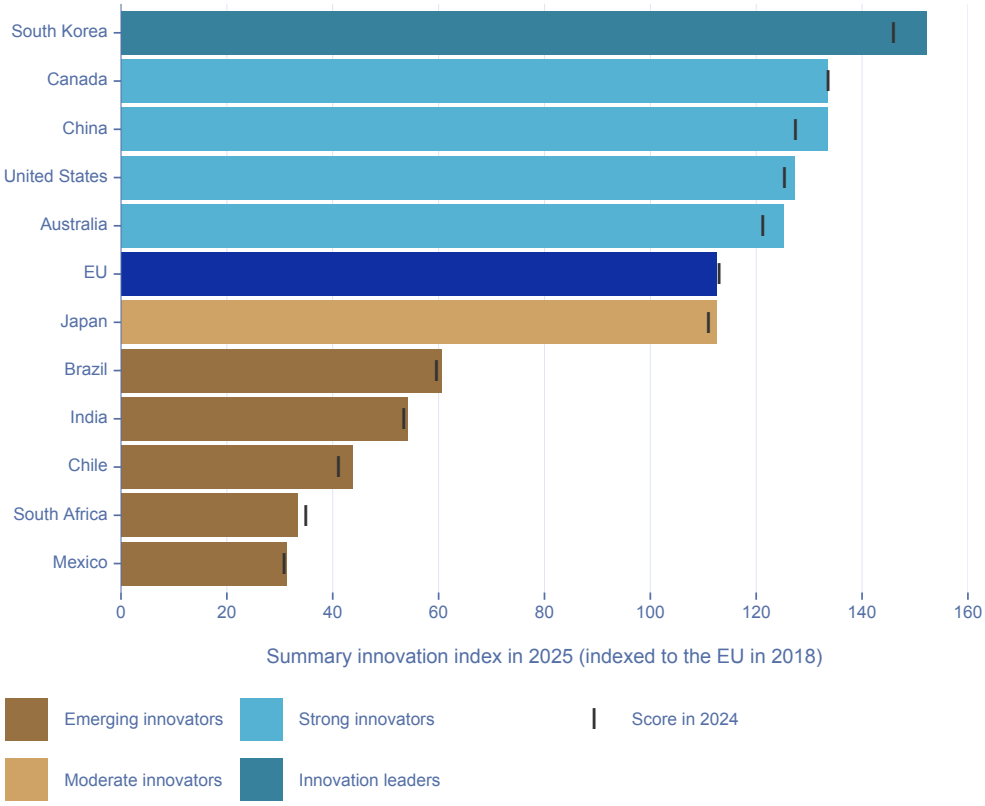
South Korea remains the most innovative country in 2025, with a summary innovation index of 152.2% (relative to the EU in 2018). It is classified as an Innovation Leader, as its performance exceeds 125% of the EU average in 2025 (152.2 vs 112.6 for the EU). Four other competitors – Canada, China, the United States, and Australia – also outperform the EU. China's performance has continued to improve, overtaking the EU[35] and is now on par with Canada, both scoring 133.4%. These four countries are classified as Strong Innovators, with innovation performance between 100% and 125% of the 2025 EU average.

On the other hand, the EU ties with Japan in 2025. Japan has continued an upward trajectory, closing the gap with the EU since 2024. The EU continues to outperform Brazil, India, Chile, South Africa, and Mexico, which are classified as Emerging Innovators, with performance levels below 70% of the EU average, as was the case in 2024. Japan, Brazil, India, Chile, and Mexico have all improved their innovation performance compared to 2024, while South Africa has declined slightly (-1.5%-points).

34 European Commission (2025). A Competitiveness Compass for the EU. Report available at: https://commission.europa.eu/document/download/10017eb1-4722-4333-add2-e0ed18105a34_en

35 Under the 2024 EIS framework, China was lagging the EU in 2024. However, with the updated 2025 framework and revised indicator set, China is now shown to outperform the EU both in 2025 and retrospectively in 2024. Nonetheless, China was behind the EU in 2018 based on the new framework and overtook the EU between 2019 and 2020 (and the USA between 2023 and 2024). China recorded the largest improvement over 2018–2025 (+44.8%-points) among all global competitors, it now shares second place with Canada.

Figure 33: Innovation performance of the EU and its global competitors

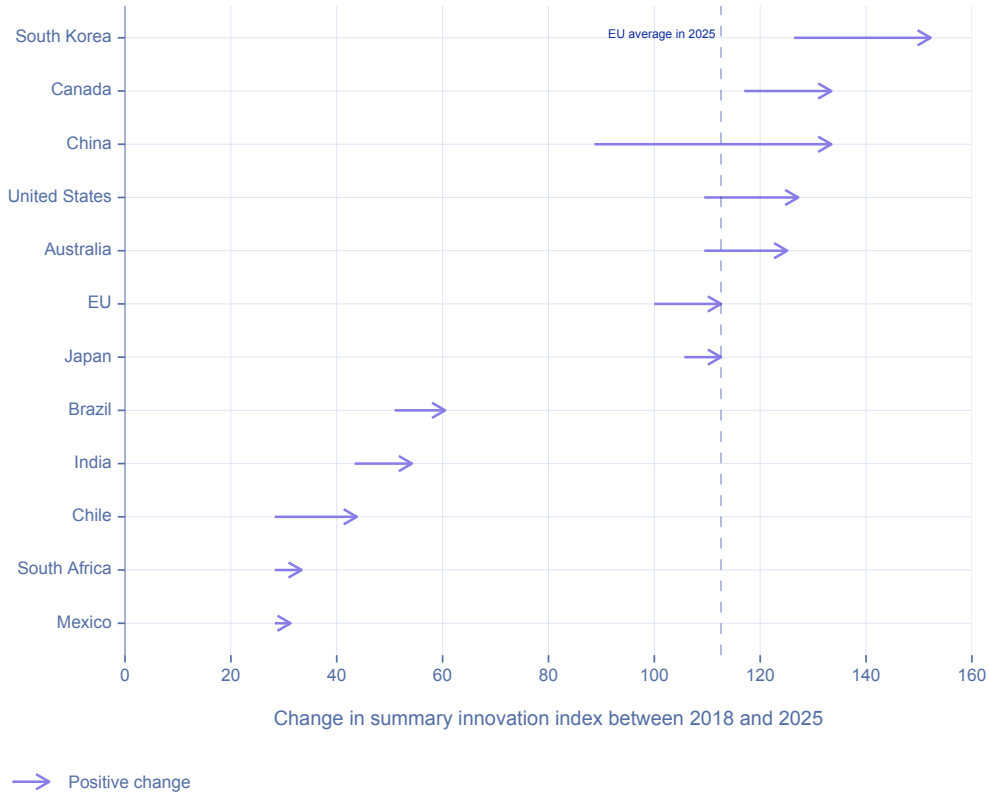


Note: All performance scores are relative to that of the EU in 2018. Coloured bars show countries' performance in 2025 while the vertical bars show performance in 2024. Due to limited data availability for global competitors, scores are calculated using a smaller set of indicators.

Compared to 2024, most global competitors have improved their innovation performance. Only Canada, the EU, and South Africa recorded a decline. South Korea shows the largest annual improvement (+6.3%-points), followed by China (+6.0%-points) and Australia (+3.8%-points). The gap between Australia and the United States is also narrowing.

Over the longer term (Figure 34), all global competitors have improved their innovation performance between 2018 and 2025. Notably, the five countries that now outperform the EU have all recorded faster growth than the EU itself, thereby widening the performance gap. Among the six countries still lagging the EU, only Chile has increased its performance at a higher rate than the EU since 2018, with a gain of 15.5%-points.

Figure 34: Performance change between 2018 and 2025 for the EU and global competitors

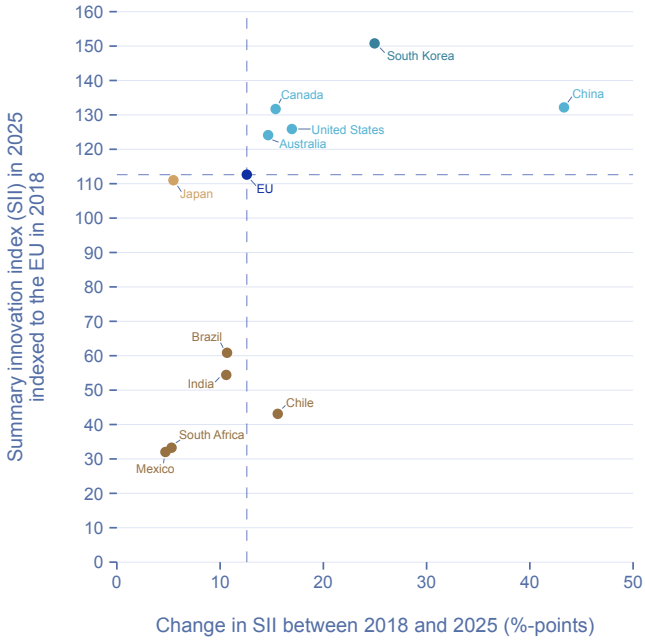


Note: Performance change is measured as the difference between 2025 and 2018 scores, relative to that of the EU in 2018.

Figure 35 below compares the EU to its global competitors based on their innovation performance in 2025 and the change in performance between 2018 and 2025. South Korea, China, Canada, the United States, and Australia not only lead the EU but have also improved at a faster rate over the long term. This was not the case in previous editions, where countries outperforming the EU tended to show slower progress. Figure 35 also illustrates the strong performance trajectory of China, placing it at the far right of the graph due to its rapid growth since 2018. In contrast, Brazil, India, South Africa, and Mexico appear in the lower-left quadrant, reflecting both lower overall performance and slower growth. Chile stands out as the only country in this group that has grown faster than the EU over the same period. Interestingly, while Japan matches the EU's performance level

in 2025, it has grown at a slower pace since 2018. A year-by-year analysis reveals that Japan experienced two periods of decline (between 2020-2021 and 2022-2023), whereas the EU recorded consistent year-on-year improvements until its first decline from 2024 to 2025 (see Figure 1).

Figure 35: The EU versus its global competitors



Note: The horizontal and vertical lines indicate the score of the EU for each axis. Global countries are coloured based on their overall innovation performance (SII) as per Figure 33. Note that this Figure presents the SII and change in SII relative to the EU in 2018, while the subsequent figures present the score on the vertical axis relative to the EU in 2025.

Methodological Note: In Figures 32-36, the EU is plotted against its global competitors in terms of performance in 2025 (vertical axis) and performance change from 2018 to 2025 (horizontal axis).

Performance scores (vertical axis) represent a percentage relative to the EU in 2018. For example, a score of 110 means that the country, in 2025, is performing 10% above the EU average in 2018. Performance change (horizontal axis) is measured as the difference between 2025 and 2018 scores, relative to that of the EU in 2018.

The horizontal and vertical dashed lines show the performance of the EU and define four meaningful quadrants on the graphs:

- Top-right quadrant: Competitor performs better than the EU in 2025 and has improved at a faster pace than the EU since 2018.
- Top-left quadrant: Competitor performs better than the EU in 2025 but has improved at a slower pace than the EU since 2018.
- Bottom-right quadrant: Competitor performs worse than the EU in 2024 but has improved at a faster pace than the EU since 2018.
- Left-right quadrant: Competitor performs worse than the EU in 2025 and has improved at a slower pace than the EU since 2018.

4.3 What are the strengths and weaknesses of the EU compared to its global competitors?

In 2025, the EU demonstrates strong performance in seven out of 17 indicators[36] across the four main categories (framework conditions, investments, innovation activities, and impacts). This section provides a detailed analysis of how the EU competes with the global competitors from North and South America (Brazil, Canada, Chile, Mexico, and the United States), Asia (China, India, Japan, and South Korea), Oceania (Australia), and Africa (South Africa) in each indicator, illustrating both EU strengths and areas for improvement.

Despite showing strong competitiveness in several key indicators, the EU still faces challenges in areas such as the application of trademarks or collaboration among innovative SMEs. Additionally, the EU has been overtaken by China in *Direct and indirect government support of business R&D*, now ranking 5th for that indicator among global competitors.

36 Due to limited data availability for global competitors compared to European countries, a more restricted set of 17 indicators has been used for calculating the summary innovation index for global comparisons.

Overall, the EU shows strong performance, ranking in the top four globally for the following indicators:

- *New doctorate graduates* (3rd)
- *International scientific co-publications* (4th)
- *R&D expenditure in the public sector* (4th)
- *Employed ICT specialists* (3rd)
- *SMEs introducing product innovations* (3rd)
- *SMEs introducing business process innovations* (4th)
- *Exports of medium and high technology products* (4th)

The EU performs moderately, between 5th and 8th, among global competitors for the following indicators:

- *Population with tertiary education* (6th)
- *Scientific publications among the top 10% most cited* (5th)
- *Direct and indirect government support of business R&D* (5th)
- *R&D expenditure in the business sector* (5th)
- *Public-private co-publications* (5th)
- *PCT patent applications* (5th)
- *Design applications* (5th)
- *Knowledge-intensive service exports* (5th)

Finally, for the following indicators, the EU ranks between 9th and 12th, reflecting a weaker performance compared to its global competitors:

- *Innovative SMEs collaborating with others* (last)
- *Trademark applications* (10th)

The following pages provide more detailed comparisons for each main category and indicator, contrasting the EU with its global competitors.

Framework conditions

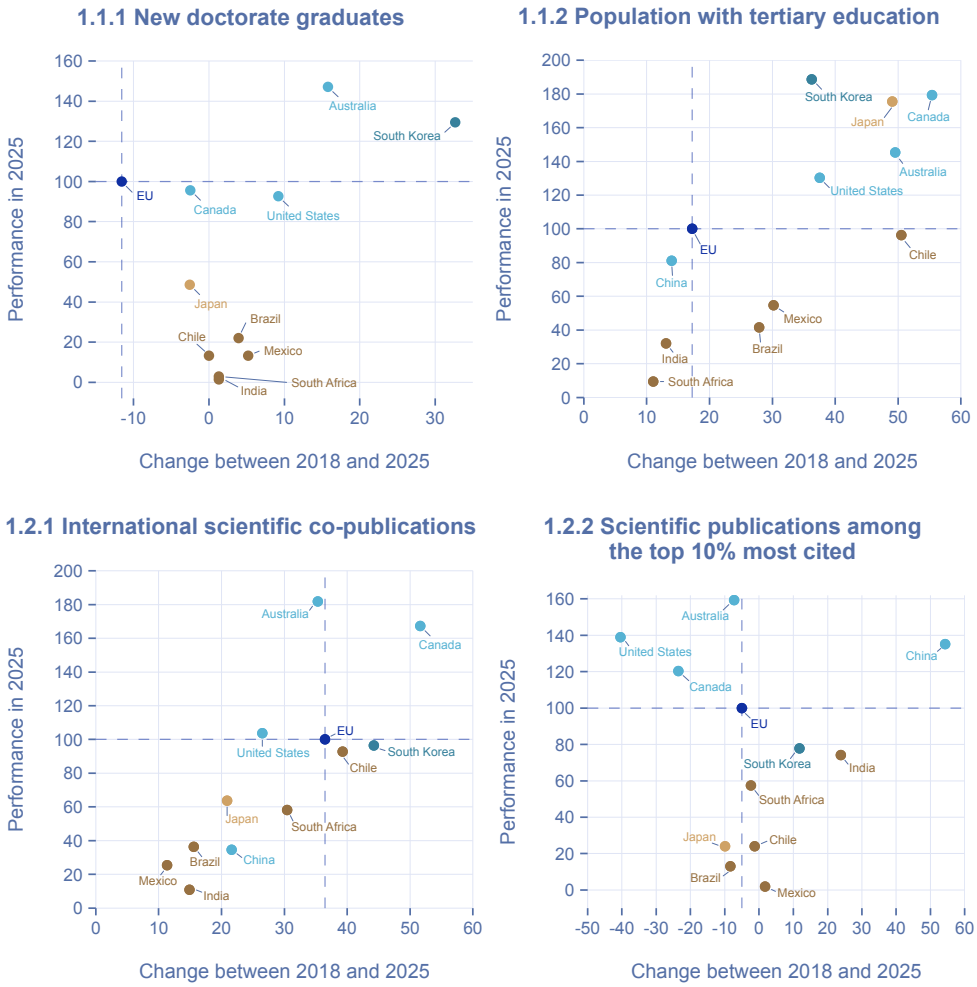
The Framework Conditions category measures the availability of a high-skilled and educated workforce, as well as competitiveness in science by focusing on international, high-quality, and collaborative publications, all of which are crucial for innovation through knowledge-based activities (Figure 36).

The EU has a high number of individuals graduating with doctoral degrees in science, technology, engineering, or mathematics fields each year relative to its population, ranking 3rd just behind Australia and South Korea. However, the EU has shown the biggest decrease in the number of *New doctorate graduates* since 2018. Canada and Japan have also experienced a decrease in performance since 2018, although to a lesser extent than the EU. All other global competitors have improved since 2018, albeit at different paces.

The EU performs moderately in terms of the *Share of Population with tertiary education* compared to global competitors. South Korea leads in this indicator, and Canada, Japan, Australia, and the United States lead over the EU. The EU has improved since 2018, but at the 4th slowest pace (an improvement compared to last year), ahead of China, India, and South Africa.

The EU demonstrates a strong performance in scientific publications, ranking 4th in publications with at least one co-author abroad, with a notable increase since 2018 reflecting its strong tendency to disseminate research results collaboratively. The EU ranks 5th in the *percentage of EU publications in the top 10% most cited worldwide*, indicating that the EU not only disseminates research widely but also provides high-quality sources internationally. A decrease in performance for this indicator has been observed for most countries, including the EU, since 2018; however, its decline is smaller than for the United States, Canada, Australia, Brazil or Japan. China has achieved a significant improvement compared to other competitors in this indicator.

Figure 36: The EU versus its global competitors in framework conditions



Note: As for Figure 35, the horizontal axis shows changes in performance between 2018 and 2025 (values indexed to the EU average in 2018) and the y axis show the current performance (values indexed to the EU in 2025). Global countries are coloured based on the overall performance (SII) as per Figure 33. The colouring is therefore the same in from Figure 36 to Figure 39.

Investments

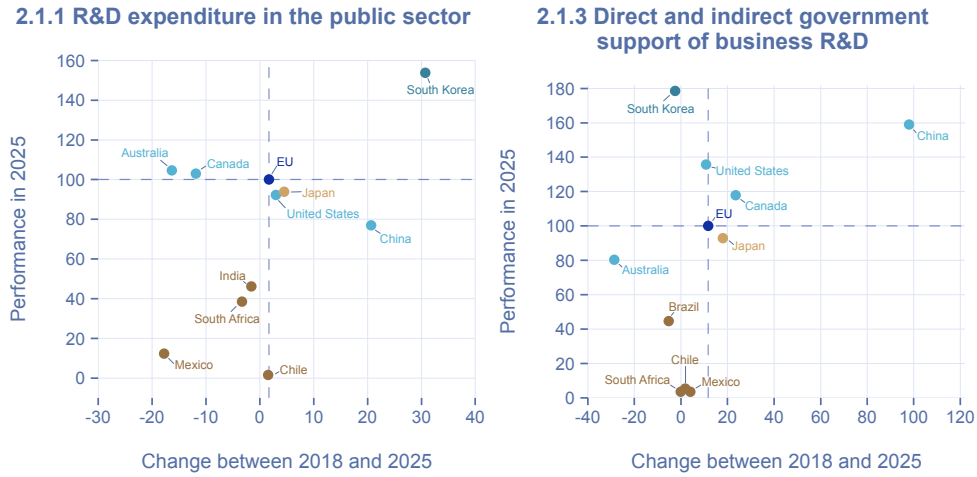
The Investments category captures investments made in both the public and business sectors and differentiates between three innovation areas: *Finance and support*, *Firm investments*, and *ICT labour employment* (Figure 37).

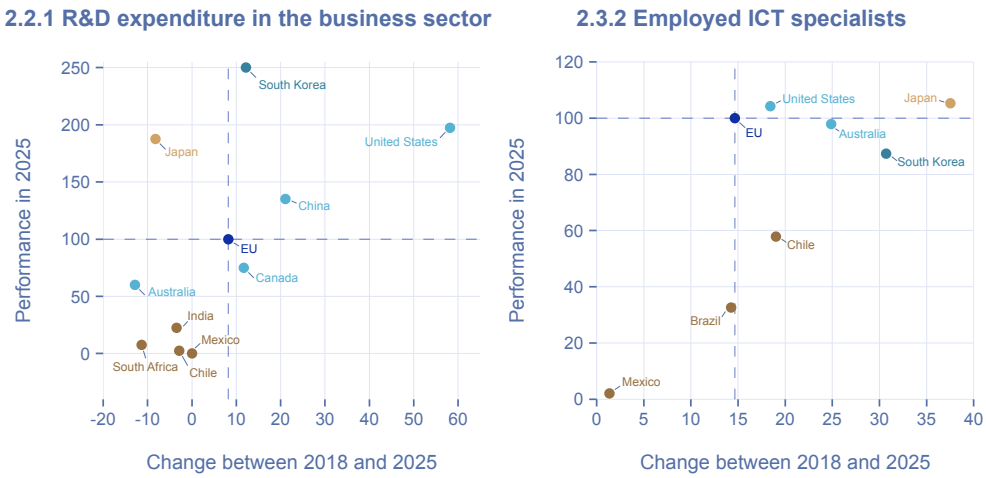
The EU maintains a strong overall performance in the area of *Finance and support*. It ranks 4th in *public R&D expenditure* and 5th in *business R&D expenditure*, with South Korea leading both indicators by a significant margin. Canada and China surpass the EU in both level and rate of increase, and Japan, though still lagging, has also increased its support at a faster pace since 2018. In contrast, Australia is notably underperforming in this area, having experienced a sharp decline since 2018.

Regarding business R&D expenditure, the EU ranks 5th, with only moderate improvement since 2018 compared to other global competitors. The United States has shown particularly strong progress on this indicator.

In terms of *ICT specialist employment*, the EU performs well, ranking 3rd, just behind Japan and the United States. Australia is continuing to catch up and growing at a faster pace than the EU, as observed last year, although the gap has not yet been closed. Chile, the USA, Australia, South Korea, and Japan are all improving faster than the EU.

Figure 37: The EU versus its global competitors in investments





Note: As for Figure 35, the horizontal axis shows changes in performance between 2018 and 2025 (values indexed to the EU average in 2018) and the y axis show the current performance (values indexed to the EU in 2025). Global countries are coloured based on the overall performance (SII) as per Figure 33. The colouring is therefore the same in from Figure 36 to Figure 39.

Innovation activities

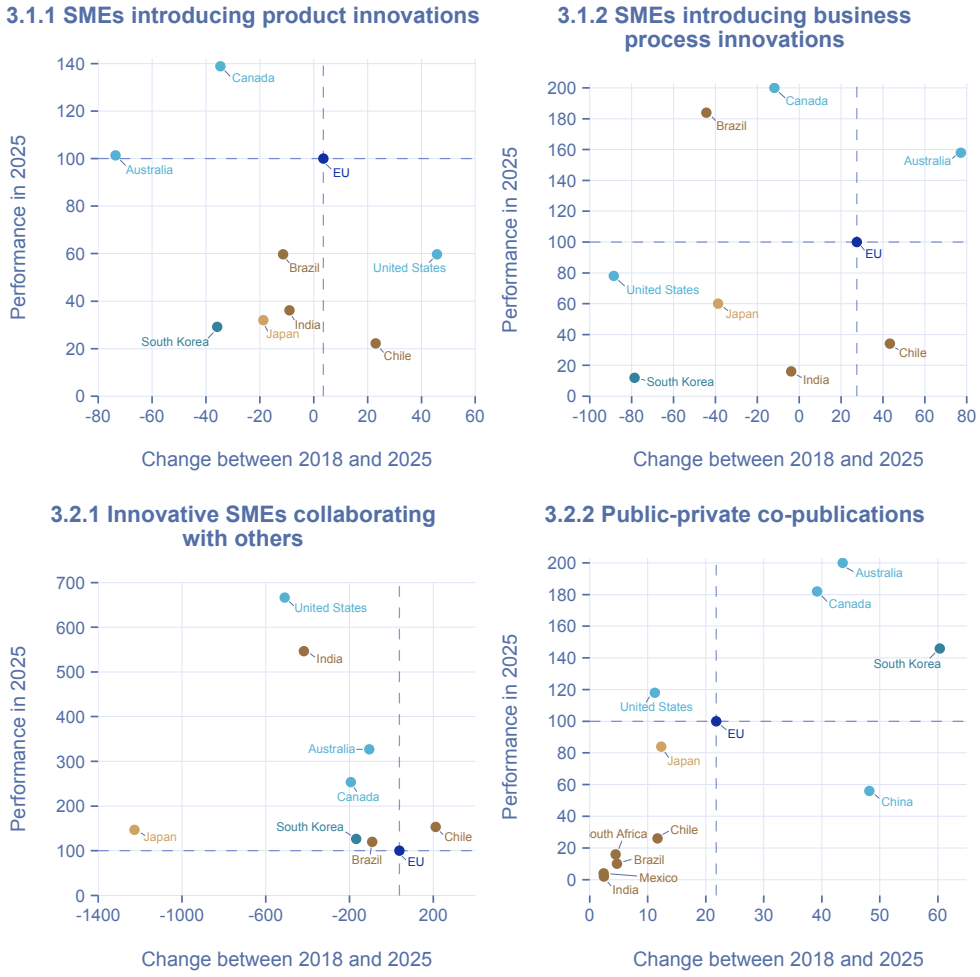
The Innovation Activities category encompasses various facets of innovation, including the introduction of products or business process innovations by SMEs, the level of collaboration within the country, and the number of intellectual property rights (Figure 38).

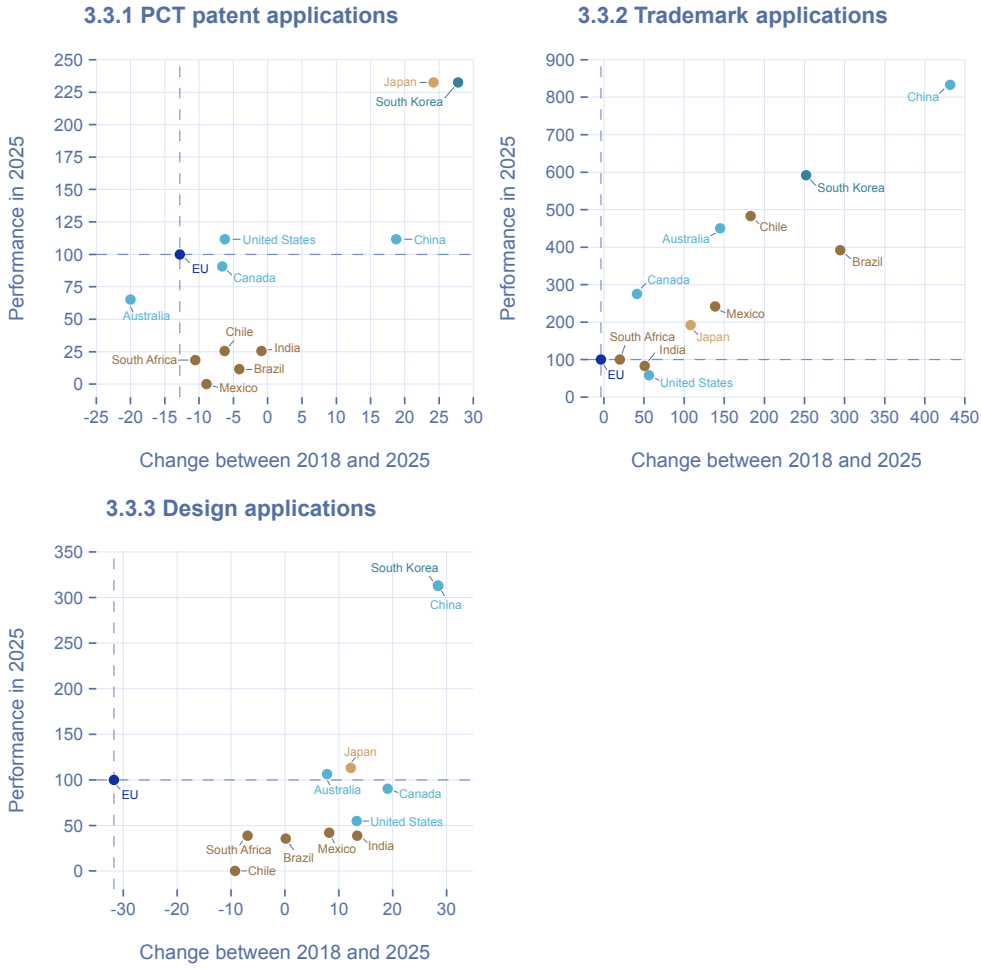
The EU has a significant *percentage of SMEs introducing products* and *business processes to the enterprise or to the market*, ranking 3rd and 4th respectively. While most competitors have experienced a slower rate of innovation introduction since 2018, the EU shows a moderate increase for both over time. The USA has improved the most in product innovations, while also having the worst decrease in *business process innovations* since 2018. South Korea, despite being an Innovation Leader, ranks second last and last in those indicators, respectively.

The EU has a weak performance in *SME collaboration with other organisations*, ranking last. It is however one of two countries, with Chile, that shows an improvement since 2018, while all other countries are collaborating less than in 2018, especially Japan with a significant decrease. However, the EU had moderate *public-private collaboration for scientific publications*, with the 5th best performance in 2025 and the 5th largest improvement since 2018.

In the area of intellectual property, the EU demonstrates moderate performance in patent and *Design applications*, ranking 5th and 4th, respectively. However, as noted in previous editions of the EIS, *trademarks* remain the weakest aspect of the EU's research and innovation profile, with the third-lowest score among global competitors. Moreover, the EU has shown limited progress across all three types of *Intellectual assets* since 2018, ranking either last or second last in terms of improvement.

Figure 38: The EU versus its global competitors in innovation activities





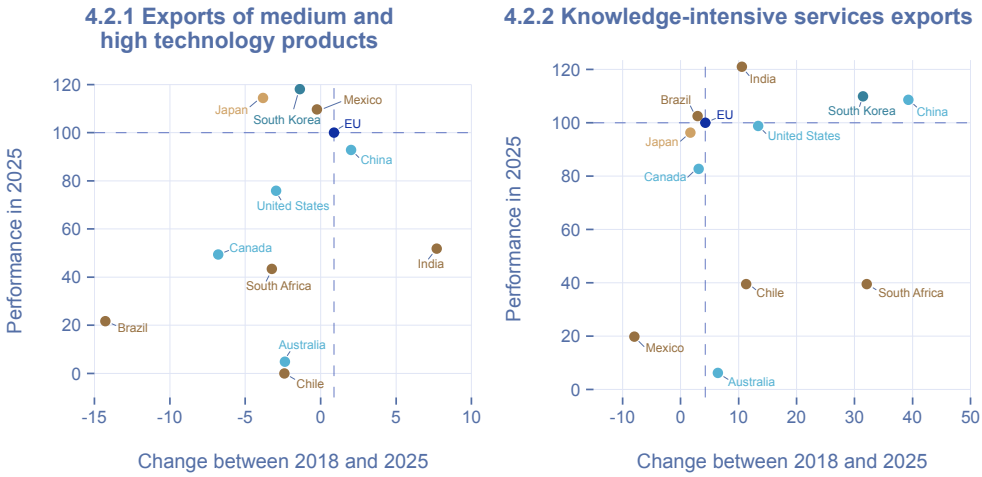
Note: As for Figure 35, the horizontal axis shows changes in performance between 2018 and 2025 (values indexed to the EU average in 2018) and the y axis show the current performance (values indexed to the EU in 2025). Global countries are coloured based on the overall performance (SII) as per Figure 33. The colouring is therefore the same in from Figure 36 to Figure 39.

Impacts

The Impacts category captures the effects of enterprises' innovation activities. For global competitors, only economic impacts are assessed (Figure 39). The EU performs strongly in the *export of medium and high technology products*, ranking 4th behind South Korea, Japan, and Mexico. It also shows the third strongest improvement among global competitors since 2018. South Korea leads on this indicator, followed by Japan; at the other end, Chile and Australia rank last, well behind the EU, while Brazil has experienced a sharp decline in performance since 2018.

The EU shows moderate performance in the *export of knowledge-intensive services*, ranking 5th among global competitors, with Japan and the United States close behind. Since 2018, the EU has achieved only modest gains in this area. Notably, while Japan demonstrated strong competitiveness in both product and service exports in the previous EIS edition, leading in both, it has since been overtaken by South Korea in the former and now ranks below the EU in the latter.

Figure 39: The EU versus its global competitors in impacts



Note: As for Figure 35, the horizontal axis shows changes in performance between 2018 and 2025 (values indexed to the EU average in 2018) and the y axis show the current performance (values indexed to the EU in 2025). Global countries are coloured based on the overall performance (SII) as per Figure 33. The colouring is therefore the same in from Figure 36 to Figure 39.

Note on China: The 2024 EIS indicator framework included Air emissions by fine particulates and Environment-related technologies in the Impacts dimension. These have been replaced by *Production-based CO_2* productivity and *Labour productivity*, both of which are unavailable globally. The boost in China's performance observed in this EIS edition is likely due to the exclusion of the former indicators. In 2024, China ranked second last in Air emissions by fine particulates (at 38% of the EU average) and last in Environment-related technologies (at around 29% of the EU average). China's consistent low scores on environment-related indicators in previous editions had a significant dampening effect on its overall performance, so their removal likely contributed to the notable improvement observed this year.

Structural indicators comparison: the EU versus its global competitors

To better understand the position of the EU in the global economic landscape, it is useful to take account of key structural indicators – such as GDP per capita, population size, and employment shares – with those of its global competitors (Figure 40).

South Korea's population is 10 times smaller than the EU's and a slightly lower GDP per capita is than the EU's. The share of the population engaged as nascent entrepreneurs or owner-managers is nearly twice as high in South Korea as in the EU. Among top R&D spending firms, South Korea invests about 30% more in R&D than the EU. However, the number of unicorns in South Korea is nearly 10 times lower. Foreign investment in South Korea, as a percent of GDP, has recently overtaken that of the EU, despite the EU having led by a wide margin last year.

China is the largest competitor in terms of population but has a GDP per capita less than half of the EU's. China's agricultural sector is, in relative terms, almost six times larger than that of the EU. The country has the largest employment share in industry among global competitors. There are half as many top R&D spending firms per million population in China compared to the EU, but, based on the EU Industrial R&D Scoreboard, these firms spend half as much on R&D as those in the EU. However, among strong and Leading Innovators, China reports the highest level of perceived corruption and the lowest rule of law.

Canada presents a slightly higher GDP per capita than the EU, for a population twelve times smaller. Canada's top R&D spending firms spent near half as much than in the EU, but foreign investments are higher. Entrepreneurial activities and basic-school entrepreneurial education are at a much higher level than in the EU. Employment in agriculture is much lower in Canada than in the EU.

The **United States** have the highest GDP per capita of all global competitors. Entrepreneurial activities are at a much higher level than in the EU. The number of top USA R&D spending enterprises is three times the EU's (23 enterprises among the world's top

2,500 R&D spenders per 10 million people, compared to 7.8), but they spend, on average, a comparable amount on R&D. FDI net inflows are lower than in the EU. The United States has the highest number of unicorns of all global competitors, more than six times that of the EU. The United States has the highest share of government procurement of advanced technology products among global competitors, though China and India follow closely.

Australia has the second highest GDP per capita among all global competitors and has the smallest population of all strong and leading global innovators. It receives the most foreign investment (relative to GDP) of all strong and leading Innovators, albeit comparable to Canada. Compared to the EU, Australia has less top R&D spending enterprises, which also spends less towards R&D, and a low number of unicorns.

Japan has a GDP per capita twice as high as China. Japan has more top R&D spending enterprises per capita than the EU among the top 2,500 worldwide. However, the share of foreign investment in Japan is lower than in the EU, and similar to South Korea and China. Japan is experiencing a significant population decline. Entrepreneurial activity and education levels are comparable to those of the EU.

Brazil has nearly three times the level of entrepreneurial activity as the EU; however, it has far fewer top R&D spending firms, which also invest five times less in R&D than EU firms. Brazil has a relatively high share of employment in agriculture compared to the EU. Foreign investment is relatively high in Brazil.

India has the lowest GDP per capita of all global competitors, but the highest average annual GDP growth. India's agricultural sector accounts for more than 40% of total employment, the highest of all global competitors. Its service sector, on the other hand, is the lowest among global competitors, less than half that of the EU. India has the third largest number of unicorns among global competitors, behind the United States and the EU. Entrepreneurial activities and training are higher in India than in the EU; basic-school entrepreneurial education and training is the highest among global competitors.

Chile has the highest percentage of population who are either a nascent entrepreneur or manager of a new enterprise among all global competitors, four times that of the EU. Additionally, Chile receives the most foreign investments among global competitors, nearly six times more than the EU.

South Africa's entrepreneurial activities and training are higher than in the EU. South Africa has the second highest employment share in agriculture among the global competitors considered in this report, just behind China. Foreign investments are high in South Africa, more than twice that of the EU. South Africa has the lowest number of unicorns among all global competitors. South Africa also has the highest annual population growth among Emerging Innovators, and third highest among global competitors.

Mexico has a GDP per capita less than half of that of the EU, but an annual growth nearly twice as fast. Foreign investments are higher compared to the EU. Mexico has the highest employment share in knowledge-intensive services among Emerging Innovators, and third highest among all global competitors. Among Emerging Innovators, Mexico reports the highest level of perceived corruption and the lowest rule of law.

Figure 40: The EU versus its global competitors (structural indicators)

	EU	KR	CN	CA	US	AU	JP	BR	IN	CL	ZA	MX
GDP per capita (in thousands)	56	51	22	61	77	65	47	20	9.1	31	15	23
Average annual GDP growth (2020-2022 average)	2	2	4.1	2.5	2.7	3.8	1.3	3	7.6	1.1	1.3	3.4
Employment share Agriculture	4	5.4	23	1.3	1.6	2.3	3	8.8	43	6.4	20	13
Employment share Industry	24	24	32	19	19	19	24	20	25	23	18	25
Employment share Services	72	70	45	79	79	79	73	71	31	71	63	63
Employment share Knowledge-intensive services	15	26	27		11	5.4	20	12	14	9	12	21
Total early-stage Entrepreneurial Activity (TEA)	7.1	11	6.1	21	18		6.3	20	12	28	9.8	15
FDI net inflows	1	1.2	1.1	2.4	1.6	2.7	0.8	3.2	1.2	5.8	4.3	2.4
Top R&D spending enterprises per 10 million population	7.8	9	4.4	6.9	23	3.5	17	0.2	0.1			
Top R&D spending enterprises, average R&D spending	616	813	337	259	643	417	518	219	257			
Number of unicorns	111	13	162	21	687	9	8	18	68	2	1	8
Buyer sophistication	3.6	5	4.3	4.4	4.8	3.9	5	3.4	4.4	3.9	4	3.4
Corruption Perceptions Index	63	63	43	75	68	76	72	36	39	65	42	29
Basic-school entrepreneurial education and training	2.4			3.6	3.7		2.4	2.2	5.6	2.7	3	2.1
Government procurement of advanced technology products	3.4	3.8	4.4	3.4	4.6	3.3	4	2.8	4.3	2.9	3	3.1
Rule of law	1	1.2	0	1.5	1.4	1.6	1.5	-0.3	0.1	0.7	0.1	-0.8
Population size (in millions)	448	52	1412	39	333	26	125	210	1426	20	62	129
Average annual population growth (2020-2022 average)	0.2	0	-0.1	2.4	0.4	1.9	-0.5	0.4	0.8	0.5	1.4	0.8
Population density	112	530	150	4.3	36	3.4	345	25	476	26	51	66

EU Below EU Above EU

5. INDUSTRIAL RESILIENCE IN A TURBULENT WORLD

The current decade is marked by significant events and challenges. The COVID-19 pandemic was a health crisis the world has not seen for over a century. Russia's military aggression against Ukraine has eroded expectations of Europe as a continent of peace. Growing competition between geopolitical powers has threatened the world order based on openness, cooperation and rules. As emphasised by President von der Leyen in her Special Address at the World Economic Forum[37], these challenges increasingly signal that Europe's economic growth model, which benefits from free trade and cheap energy from Russia, has been put under pressure and that leadership in mitigating climate change has become more difficult to sustain.

While many of the challenges that have emerged in recent years have been most visible in the context of product trade – such as disruptions related to health products, energy, or critical raw materials – the EU's structural weaknesses in technological performance are just as relevant. These weaknesses may not always manifest as immediate supply chain crises, but they are deeply consequential. They underpin the EU's long-term strategic dependencies and increasingly shape future risks in supply chains, competitiveness and technological sovereignty. Deficiencies in the EU's technological performance, notably in relation to China and the USA, have been widely documented over recent years. Addressing them is central to Europe's economic security and strategic autonomy, as underlined by both the European Commission and the European Council in their calls for strengthening Europe's technological leadership and reducing critical dependencies. Under these circumstances, two words – innovation and resilience – have become more salient in academic and policy discussions across Europe. The report delivered by Mario Draghi is explicit in this regard: research and innovation should become the main drivers of productivity and people's well-being as it is key to pursuing the green and digital transitions, necessary to reinforce Europe's resilience, and to strengthen its position in global supply chains[38].

This chapter addresses the issues of resilience and innovation. It is based on Exploratory study on the linkages between innovation and resilience, commissioned by the EC[39]. The following sections summarise key findings from this study and provides condensed empirical evidence on innovation-driven industrial and economic resilience and key innovation-related dependencies across Europe.

37 Ursula von der Leyen, 'Special Address by President von Der Leyen at the World Economic Forum', January 2025 https://ec.europa.eu/commission/presscorner/detail/en/speech_23_232

38 Mario Draghi, The Future of European Competitiveness. Part B | In-Depth Analysis and Recommendations, 2024.

39 Kalanta et al (2025). European Innovation Scoreboard 2025 - Exploratory study on the linkages between innovation and resilience. European Commission (Brussels). DOI: 10.2777/0663803

5.1 The concept of resilience

For the purposes of the EIS, the study views resilience from a systems perspective and defines it **in terms of the magnitude and duration the performance of the system deviates from the target level**. It is assumed that the system is resilient if it can return to its previous performance levels by **absorbing** the shock or by **recovering** from it, or if it is able to move to a new equilibrium with similar performance levels by **adapting** to the shock[40]. Following this approach the study focuses on **economic and industrial resilience of the EU to geopolitical shocks, which is perceived as the capacity of the EU economy and industries to withstand geopolitical turbulences arising from international trade disruption and intensifying competition between the global powers.** More specifically, the study explores how this capacity can be enhanced with **innovation.**

Based on a thorough analysis of the existing evidence, the study finds that the EU economic and industrial resilience to geopolitical shocks can be enhanced via improving its technology capacities. One technology area is of special importance. It is deep tech, which is defined as cutting-edge science, technology and engineering that combines advances in physical, biological and digital spheres and which has the potential to deliver transformative solutions[41]. Evidence shows that deep tech is key to EU industrial ecosystems when it comes to their capacities to better absorb and recover from supply chain disruptions or, if supply chain disruptions become persistent, to develop new capacities and engage in new activities that are less exposed to these disruptions. Furthermore, in the long term, improving deep tech capacities is key to pursuing EU's strategic goals of twin (digital and green) transition as well as strengthening its security.

Following these theoretical considerations, the key conceptual premise of the study is that **improving deep tech capacities across EU's industrial ecosystems is most relevant for enhancing the EU's economic and industrial resilience to geopolitical shocks.** Within these capacities, three dimensions are of special relevance. As presented in Figure 41, these are:

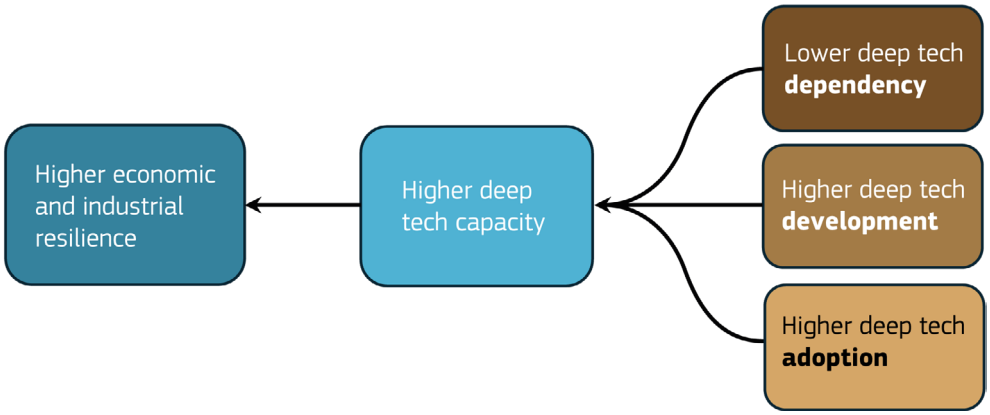
- **deep tech dependency,** which encompasses the dependency of the EU on deep tech developed elsewhere;
- **deep tech development,** which focuses on the capacity of the EU to develop its own deep tech;

40 Jakob Hafele and others, A Framework for Economic Resilience: Guiding Economic Policy through a Social-Ecological Transition (2022) https://zoe-institut.de/wp-content/uploads/2023/10/ZOE_Economic_Resilience_Framework.pdf; Anna Rita Manca, Peter Benczur, and Enrico Giovannini, Building a Scientific Narrative towards a More Resilient EU Society. Part 1: A Conceptual Framework (2017), doi:10.2760/635528; Lucia Alessi and others, 'The Resilience of EU27 Member States to the Financial and Economic Crisis', Social Indicators Research, 148.2 (2020), pp. 569–98, doi:10.1007/s11205-019-02200-1; Ron Martin and Peter Sunley, 'On the Notion of Regional Economic Resilience: Conceptualization and Explanation', Journal of Economic Geography, 15.1 (2015), pp. 1–42, doi:10.1093/jeg/lbu015.

41 European Commission, A New European Innovation Agenda, 2022 https://op.europa.eu/en/publication-detail/-/publication/e9058375-fe64-11ec-b94a-01aa75ed71a1/

- **deep tech adoption,** which covers the extent of integration and utilisation of deep tech across multiple industrial ecosystems for productivity, circularity and other purposes and which enables individual firms to be better prepared for geopolitical shocks.

Figure 41. Analytical dimensions of enhancing resilience through improving deep tech capacity



Source: authors' compilation.

This leads to the conclusion that **key to the EU's economic and industrial resilience is its capacity to reduce deep tech dependencies by strengthening its own deep tech development abilities and by more extensively adopting transformative benefits of these technologies across all industrial ecosystems.**

5.2 Capturing industrial and innovation resilience and innovation dependencies in the EIS

The conceptual framework briefly summarised above presents resilience as an inherent property of innovation. The higher the performance of innovation ecosystems is, the more resilient industries, economies and societies become. This link between innovation and the economic and industrial resilience is to some extent already captured in the EIS through long-standing indicators that demonstrate countries' capabilities to develop new technologies and absorb these technologies across industries and throughout the economy. Examples of such indicators include business and government R&D expenditure, *New doctorate graduates*, patent application, and adoption of digital technologies. The rationale behind giving these long-standing EIS indicators a resilience-based interpretation rests on the assumption that higher rates of new technology development and adoption help industries and economies to withstand geopolitical shocks easier. New technologies are

conducive to faster recovery after the shock, but most importantly, these technologies are key to adapting to changing geopolitical and geoeconomic realities.

The technology dependency dimension, however, was not at all captured by the existing EIS indicators. To represent the extent to which EU innovation and industrial ecosystems depend on knowledge and innovation developed abroad, two new indicators are proposed to be included in the EIS. One of these indicators is **high-tech imports from partners outside of the EU27 as a share of total high-tech use**[42]**.** This indicator demonstrates how much EU27 Member States' domestic use of high-tech products and services is dependent on imports of these products and services from outside of the EU. In other words, the indicator shows the share of high-tech products and services – used by firms, households, and the government for intermediate or final consumption or for investment (gross fixed capital formation) – that is supplied by non-EU countries[43]. This indicator is included in the EIS indicator framework under *Trade impacts* dimension.

Another indicator is a well-established **Herfindahl-Hirschman Index (HHI) of non-EU imports**. Calculated for high-tech goods[44], this index shows how much EU27 Member States' imports of these goods from outside of the EU are concentrated. The HHI complements the first indicator by showing to what extent EU27 Member States rely for their high-tech imports on a limited number of partners and sheds light on how vulnerable these imports could become in an event of geopolitical shocks. This indicator is included among structural indicators under the Economy dimension.

The two indicators newly included in the EIS build on the fact that high-tech products are essential in all advanced economies. As they are used for a variety of purposes, having a reliable supply of them is no less important. High-tech products rely on cutting edge science and technology and require diverse skills and other resources. This means that no single country can produce all what it needs; it must import at least some of them from other countries. In a globalised and liberalised economy, this is not a problem as this not only grants access to global supplies but also is considered as a source of efficiency.

The liberal global order, however, can be vulnerable to fragmentation because of various types of tensions coming from supply chain disruptions due to natural disasters, scarcity of natural resources or increasing geopolitical tensions between global powers. Many of these

42 While the study conceptually links resilience to deep-tech dependency, due to data availability issues, the selected indicators proxy deep-tech with high-tech as the best available alternative. To represent deep-tech most closely, the operationalisation of high-tech includes products and services and follows the Eurostat's definitions of high-tech manufacturing and high-tech services (based on Nace rev. 2 2-digit level) to include: basic pharmaceutical products and pharmaceutical preparations (C21); computer, electronic and optical products (C26); motion picture, video and television programme production services, sound recording and music publishing; programming and broadcasting services (J59_60); telecommunications services (J61); computer programming, consultancy and related services; Information services (J62_63); and scientific research and development services (M72

43 See the EIS 2025 methodology report available at: https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard_en

44 Unfortunately, existing trade statistical databases, which covers all trade partners, which is an essential condition for calculating HHI, do not include services.

trends are present currently. The two indicators aim at raising awareness of policy makers about potential vulnerabilities EU27 Member States (and non-EU countries included in the EIS) might face in the domain of accessing high-tech products and services from outside of the EU. The indicators show this by identifying a share of high-tech products that a country needs to import from non-EU countries to satisfy its domestic needs and how concentrated these imports are.

Vulnerability, however, should not be equalled to resilience. Higher vulnerability does not mean lower resilience and vice versa. Thus, higher indicators values do not suggest lower resilience but that the country has strong import dependencies, which in a case of external disruptions can become a source of potential vulnerability and internal disruptions. This might hit strategic industrial and R&I ecosystems especially hard because they strongly rely on high-tech products and services for their performance. To avoid these risks, the country might take resilience into consideration more seriously and possibly consider reducing import dependencies and/or concentration by higher diversification of partner countries, finding supplies within the EU (or EFTA) or engaging in initiatives (also possibly together with other EU countries) in developing some high-tech products and services domestically. If successful, these actions will reduce import dependencies and lead to higher resilience of strategic industrial and R&I ecosystems to shocks to global supply chains or international trade.

5.3 Dependency of EIS countries on high-tech imports

Figure 42 below presents values of both indicators for EIS countries for 2022, the latest available data. Columns demonstrate data on high-tech imports from partners outside of the EU27 as a share of total high-tech use. For better complementarity with the HHI indicator, the columns are split into goods and services. Markers show the HHI of concentration of high-tech imports of goods[45]. The interpretation of the HHI is as follows: values bellow 0.1 show low concentration (high diversification), values between 0.1 and 0.25 show moderate concentration, and values above 0.25 are a sign of high concentration and strong dependency.

The figure shows that EIS countries exhibit a large variation in shares of high-tech imports with some of them having values as high as around 50% and others as low as around 10%. This suggests that some countries for the domestic use are more dependent on imports of high-tech goods and services from outside the EU than others. While Croatia and Lithuania have the lowest shares of only around 9 and 10% respectively, a completely different situation exists in Ireland and Cyprus, each of which in 2022 imported around 50% of high-tech goods and services needed for their domestic use.

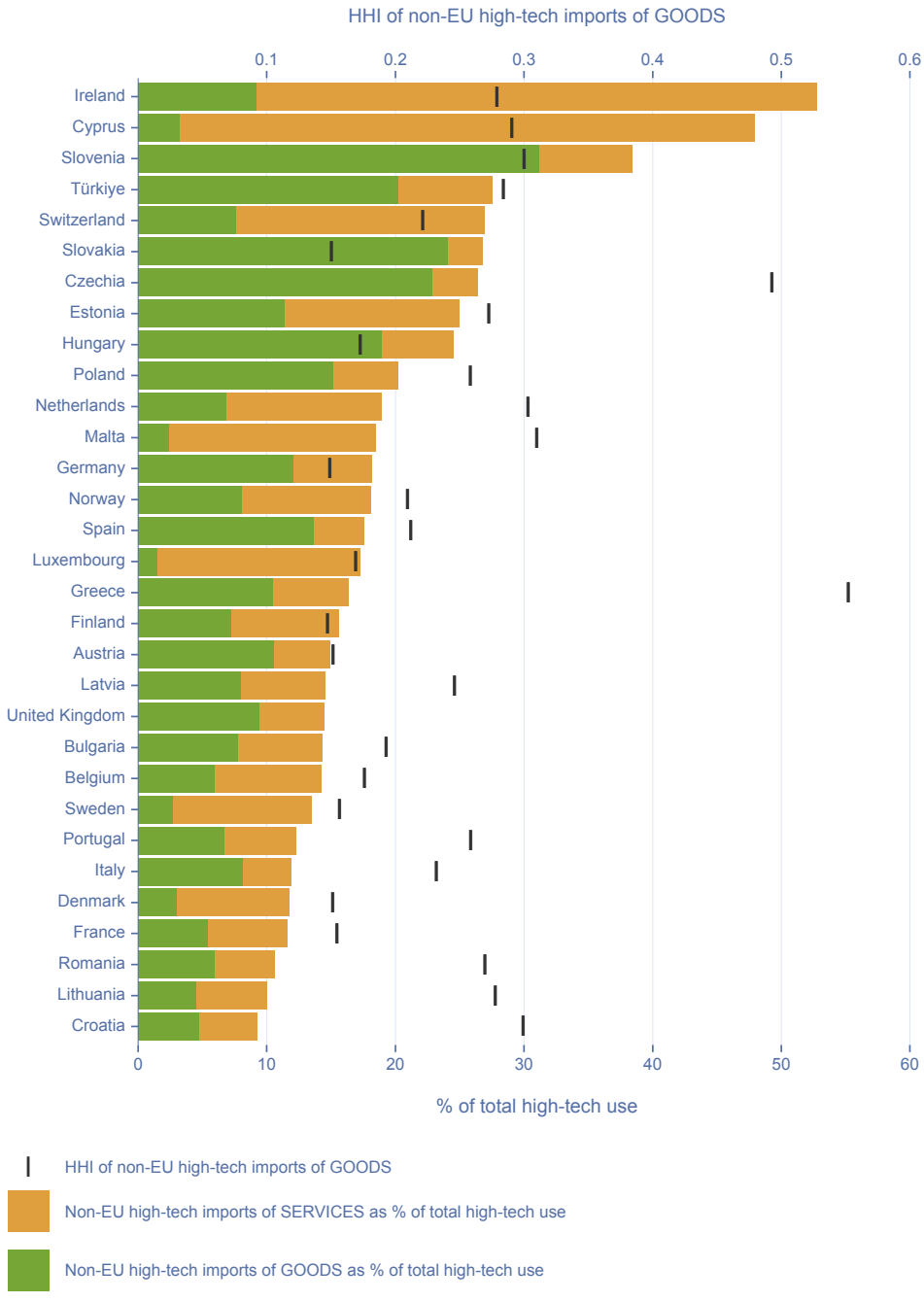
A deeper look into what these imports are, where they come from and for what purpose

45 Calculating HHI for high-tech services is not possible due to a lack of relevant data.

they are used reveals more detail. The largest Ireland's high-tech imports dependency is on scientific research and development services imported from the USA. These imports are solely used for gross fixed capital formation suggesting their key importance for Irish knowledge- and technology-intense industries, while disruptions in these imports would be especially harmful. A different situation exists in Cyprus. Here, the largest import dependency is on computer programming, consultancy and related services from the Rest of the World, a somewhat unexpected result because in the FIGARO database, this group mostly consists of smaller developing economies. These imports are used as intermediary inputs mostly in two sectors: in computer programming, consultancy and information service activities and in publishing activities, which, given the explanation above, also suggests that the destination of these imports are local subsidiaries of Israel-based parent firms.

Slovenia is yet another case with large high-tech import dependency but of a different composition. It imports almost 39% of high-tech products used domestically but with goods making four fifth of them. Furthermore, 66% of these goods are basic pharmaceutical products and pharmaceutical preparations used for household consumption and as intermediate inputs for further processing in the pharma industry. These goods are mostly imported from two countries, China and Switzerland.

Figure 42: Shares and concentration of non-EU imports in EU and neighbouring countries.



Source: Eurostat FIGARO

Some other Central Eastern European Members States, such as Czechia, Hungary, Poland and Slovakia also exhibit a trend to be more dependent on high-tech goods rather than on services. In contrast to Slovenia, in these countries, the largest dependency in 2022 was on computer, electronic and optical products mostly used as intermediary inputs in the electronics industry, for gross fixed capital formation and for household consumption. A similar trend of being dependent on imports of computer, electronic and optical products is observable in Germany too. Here, however, they were much less used as intermediary inputs in the electronics industry and more as accumulation of inventories.

The data on concentration of non-EU imports of high-tech goods adds more nuances to the picture. Again, the variation of the index between the countries is large; however, it is only weakly correlated with the share of non-EU imports indicator. For EIS countries, values of the HHI range from around 0.15 in Slovakia, Finland, Germany and Austria to around 0.3 in Cyprus, Slovenia, Türkiye, the Netherlands, Malta, Lithuania and Croatia to 0.5 and above in Czechia and Greece. In general, the data tells that in EIS countries, imports of high-tech goods from non-EU countries tend to be highly concentrated. No countries have HHI values below 0.1, a threshold for well diversified imports. Roughly half of the countries have moderate levels of concentration, not exceeding 0.25, while imports in the other half are highly concentrated and exceed the value of 0.25.

In countries with high imports concentration, China is the sole individual import partner responsible for most of it. For example, in 2022 Greece imported from China 74% of its imported high-tech goods, while no other import partner accounted for more than 7% of imports. Similarly, in Czechia, 70% of high-tech goods came from China, while no other country exceeded 6%.

Nevertheless, it cannot be excluded that the concentration patterns displayed by Greece and Czechia are a result of other factors beyond pure dependencies of their respective economies. For example, Greek ports may play the role of major entry points in the EU for Chinese imports, fostered by the operational control of some of these infrastructures by Chinese companies.

In contrast, countries with lower levels of import concentration have achieved this by counterbalancing the importance of China with larger import values from other countries. For example, the concentration in Germany is lower because 90% of its imports come from 11 partners, among which China makes only 29%. Austria demonstrates a similar situation with only 17% of its high-tech imports originating in China.

Some exceptions from China's dominant role in high concentration of imports also exist. These are Ireland, Malta and Latvia. The dominant Ireland's high-tech goods import partner in 2022 was the USA making almost 48% share. Most of these imports were comprised of basic pharmaceutical products and pharmaceutical preparations and were used as

intermediate inputs for further processing. While goods comprised only a small fraction of Malta's high-tech imports, around 53% of them came from Canada and mostly included computer, electronic and optical products. In Latvia, imports of high-tech goods made a much larger share in its total high-tech imports but otherwise the situation was similar with 41% of these imports originating from Canada and computer, electronic and optical products dominating.

6. COUNTRY PROFILES

ALBANIA

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **37.9**
Change vs 2018: ▲ +7.4 Change vs 2024: ▲ +4.4

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**37.9**	**35**	**7.4**	**4.4**
Human resources	**36.5**	**34**	**28.2**	**10.7**
New doctorate graduates	21.6	34	11.6	11.6
Population with tertiary education	78	27	68.5	10.8
Population involved in lifelong learning	9.2	36	9.6	9.6
Attractive research systems	**25.6**	**38**	**-1.6**	**-6.2**
International scientific co-publications	6.1	38	8.3	0
Scientific publications among the top 10% most cited	45.2	30	13.3	17.3
Foreign doctorate students as a % of all doctorate students	13.7	35	-43.1	-62.9
Digitalisation	**13.1**	**36**	**18.8**	**18.8**
High speed internet access	N/A		N/A	N/A
Individuals with above basic overall digital skills	16.1	34	16.7	16.7
Finance and support	**2.1**	**38**	**0**	**0**
R&D expenditure in the public sector	1.7	38	0	0
Venture capital expenditures	N/A		N/A	N/A
Direct and indirect government support of business R&D	N/A		N/A	N/A
Firm investments	**7**	**38**	**0.4**	**0**
R&D expenditure in the business sector	2.1	36	0.7	0
Non-R&D innovation expenditures	16.5	35	0	0
Innovation expenditures per person employed	N/A		N/A	N/A
Investments in information technologies	**20.9**	**37**	**5**	**5**
Cloud Computing	34.7	31	0	0
Employed ICT specialists	5.9	38	6.8	6.8
Innovators	**89.8**	**26**	**33.5**	**33.5**
SMEs introducing product innovations	102.3	25	12.8	12.8
SMEs introducing business process innovations	80	25	53.5	53.5
Linkages	**40**	**34**	**-13.8**	**0**
Innovative SMEs collaborating with others	69.1	28	-27.5	0
Public-private co-publications	5.1	38	4.7	0
Job-to-job mobility of HRST	N/A		N/A	N/A
Intellectual assets	**16.2**	**37**	**4.9**	**3.4**
PCT patent applications	24.2	38	10.9	4.9
Trademark applications	7.7	38	-8.5	5.8
Design applications	13.1	31	8.2	-0.1
Sales and employment impacts	**136.8**	**3**	**0**	**0**
Sales of new-to-market and new-to-firm innovations	195.4	1	0	0
Employment in innovative enterprises	85.6	22	0	0
Trade impacts	**0.5**	**39**	**-2.8**	**-1.9**
Exports of medium and high-tech products	0	37	0	0
Knowledge-intensive services exports	0.9	39	-6	-4.2
High-tech imports from partners outside the EU	N/A		N/A	N/A
Resource and labour productivity	**77**	**20**	**15.2**	**-0.3**
Resource productivity	42.9	29	37	0
Production-based CO_2 productivity	94.4	21	-10.8	-0.8
Labour productivity	N/A		N/A	N/A

Albania ranks 35th among the EU and neighbouring countries.

Relative strengths

- Sales of new-to-market and new-to-firm innovations
- SMEs introducing product innovations
- Production-based CO_2 productivity

Relative weaknesses

- Exports of medium and high-tech products
- Knowledge-intensive services exports
- R&D expenditure in the public sector

Highest ranked indicators among the EU and neighbouring countries

- Sales of new-to-market and new-to-firm innovations
- Production-based CO_2 productivity
- Employment in innovative enterprises

Lowest ranked indicators among the EU and neighbouring countries

- Knowledge-intensive services exports
- R&D expenditure in the public sector
- Public-private co-publications

Strong increases since 2018

- Population with tertiary education
- SMEs introducing business process innovations
- Resource productivity

Strong decreases since 2018

- Foreign doctorate students as a % of all doctorate students
- Innovative SMEs collaborating with others
- Production-based CO_2 productivity

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

AUSTRIA

Strong Innovator

Summary innovation index (indexed to EU in 2025): **114**
Change vs 2018: ▲ +8.2 Change vs 2024: ▼ -4.0

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**114.0**	**8**	**8.2**	**-4.0**
Human resources	**109.8**	**12**	**6.1**	**-2.4**
New doctorate graduates	100.0	9	-11.6	-11.6
Population with tertiary education	100.0	15	11.3	4.0
Population involved in lifelong learning	131.5	8	28.8	4.8
Attractive research systems	**154.1**	**8**	**32.3**	**4.9**
International scientific co-publications	182.9	8	68.7	16.7
Scientific publications among the top 10% most cited	112.3	10	-5.7	-1.0
Foreign doctorate students as a % of all doctorate students	192.8	4	81.7	7.6
Digitalisation	**96.9**	**14**	**66.1**	**15.3**
High speed internet access	81.0	24	156.7	42.0
Individuals with above basic overall digital skills	120.2	10	-5.5	-5.5
Finance and support	**121.1**	**7**	**6.8**	**-17.9**
R&D expenditure in the public sector	148.3	2	15.3	6.8
Venture capital expenditures	38.6	16	-8.3	-52.7
Direct and indirect government support of business R&D	145.3	4	3.5	-31.8
Firm investments	**111.2**	**7**	**-1.6**	**-0.2**
R&D expenditure in the business sector	153.8	3	5.2	6.0
Non-R&D innovation expenditures	60.5	20	-28.0	-13.9
Innovation expenditures per person employed	101.2	10	14.1	5.7
Investments in information technologies	**105.2**	**14**	**85.0**	**14.2**
Cloud Computing	103.0	14	241.2	49.8
Employed ICT specialists	107.7	9	23.4	0.0
Innovators	**116.5**	**9**	**-16.4**	**-12.6**
SMEs introducing product innovations	115.1	10	-24.5	-12.4
SMEs introducing business process innovations	117.5	5	-8.7	-13.1
Linkages	**177.3**	**6**	**21.0**	**-6.5**
Innovative SMEs collaborating with others	149.6	7	-49.8	19.2
Public-private co-publications	395.5	4	123.5	1.8
Job-to-job mobility of HRST	110.4	11	32.4	-32.4
Intellectual assets	**135.2**	**1**	**-23.5**	**-14.8**
PCT patent applications	123.4	6	-14.9	-4.5
Trademark applications	130.6	6	-3.5	-14.1
Design applications	157.9	2	-48.4	-27.2
Sales and employment impacts	**99.8**	**13**	**-20.5**	**-20.1**
Sales of new-to-market and new-to-firm innovations	79.2	17	-20.4	-23.6
Employment in innovative enterprises	117.8	8	-20.7	-16.7
Trade impacts	**70.7**	**13**	**-7.2**	**-5.3**
Exports of medium and high-tech products	91.5	7	0.3	4.3
Knowledge-intensive services exports	51.5	21	6.0	-2.8
High-tech imports from partners outside the EU	67.1	15	-26.9	-17.5
Resource and labour productivity	**111.0**	**12**	**28.9**	**13.4**
Resource productivity	103.6	10	39.4	30.0
Production-based CO_2 productivity	101.2	14	39.5	7.8
Labour productivity	136.4	10	6.1	-0.3

Austria ranks 8th among EU Member States, and 11th among the EU and neighbouring countries.

Relative strengths

- Public-private co-publications
- Foreign doctorate students as a % of all doctorate students
- International scientific co-publications

Relative weaknesses

- Venture capital expenditures
- Knowledge-intensive services exports
- Non-R&D innovation expenditures

Highest ranked indicators among EU Member States

- Design applications
- R&D expenditure in the public sector
- R&D expenditure in the business sector

Lowest ranked indicators among EU Member States

- High speed internet access
- Knowledge-intensive services exports
- Non-R&D innovation expenditures

Strong increases since 2018

- Cloud Computing
- High speed internet access
- Public-private co-publications

Strong decreases since 2018

- Innovative SMEs collaborating with others
- Design applications
- Non-R&D innovation expenditures

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

BOSNIA & HERZEGOVINA

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **25.7**
Change vs 2018: ▲ +6.1 Change vs 2024: ▲ +3.0

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**25.7**	**38**	6.1	3
Human resources	**8**	**39**	**-0.4**	**-0.4**
New doctorate graduates	13.6	37	4	0
Population with tertiary education	1.7	38	-2.6	0.7
Population involved in lifelong learning	8.5	37	-4.8	-1.9
Attractive research systems	**27.2**	**37**	**-1.6**	**4.9**
International scientific co-publications	21.6	35	16.3	0
Scientific publications among the top 10% most cited	27.2	36	-9	6.1
Foreign doctorate students as a % of all doctorate students	N/A		N/A	N/A
Digitalisation	**9.9**	**37**	**7.4**	**7.4**
High speed internet access	N/A		N/A	N/A
Individuals with above basic overall digital skills	12.3	36	6.8	6.8
Finance and support	**0**	**39**	**0**	**0**
R&D expenditure in the public sector	0	39	0	0
Venture capital expenditures	0	37	0	0
Direct and indirect government support of business R&D	0	36	0	0
Firm investments	**0.9**	**39**	**0**	**0**
R&D expenditure in the business sector	2.1	36	0	0
Non-R&D innovation expenditures	0	37	0	0
Innovation expenditures per person employed	0.5	34	0	0
Investments in information technologies	**33.7**	**35**	**45.7**	**33.7**
Cloud Computing	36.1	30	101.6	96.8
Employed ICT specialists	31	35	23.4	8.8
Innovators	**116.9**	**12**	**0**	**0**
SMEs introducing product innovations	167.2	5	0	0
SMEs introducing business process innovations	77.4	26	0	0
Linkages	**16.5**	**37**	**7.2**	**0**
Innovative SMEs collaborating with others	N/A		N/A	N/A
Public-private co-publications	29.8	34	11.4	0
Job-to-job mobility of HRST	N/A		N/A	N/A
Intellectual assets	**10.9**	**39**	**3.7**	**-1**
PCT patent applications	23.3	39	7.4	-2.7
Trademark applications	1.7	39	1.7	0
Design applications	1.1	37	0.7	0
Sales and employment impacts	**73.6**	**28**	**0**	**0**
Sales of new-to-market and new-to-firm innovations	70.6	23	0	0
Employment in innovative enterprises	76.1	25	0	0
Trade impacts	**18.3**	**37**	**12.4**	**3.3**
Exports of medium and high-tech products	29.6	33	18.2	6.6
Knowledge-intensive services exports	5.9	38	6.1	-0.5
High-tech imports from partners outside the EU	N/A		N/A	N/A
Resource and labour productivity	**18.5**	**37**	**16.5**	**3.9**
Resource productivity	24.8	31	19.1	6.9
Production-based CO_2 productivity	7.9	38	12.5	0
Labour productivity	N/A		N/A	N/A

Bosnia & Herzegovina ranks 38th among the EU and neighbouring countries.

Relative strengths
- SMEs introducing product innovations
- SMEs introducing business process innovations
- Employment in innovative enterprises

Relative weaknesses
- R&D expenditure in the public sector
- Venture capital expenditures
- Direct and indirect government support of business R&D

Highest ranked indicators among the EU and neighbouring countries
- SMEs introducing product innovations
- Sales of new-to-market and new-to-firm innovations
- Employment in innovative enterprises

Lowest ranked indicators among the EU and neighbouring countries
- R&D expenditure in the public sector
- Trademark applications
- PCT patent applications

Strong increases since 2018
- Cloud Computing
- Employed ICT specialists
- Resource productivity

Strong decreases since 2018
- Scientific publications among the top 10% most cited
- Population involved in lifelong learning
- Population with tertiary education

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

BELGIUM

Strong Innovator

Summary innovation index (indexed to EU in 2025): **122.6**
Change vs 2018: ▲ +11.7 Change vs 2024: ▼ -0.9

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**122.6**	**6**	**11.7**	**-0.9**
Human resources	**120.5**	**11**	**-0.4**	**1.5**
New doctorate graduates	113.1	8	0.0	0.0
Population with tertiary education	137.3	10	-1.3	4.6
Population involved in lifelong learning	110.8	13	0.0	0.0
Attractive research systems	**137.1**	**9**	**-27.6**	**2.6**
International scientific co-publications	178.2	9	54.6	16.9
Scientific publications among the top 10% most cited	124.1	7	-22.0	-3.0
Foreign doctorate students as a % of all doctorate students	116.7	15	-117.9	0.9
Digitalisation	**119.1**	**9**	**47.6**	**30.4**
High speed internet access	129.2	5	96.7	58.0
Individuals with above basic overall digital skills	104.0	13	8.6	8.6
Finance and support	**141.7**	**2**	**32.9**	**-10.6**
R&D expenditure in the public sector	121.7	6	11.9	0.0
Venture capital expenditures	128.3	10	52.0	-51.9
Direct and indirect government support of business R&D	174.4	3	50.5	-2.3
Firm investments	**143.1**	**3**	**16.6**	**-1.8**
R&D expenditure in the business sector	160.7	1	47.0	0.0
Non-R&D innovation expenditures	97.1	8	-1.9	-6.1
Innovation expenditures per person employed	154.0	1	2.0	0.0
Investments in information technologies	**117.0**	**9**	**55.7**	**3.3**
Cloud Computing	116.5	11	190.4	-10.4
Employed ICT specialists	117.9	8	2.9	8.8
Innovators	**160.9**	**2**	**47.5**	**-0.2**
SMEs introducing product innovations	160.2	2	15.3	12.4
SMEs introducing business process innovations	161.7	2	78.7	-12.3
Linkages	**176.8**	**7**	**30.1**	**5.4**
Innovative SMEs collaborating with others	226.2	2	55.5	28.6
Public-private co-publications	277.7	8	71.5	12.7
Job-to-job mobility of HRST	93.8	18	-11.8	-17.6
Intellectual assets	**90.6**	**14**	**-13.1**	**-7.1**
PCT patent applications	107.2	8	-11.7	-4.8
Trademark applications	91.0	21	-9.8	-9.4
Design applications	64.2	17	-17.4	-8.6
Sales and employment impacts	**122.8**	**6**	**-8.9**	**-20.7**
Sales of new-to-market and new-to-firm innovations	83.1	16	-25.1	-36.7
Employment in innovative enterprises	157.1	1	7.0	-5.1
Trade impacts	**69.5**	**15**	**-9.4**	**-0.8**
Exports of medium and high-tech products	76.9	13	5.0	2.3
Knowledge-intensive services exports	96.0	9	5.0	0.9
High-tech imports from partners outside the EU	36.8	23	-37.1	-5.4
Resource and labour productivity	**127.6**	**8**	**38.4**	**3.1**
Resource productivity	142.7	7	54.8	-3.5
Production-based CO_2 productivity	92.8	17	52.3	12.7
Labour productivity	155.9	5	6.2	0.9

Belgium ranks 6th among EU Member States, and 8th among the EU and neighbouring countries.

Relative strengths

- Public-private co-publications
- Innovative SMEs collaborating with others
- International scientific co-publications

Relative weaknesses

- High-tech imports from partners outside the EU
- Design applications
- Exports of medium and high-tech products

Highest ranked indicators among EU Member States

- R&D expenditure in the business sector
- Employment in innovative enterprises
- Innovation expenditures per person employed

Lowest ranked indicators among EU Member States

- High-tech imports from partners outside the EU
- Trademark applications
- Job-to-job mobility of HRST

Strong increases since 2018

- Cloud Computing
- High speed internet access
- SMEs introducing business process innovations

Strong decreases since 2018

- Foreign doctorate students as a % of all doctorate students
- High-tech imports from partners outside the EU
- Sales of new-to-market and new-to-firm innovations

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BULGARIA

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **45.8**
Change vs 2018: ▲ +6.3 Change vs 2024: ▼ -2.2

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**45.8**	**26**	**6.3**	**-2.2**
Human resources	**46.7**	**26**	**-4.8**	**5.0**
New doctorate graduates	47.7	21	-11.6	11.6
Population with tertiary education	79.7	19	0.0	0.0
Population involved in lifelong learning	10.0	27	0.0	0.0
Attractive research systems	**32.3**	**27**	**14.8**	**2.3**
International scientific co-publications	28.9	26	11.8	1.8
Scientific publications among the top 10% most cited	21.7	27	6.2	-1.3
Foreign doctorate students as a % of all doctorate students	52.4	21	36.8	10.6
Digitalisation	**76.0**	**24**	**33.6**	**4.2**
High speed internet access	116.6	9	76.7	9.8
Individuals with above basic overall digital skills	16.0	27	-0.4	-0.4
Finance and support	**20.3**	**24**	**6.0**	**4.0**
R&D expenditure in the public sector	26.7	24	13.6	6.8
Venture capital expenditures	35.4	19	5.2	4.4
Direct and indirect government support of business R&D	2.2	26	-3.4	0.0
Firm investments	**34.8**	**25**	**-5.5**	**-1.1**
R&D expenditure in the business sector	32.4	21	-3.7	0.0
Non-R&D innovation expenditures	65.8	19	-18.2	-7.8
Innovation expenditures per person employed	18.3	25	3.6	3.7
Investments in information technologies	**57.5**	**25**	**48.2**	**17.3**
Cloud Computing	28.0	27	88.5	38.6
Employed ICT specialists	89.8	19	32.2	8.8
Innovators	**31.0**	**26**	**3.5**	**-36.6**
SMEs introducing product innovations	49.3	24	12.8	-39.0
SMEs introducing business process innovations	16.7	26	-5.2	-34.3
Linkages	**31.2**	**26**	**14.9**	**-6.5**
Innovative SMEs collaborating with others	40.9	26	25.7	-18.7
Public-private co-publications	46.9	26	27.5	2.0
Job-to-job mobility of HRST	16.7	25	0.0	0.0
Intellectual assets	**97.7**	**12**	**-13.8**	**-0.5**
PCT patent applications	38.1	26	-7.2	1.4
Trademark applications	127.6	7	16.8	-0.9
Design applications	157.1	3	-44.0	-2.4
Sales and employment impacts	**25.0**	**26**	**-13.5**	**-31.6**
Sales of new-to-market and new-to-firm innovations	26.2	25	-17.6	-29.4
Employment in innovative enterprises	24.0	26	-9.2	-33.5
Trade impacts	**58.6**	**19**	**8.5**	**-1.9**
Exports of medium and high-tech products	42.0	25	4.7	-3.2
Knowledge-intensive services exports	65.5	13	21.7	-0.8
High-tech imports from partners outside the EU	69.3	14	0.6	-1.2
Resource and labour productivity	**26.4**	**27**	**22.2**	**12.6**
Resource productivity	13.5	26	18.6	4.6
Production-based CO_2 productivity	50.7	26	43.1	33.5
Labour productivity	9.7	27	5.9	1.2

Bulgaria ranks 26th among EU Member States, and 32nd among the EU and neighbouring countries.

Relative strengths
- Design applications
- Trademark applications
- High speed internet access

Relative weaknesses
- Direct and indirect government support of business R&D
- Labour productivity
- Population involved in lifelong learning

Highest ranked indicators among EU Member States
- Design applications
- Trademark applications
- High speed internet access

Lowest ranked indicators among EU Member States
- Labour productivity
- Population involved in lifelong learning
- Individuals with above basic overall digital skills

Strong increases since 2018
- Cloud Computing
- High speed internet access
- Production-based CO_2 productivity

Strong decreases since 2018
- Design applications
- Non-R&D innovation expenditures
- Sales of new-to-market and new-to-firm innovations

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SWITZERLAND

Innovation Leader

Summary innovation index (indexed to EU in 2025): **139.8**
Change vs 2018: ▼ -1.7 Change vs 2024: ▼ -1.6

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**139.8**	**1**	**-1.7**	**-1.6**
Human resources	**176.4**	**1**	**6.6**	**-4.4**
New doctorate graduates	191.5	1	0	0
Population with tertiary education	139	12	-8.6	-6
Population involved in lifelong learning	199.2	6	34.6	-9.6
Attractive research systems	**219.8**	**1**	**-3.1**	**-1**
International scientific co-publications	279.7	1	0	0
Scientific publications among the top 10% most cited	148	3	-15.4	-3.3
Foreign doctorate students as a % of all doctorate students	275.2	1	21.3	3.3
Digitalisation	**137.3**	**8**	**20.2**	**9.5**
High speed internet access	117.8	11	32.5	8.2
Individuals with above basic overall digital skills	165.9	6	10.8	10.8
Finance and support	**92.6**	**14**	**12.8**	**-1.1**
R&D expenditure in the public sector	135	4	-1.7	0
Venture capital expenditures	127.6	12	70.9	-5.9
Direct and indirect government support of business R&D	18.4	26	0.5	0
Firm investments	**170.8**	**1**	**14.8**	**0**
R&D expenditure in the business sector	152.4	4	14.2	0
Non-R&D innovation expenditures	N/A		N/A	N/A
Innovation expenditures per person employed	N/A		N/A	N/A
Investments in information technologies	**113.1**	**12**	**8.6**	**0**
Cloud Computing	N/A		N/A	N/A
Employed ICT specialists	117.9	8	5.9	0
Innovators	**112.5**	**14**	**-25.7**	**0**
SMEs introducing product innovations	166.8	6	25.5	0
SMEs introducing business process innovations	69.8	30	-75.3	0
Linkages	**193.1**	**5**	**11.6**	**2.5**
Innovative SMEs collaborating with others	75.7	22	0	0
Public-private co-publications	484.2	1	0	0
Job-to-job mobility of HRST	170.8	5	26.5	5.9
Intellectual assets	**137.5**	**1**	**-25.7**	**-6.6**
PCT patent applications	160	1	0	0
Trademark applications	125.3	8	-14.9	-9.1
Design applications	115.8	7	-64.1	-12.5
Sales and employment impacts	**136.6**	**4**	**-4.3**	**0**
Sales of new-to-market and new-to-firm innovations	171.8	4	54.2	0
Employment in innovative enterprises	105.9	17	-61	0
Trade impacts	**70.1**	**17**	**-8.4**	**-5.3**
Exports of medium and high-tech products	68.8	20	-8.7	-1.8
Knowledge-intensive services exports	93.4	12	-2.2	3.7
High-tech imports from partners outside the EU	49.3	21	-13.8	-17.1
Resource and labour productivity	**190.5**	**1**	**7.2**	**0**
Resource productivity	170.3	1	0	0
Production-based CO_2 productivity	173	1	3.1	0
Labour productivity	246.5	3	19.5	0

Switzerland ranks 1st among the EU and neighbouring countries.

Relative strengths
- Public-private co-publications
- International scientific co-publications
- Foreign doctorate students as a % of all doctorate students

Relative weaknesses
- Direct and indirect government support of business R&D
- High-tech imports from partners outside the EU
- Exports of medium and high-tech products

Highest ranked indicators among the EU and neighbouring countries
- Public-private co-publications
- International scientific co-publications
- Foreign doctorate students as a % of all doctorate students

Lowest ranked indicators among the EU and neighbouring countries
- SMEs introducing business process innovations
- Direct and indirect government support of business R&D
- Innovative SMEs collaborating with others

Strong increases since 2018
- Venture capital expenditures
- Sales of new-to-market and new-to-firm innovations
- Population involved in lifelong learning

Strong decreases since 2018
- SMEs introducing business process innovations
- Design applications
- Employment in innovative enterprises

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CYPRUS

Moderate Innovator

Summary innovation index (indexed to EU in 2025): **84.1**
Change vs 2018: ▲ +17.6 Change vs 2024: ▼ -14.6

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**84.1**	**17**	**17.6**	**-14.6**
Human resources	**101.2**	**15**	**11.4**	**-2.4**
New doctorate graduates	34.7	23	11.6	0.0
Population with tertiary education	190.4	3	8.6	-9.9
Population involved in lifelong learning	82.3	17	14.4	2.9
Attractive research systems	**165.0**	**5**	**76.0**	**10.9**
International scientific co-publications	241.1	3	167.6	10.6
Scientific publications among the top 10% most cited	116.3	9	9.0	-10.7
Foreign doctorate students as a % of all doctorate students	168.0	8	137.0	59.8
Digitalisation	**94.3**	**16**	**93.0**	**34.8**
High speed internet access	97.1	18	187.9	56.1
Individuals with above basic overall digital skills	89.9	18	17.9	17.9
Finance and support	**19.9**	**25**	**-2.4**	**-8.2**
R&D expenditure in the public sector	28.3	23	3.4	-1.7
Venture capital expenditures	13.0	25	-45.9	-38.7
Direct and indirect government support of business R&D	14.7	22	13.2	-0.2
Firm investments	**35.9**	**24**	**-3.1**	**-8.2**
R&D expenditure in the business sector	16.6	27	6.7	-0.7
Non-R&D innovation expenditures	83.1	12	-19.3	-19.6
Innovation expenditures per person employed	25.8	24	1.3	-5.9
Investments in information technologies	**110.2**	**10**	**110.3**	**-6.4**
Cloud Computing	119.7	10	308.8	21.6
Employed ICT specialists	100.0	14	32.2	-17.6
Innovators	**99.0**	**15**	**32.8**	**-82.0**
SMEs introducing product innovations	108.9	13	40.0	-61.3
SMEs introducing business process innovations	91.3	15	25.8	-102.0
Linkages	**164.3**	**10**	**87.7**	**-76.8**
Innovative SMEs collaborating with others	74.1	17	4.1	-223.9
Public-private co-publications	316.2	7	212.0	8.4
Job-to-job mobility of HRST	177.1	3	100.0	8.8
Intellectual assets	**101.8**	**11**	**-25.5**	**-14.5**
PCT patent applications	54.6	18	0.9	-0.6
Trademark applications	233.0	1	0.0	0.0
Design applications	36.0	21	-76.2	-42.1
Sales and employment impacts	**75.0**	**19**	**0.6**	**-52.5**
Sales of new-to-market and new-to-firm innovations	84.2	15	-12.8	-25.5
Employment in innovative enterprises	67.0	18	13.6	-78.8
Trade impacts	**50.9**	**24**	**-25.6**	**-7.4**
Exports of medium and high-tech products	45.9	23	-38.9	-18.0
Knowledge-intensive services exports	109.7	4	13.6	-4.5
High-tech imports from partners outside the EU	0.7	27	-47.5	0.7
Resource and labour productivity	**60.6**	**22**	**15.2**	**3.6**
Resource productivity	60.1	19	9.5	13.9
Production-based CO_2 productivity	54.7	24	27.6	-5.5
Labour productivity	70.1	13	9.6	1.0

Cyprus ranks 17th among EU Member States, and 21st among the EU and neighbouring countries.

Relative strengths

- Public-private co-publications
- International scientific co-publications
- Trademark applications

Relative weaknesses

- High-tech imports from partners outside the EU
- Venture capital expenditures
- Direct and indirect government support of business R&D

Highest ranked indicators among EU Member States

- Trademark applications
- International scientific co-publications
- Population with tertiary education

Lowest ranked indicators among EU Member States

- High-tech imports from partners outside the EU
- R&D expenditure in the business sector
- Venture capital expenditures

Strong increases since 2018

- Cloud Computing
- Public-private co-publications
- High speed internet access

Strong decreases since 2018

- Design applications
- High-tech imports from partners outside the EU
- Venture capital expenditures

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CZECHIA

Moderate Innovator

Summary innovation index (indexed to EU in 2025): **80.6**
Change vs 2018: ▲ +16.3 Change vs 2024: ▼ -8.4

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**80.6**	**19**	**16.3**	**-8.4**
Human resources	**73.6**	**20**	**9.8**	**1.8**
New doctorate graduates	100.0	9	0.0	0.0
Population with tertiary education	40.1	24	-9.3	-1.3
Population involved in lifelong learning	79.2	19	48.1	8.7
Attractive research systems	**86.9**	**18**	**33.9**	**6.0**
International scientific co-publications	102.4	14	42.2	11.0
Scientific publications among the top 10% most cited	53.2	22	13.4	2.9
Foreign doctorate students as a % of all doctorate students	125.3	14	71.4	8.4
Digitalisation	**85.6**	**18**	**58.9**	**24.4**
High speed internet access	52.0	26	69.5	-8.9
Individuals with above basic overall digital skills	135.0	8	50.9	50.9
Finance and support	**63.7**	**18**	**1.5**	**-21.0**
R&D expenditure in the public sector	85.0	13	-1.7	-6.8
Venture capital expenditures	37.8	17	46.9	-86.8
Direct and indirect government support of business R&D	56.6	14	-17.9	-4.2
Firm investments	**80.4**	**12**	**9.7**	**-35.0**
R&D expenditure in the business sector	79.3	11	13.4	-1.5
Non-R&D innovation expenditures	105.0	7	-8.9	-68.9
Innovation expenditures per person employed	66.8	13	21.9	-38.7
Investments in information technologies	**96.3**	**16**	**65.5**	**12.0**
Cloud Computing	104.7	12	238.9	27.9
Employed ICT specialists	87.2	21	-2.9	5.9
Innovators	**96.0**	**18**	**11.1**	**-52.5**
SMEs introducing product innovations	103.0	17	7.0	-49.0
SMEs introducing business process innovations	90.4	16	14.9	-56.3
Linkages	**85.3**	**22**	**19.9**	**-10.9**
Innovative SMEs collaborating with others	108.3	11	9.2	-14.2
Public-private co-publications	129.9	18	25.7	-2.0
Job-to-job mobility of HRST	47.9	22	26.5	-11.8
Intellectual assets	**67.8**	**21**	**-4.9**	**-7.5**
PCT patent applications	54.5	19	-8.1	-8.7
Trademark applications	91.4	19	12.7	-3.8
Design applications	63.3	18	-14.0	-8.7
Sales and employment impacts	**94.4**	**15**	**1.1**	**-22.6**
Sales of new-to-market and new-to-firm innovations	109.9	9	6.1	-5.8
Employment in innovative enterprises	80.5	16	-4.0	-38.7
Trade impacts	**88.1**	**6**	**11.4**	**1.3**
Exports of medium and high-tech products	114.7	3	7.3	1.8
Knowledge-intensive services exports	55.8	19	10.1	-1.9
High-tech imports from partners outside the EU	90.7	6	16.8	3.4
Resource and labour productivity	**59.7**	**23**	**29.1**	**8.5**
Resource productivity	79.1	15	41.6	9.5
Production-based CO_2 productivity	51.7	25	39.9	15.1
Labour productivity	41.9	19	4.4	0.7

Czechia ranks 19th among EU Member States, and 23rd among the EU and neighbouring countries.

Relative strengths

- Individuals with above basic overall digital skills
- Public-private co-publications
- Foreign doctorate students as a % of all doctorate students

Relative weaknesses

- Venture capital expenditures
- Population with tertiary education
- Labour productivity

Highest ranked indicators among EU Member States

- Exports of medium and high-tech products
- High-tech imports from partners outside the EU
- Non-R&D innovation expenditures

Lowest ranked indicators among EU Member States

- High speed internet access
- Production-based CO_2 productivity
- Population with tertiary education

Strong increases since 2018

- Cloud Computing
- Foreign doctorate students as a % of all doctorate students
- High speed internet access

Strong decreases since 2018

- Direct and indirect government support of business R&D
- Design applications
- Population with tertiary education

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GERMANY

Strong Innovator

Summary innovation index (indexed to EU in 2025): **111.1**
Change vs 2018: ▲ +8.7 Change vs 2024: ▼ -2.1

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**111.1**	**9**	**8.7**	**-2.1**
Human resources	**96.3**	**16**	**-3.9**	**-0.9**
New doctorate graduates	139.2	2	-23.1	-11.6
Population with tertiary education	76.3	20	19.9	13.2
Population involved in lifelong learning	68.5	23	0.0	0.0
Attractive research systems	**103.2**	**15**	**0.0**	**1.6**
International scientific co-publications	92.2	16	24.8	6.4
Scientific publications among the top 10% most cited	107.5	11	-11.7	-1.9
Foreign doctorate students as a % of all doctorate students	106.8	16	2.0	3.9
Digitalisation	**82.8**	**22**	**60.6**	**9.0**
High speed internet access	93.1	20	132.1	15.1
Individuals with above basic overall digital skills	67.7	23	4.2	4.2
Finance and support	**92.0**	**11**	**13.0**	**-6.4**
R&D expenditure in the public sector	133.3	4	-1.7	-1.7
Venture capital expenditures	94.5	12	62.0	-33.4
Direct and indirect government support of business R&D	41.9	16	6.7	2.3
Firm investments	**143.4**	**2**	**-0.7**	**-0.7**
R&D expenditure in the business sector	143.4	4	11.2	3.7
Non-R&D innovation expenditures	140.9	3	-15.9	-16.4
Innovation expenditures per person employed	145.0	5	0.3	8.0
Investments in information technologies	**105.8**	**13**	**79.4**	**20.9**
Cloud Computing	104.4	13	252.0	44.3
Employed ICT specialists	107.7	9	11.7	11.7
Innovators	**117.0**	**8**	**10.9**	**-31.0**
SMEs introducing product innovations	105.1	16	-22.2	-41.3
SMEs introducing business process innovations	126.6	4	43.0	-21.0
Linkages	**130.4**	**11**	**18.1**	**-11.2**
Innovative SMEs collaborating with others	88.2	16	31.1	-29.4
Public-private co-publications	188.5	12	33.7	-2.4
Job-to-job mobility of HRST	141.7	6	0.0	0.0
Intellectual assets	**119.3**	**7**	**-27.6**	**-9.2**
PCT patent applications	134.2	4	-14.7	-6.0
Trademark applications	102.3	17	-7.7	-11.2
Design applications	113.8	8	-57.8	-11.4
Sales and employment impacts	**125.3**	**4**	**-4.4**	**-8.5**
Sales of new-to-market and new-to-firm innovations	105.3	10	-7.1	-7.2
Employment in innovative enterprises	142.7	2	-1.7	-9.7
Trade impacts	**104.9**	**1**	**-2.6**	**-0.4**
Exports of medium and high-tech products	109.0	6	-3.5	-2.4
Knowledge-intensive services exports	103.8	7	5.6	5.0
High-tech imports from partners outside the EU	101.6	2	-9.4	-3.2
Resource and labour productivity	**117.4**	**11**	**40.7**	**15.5**
Resource productivity	127.4	9	57.7	22.8
Production-based CO_2 productivity	90.3	18	57.9	22.7
Labour productivity	141.6	7	4.3	-0.2

Germany ranks 9th among EU Member States, and 13th among the EU and neighbouring countries.

Relative strengths

- Public-private co-publications
- Innovation expenditures per person employed
- R&D expenditure in the business sector

Relative weaknesses

- Direct and indirect government support of business R&D
- Individuals with above basic overall digital skills
- Population involved in lifelong learning

Highest ranked indicators among EU Member States

- Employment in innovative enterprises
- New doctorate graduates
- High-tech imports from partners outside the EU

Lowest ranked indicators among EU Member States

- Individuals with above basic overall digital skills
- Population involved in lifelong learning
- Population with tertiary education

Strong increases since 2018

- Cloud Computing
- High speed internet access
- Venture capital expenditures

Strong decreases since 2018

- Design applications
- New doctorate graduates
- SMEs introducing product innovations

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

DENMARK

Innovation Leader

Summary innovation index (indexed to EU in 2025): **135**
Change vs 2018: ▲ +12.3 Change vs 2024: ▼ -4.9

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**135.0**	**2**	**12.3**	**-4.9**
Human resources	**160.0**	**3**	**1.5**	**-0.4**
New doctorate graduates	126.1	6	-46.2	-11.6
Population with tertiary education	140.1	9	13.9	14.6
Population involved in lifelong learning	220.0	1	64.4	0.0
Attractive research systems	**189.2**	**2**	**17.2**	**2.1**
International scientific co-publications	279.7	1	79.1	0.0
Scientific publications among the top 10% most cited	141.5	3	-13.0	2.3
Foreign doctorate students as a % of all doctorate students	176.3	6	25.8	3.6
Digitalisation	**139.5**	**2**	**10.9**	**6.3**
High speed internet access	131.2	3	13.8	3.0
Individuals with above basic overall digital skills	151.7	4	8.9	8.9
Finance and support	**132.2**	**4**	**47.9**	**-26.9**
R&D expenditure in the public sector	158.3	1	0.0	0.0
Venture capital expenditures	168.7	5	179.2	-143.9
Direct and indirect government support of business R&D	75.9	11	40.1	0.0
Firm investments	**112.8**	**5**	**-8.4**	**-6.2**
R&D expenditure in the business sector	123.4	6	-14.2	5.2
Non-R&D innovation expenditures	77.1	15	1.3	-36.3
Innovation expenditures per person employed	124.3	6	-11.0	8.4
Investments in information technologies	**138.7**	**6**	**56.3**	**2.5**
Cloud Computing	155.9	1	207.4	17.0
Employed ICT specialists	120.4	7	-2.9	-2.9
Innovators	**119.0**	**7**	**40.6**	**-2.7**
SMEs introducing product innovations	132.6	7	39.0	0.0
SMEs introducing business process innovations	108.3	10	42.2	-5.2
Linkages	**189.9**	**3**	**-25.7**	**-32.2**
Innovative SMEs collaborating with others	55.1	22	-67.6	-87.3
Public-private co-publications	484.2	1	51.2	0.0
Job-to-job mobility of HRST	181.2	2	-26.5	0.0
Intellectual assets	**127.0**	**4**	**-36.9**	**-17.0**
PCT patent applications	144.6	3	-7.6	-4.7
Trademark applications	112.2	11	-15.7	-7.3
Design applications	115.2	7	-87.3	-38.9
Sales and employment impacts	**104.4**	**12**	**19.6**	**-5.9**
Sales of new-to-market and new-to-firm innovations	103.7	12	19.9	-16.4
Employment in innovative enterprises	104.6	13	19.1	4.0
Trade impacts	**98.8**	**2**	**13.1**	**6.0**
Exports of medium and high-tech products	78.9	12	8.6	2.0
Knowledge-intensive services exports	128.9	1	39.2	17.1
High-tech imports from partners outside the EU	90.7	6	-5.9	-0.1
Resource and labour productivity	**143.1**	**3**	**53.1**	**12.9**
Resource productivity	69.1	17	28.5	8.0
Production-based CO_2 productivity	173.0	1	116.6	24.5
Labour productivity	209.3	3	18.9	6.9

Denmark ranks 2nd among EU Member States, and 3rd among the EU and neighbouring countries.

Relative strengths

- Public-private co-publications
- International scientific co-publications
- Population involved in lifelong learning

Relative weaknesses

- Innovative SMEs collaborating with others
- Resource productivity
- Direct and indirect government support of business R&D

Highest ranked indicators among EU Member States

- Public-private co-publications
- International scientific co-publications
- Population involved in lifelong learning

Lowest ranked indicators among EU Member States

- Innovative SMEs collaborating with others
- Resource productivity
- Non-R&D innovation expenditures

Strong increases since 2018

- Cloud Computing
- Venture capital expenditures
- Production-based CO_2 productivity

Strong decreases since 2018

- Design applications
- Innovative SMEs collaborating with others
- New doctorate graduates

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

ESTONIA

Strong Innovator

Summary innovation index (indexed to EU in 2025): **104.8**
Change vs 2018: ▲ +30.0 Change vs 2024: ▼ -1.2

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**104.8**	**11**	**30.0**	**-1.2**
Human resources	**120.7**	**10**	**21.4**	**3.5**
New doctorate graduates	100.0	9	23.1	11.6
Population with tertiary education	92.1	18	-3.3	-5.3
Population involved in lifelong learning	175.4	5	47.1	1.0
Attractive research systems	**132.9**	**11**	**65.1**	**-2.6**
International scientific co-publications	160.5	11	74.0	-0.2
Scientific publications among the top 10% most cited	102.1	12	29.8	-7.9
Foreign doctorate students as a % of all doctorate students	155.1	10	134.2	7.3
Digitalisation	**111.2**	**11**	**45.9**	**18.6**
High speed internet access	96.8	19	63.9	2.0
Individuals with above basic overall digital skills	132.3	9	31.9	31.9
Finance and support	**123.4**	**6**	**70.6**	**2.4**
R&D expenditure in the public sector	106.7	7	32.2	0.0
Venture capital expenditures	270.0	1	273.4	0.0
Direct and indirect government support of business R&D	41.9	16	12.9	6.8
Firm investments	**84.5**	**11**	**-4.9**	**-9.5**
R&D expenditure in the business sector	70.3	12	32.1	5.2
Non-R&D innovation expenditures	138.0	4	-46.2	-30.1
Innovation expenditures per person employed	66.1	14	-5.9	-6.0
Investments in information technologies	**144.7**	**4**	**103.6**	**12.8**
Cloud Computing	134.3	8	292.9	8.4
Employed ICT specialists	156.2	4	29.3	14.7
Innovators	**111.9**	**10**	**37.3**	**-15.1**
SMEs introducing product innovations	121.6	8	48.0	12.1
SMEs introducing business process innovations	104.1	12	26.6	-41.8
Linkages	**168.5**	**9**	**25.4**	**-35.5**
Innovative SMEs collaborating with others	165.7	5	-58.1	-64.5
Public-private co-publications	204.5	11	68.4	10.5
Job-to-job mobility of HRST	156.3	4	76.5	-32.4
Intellectual assets	**120.7**	**6**	**10.2**	**-9.2**
PCT patent applications	51.9	20	-9.8	-12.5
Trademark applications	214.3	3	48.8	-7.6
Design applications	127.2	6	5.4	-6.4
Sales and employment impacts	**112.0**	**10**	**12.2**	**-1.8**
Sales of new-to-market and new-to-firm innovations	105.2	11	16.2	22.2
Employment in innovative enterprises	117.8	8	8.3	-25.5
Trade impacts	**54.1**	**22**	**10.4**	**8.2**
Exports of medium and high-tech products	56.4	20	3.3	0.7
Knowledge-intensive services exports	84.9	10	32.9	2.5
High-tech imports from partners outside the EU	22.7	24	-2.6	20.7
Resource and labour productivity	**41.3**	**26**	**33.8**	**7.0**
Resource productivity	24.8	24	22.5	1.0
Production-based CO_2 productivity	57.3	23	75.5	21.7
Labour productivity	42.7	18	6.3	-0.5

Estonia ranks 11th among EU Member States, and 15th among the EU and neighbouring countries.

Relative strengths

- Venture capital expenditures
- Trademark applications
- Public-private co-publications

Relative weaknesses

- High-tech imports from partners outside the EU
- Resource productivity
- Direct and indirect government support of business R&D

Highest ranked indicators among EU Member States

- Venture capital expenditures
- Trademark applications
- Job-to-job mobility of HRST

Lowest ranked indicators among EU Member States

- High-tech imports from partners outside the EU
- Resource productivity
- Production-based CO_2 productivity

Strong increases since 2018

- Cloud Computing
- Venture capital expenditures
- Foreign doctorate students as a % of all doctorate students

Strong decreases since 2018

- Innovative SMEs collaborating with others
- Non-R&D innovation expenditures
- PCT patent applications

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GREECE

Moderate Innovator

Summary innovation index (indexed to EU in 2025): **75.8**
Change vs 2018: ▲ +15.3 Change vs 2024: ▼ -2.9

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**75.8**	**20**	**15.3**	**-2.9**
Human resources	**74.4**	**19**	**10.5**	**0.0**
New doctorate graduates	86.9	16	23.1	0.0
Population with tertiary education	102.3	14	2.0	0.0
Population involved in lifelong learning	30.0	26	0.0	0.0
Attractive research systems	**71.0**	**20**	**14.1**	**4.2**
International scientific co-publications	93.2	15	44.1	7.8
Scientific publications among the top 10% most cited	98.2	13	5.1	5.7
Foreign doctorate students as a % of all doctorate students	5.2	27	5.5	-3.0
Digitalisation	**46.5**	**27**	**22.7**	**11.1**
High speed internet access	31.5	27	61.0	34.8
Individuals with above basic overall digital skills	68.7	22	-7.5	-7.5
Finance and support	**71.9**	**15**	**36.0**	**-2.0**
R&D expenditure in the public sector	105.0	8	30.5	0.0
Venture capital expenditures	35.3	20	33.8	-3.0
Direct and indirect government support of business R&D	58.1	13	44.4	-3.8
Firm investments	**74.2**	**14**	**13.3**	**1.1**
R&D expenditure in the business sector	48.3	19	23.9	1.5
Non-R&D innovation expenditures	112.7	6	-13.2	-13.4
Innovation expenditures per person employed	76.1	12	25.9	13.5
Investments in information technologies	**40.0**	**26**	**35.4**	**8.6**
Cloud Computing	43.7	25	117.9	23.5
Employed ICT specialists	36.1	27	2.9	2.9
Innovators	**181.4**	**1**	**64.5**	**-9.5**
SMEs introducing product innovations	203.7	1	80.6	-9.7
SMEs introducing business process innovations	163.9	1	49.0	-9.5
Linkages	**92.8**	**21**	**-7.2**	**-36.2**
Innovative SMEs collaborating with others	103.8	12	-120.0	-79.3
Public-private co-publications	154.0	15	81.4	-4.0
Job-to-job mobility of HRST	58.3	20	47.1	-14.7
Intellectual assets	**52.9**	**24**	**-0.3**	**-6.5**
PCT patent applications	47.0	21	1.9	-6.3
Trademark applications	91.2	20	12.7	-8.1
Design applications	21.4	27	-12.7	-5.4
Sales and employment impacts	**137.3**	**2**	**12.0**	**-25.7**
Sales of new-to-market and new-to-firm innovations	140.8	3	4.8	-24.2
Employment in innovative enterprises	134.1	4	19.0	-27.2
Trade impacts	**53.9**	**23**	**-2.3**	**-0.3**
Exports of medium and high-tech products	19.7	27	7.1	1.8
Knowledge-intensive services exports	63.1	14	3.9	-8.9
High-tech imports from partners outside the EU	80.6	9	-17.5	5.5
Resource and labour productivity	**67.6**	**21**	**23.7**	**12.1**
Resource productivity	84.4	12	17.8	17.8
Production-based CO_2 productivity	69.9	21	53.8	17.6
Labour productivity	38.5	20	1.1	0.5

Greece ranks 20th among EU Member States, and 24th among the EU and neighbouring countries.

Relative strengths

- SMEs introducing product innovations
- SMEs introducing business process innovations
- Public-private co-publications

Relative weaknesses

- Foreign doctorate students as a % of all doctorate students
- Exports of medium and high-tech products
- Design applications

Highest ranked indicators among EU Member States

- SMEs introducing product innovations
- SMEs introducing business process innovations
- Sales of new-to-market and new-to-firm innovations

Lowest ranked indicators among EU Member States

- Foreign doctorate students as a % of all doctorate students
- Exports of medium and high-tech products
- Design applications

Strong increases since 2018

- Cloud Computing
- Public-private co-publications
- SMEs introducing product innovations

Strong decreases since 2018

- Innovative SMEs collaborating with others
- High-tech imports from partners outside the EU
- Non-R&D innovation expenditures

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SPAIN

Moderate Innovator

Summary innovation index (indexed to EU in 2025): **92.7**
Change vs 2018: ▲ +13.9 Change vs 2024: ▲ +1.9

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**92.7**	**15**	**13.9**	**1.9**
Human resources	**121.9**	**8**	**2.6**	**1.8**
New doctorate graduates	100.0	9	-23.1	0.0
Population with tertiary education	148.0	8	27.2	4.0
Population involved in lifelong learning	119.2	11	16.3	1.9
Attractive research systems	**90.1**	**17**	**12.2**	**1.0**
International scientific co-publications	91.5	17	34.5	5.8
Scientific publications among the top 10% most cited	88.2	14	-5.5	-0.7
Foreign doctorate students as a % of all doctorate students	91.4	18	29.7	0.4
Digitalisation	**137.4**	**5**	**12.1**	**5.8**
High speed internet access	129.7	4	23.9	9.8
Individuals with above basic overall digital skills	148.6	5	2.6	2.6
Finance and support	**109.4**	**9**	**37.1**	**-2.0**
R&D expenditure in the public sector	88.3	11	18.6	6.8
Venture capital expenditures	133.3	9	87.2	-29.2
Direct and indirect government support of business R&D	117.1	7	34.2	0.9
Firm investments	**62.5**	**18**	**9.8**	**0.5**
R&D expenditure in the business sector	55.2	16	15.7	3.7
Non-R&D innovation expenditures	85.2	10	1.4	-10.5
Innovation expenditures per person employed	56.0	16	11.6	7.0
Investments in information technologies	**75.7**	**23**	**39.8**	**4.2**
Cloud Computing	60.4	23	95.9	-7.2
Employed ICT specialists	92.3	18	17.6	8.8
Innovators	**55.0**	**21**	**12.9**	**-1.6**
SMEs introducing product innovations	62.5	22	34.7	-3.5
SMEs introducing business process innovations	49.1	23	-8.3	0.5
Linkages	**93.9**	**19**	**46.7**	**-1.8**
Innovative SMEs collaborating with others	69.4	20	31.0	20.6
Public-private co-publications	123.6	19	49.1	10.4
Job-to-job mobility of HRST	102.1	14	58.8	-26.5
Intellectual assets	**82.4**	**17**	**-9.9**	**-3.2**
PCT patent applications	66.0	14	-8.5	-6.3
Trademark applications	110.2	12	-8.4	-6.4
Design applications	77.9	15	-12.8	2.6
Sales and employment impacts	**117.1**	**7**	**12.2**	**9.6**
Sales of new-to-market and new-to-firm innovations	191.1	2	32.3	12.7
Employment in innovative enterprises	52.6	21	-7.2	6.5
Trade impacts	**67.1**	**16**	**1.4**	**-2.6**
Exports of medium and high-tech products	63.2	18	-2.6	-1.3
Knowledge-intensive services exports	35.9	25	7.4	-0.3
High-tech imports from partners outside the EU	100.5	3	0.2	-6.2
Resource and labour productivity	**118.0**	**10**	**34.0**	**20.1**
Resource productivity	149.2	6	43.6	34.2
Production-based CO_2 productivity	106.8	12	54.0	22.7
Labour productivity	87.0	12	3.1	1.3

Spain ranks 15th among EU Member States, and 19th among the EU and neighbouring countries.

Relative strengths

- Sales of new-to-market and new-to-firm innovations
- Resource productivity
- Individuals with above basic overall digital skills

Relative weaknesses

- Knowledge-intensive services exports
- SMEs introducing business process innovations
- Employment in innovative enterprises

Highest ranked indicators among EU Member States

- Sales of new-to-market and new-to-firm innovations
- High-tech imports from partners outside the EU
- High speed internet access

Lowest ranked indicators among EU Member States

- Knowledge-intensive services exports
- SMEs introducing business process innovations
- Cloud Computing

Strong increases since 2018

- Cloud Computing
- Venture capital expenditures
- Job-to-job mobility of HRST

Strong decreases since 2018

- New doctorate graduates
- Design applications
- PCT patent applications

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

Innovation Leader

Summary innovation index (indexed to EU in 2025): **125.3**
Change vs 2018: ▲ +8.9 Change vs 2024: ▼ -3.7

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**125.3**	**4**	**8.9**	**-3.7**
Human resources	**137.3**	**6**	**-16.8**	**12.5**
New doctorate graduates	126.1	6	-34.7	11.6
Population with tertiary education	71.8	22	-6.6	-0.7
Population involved in lifelong learning	220.0	1	0.0	28.8
Attractive research systems	**156.9**	**7**	**34.9**	**5.7**
International scientific co-publications	222.4	5	79.1	26.4
Scientific publications among the top 10% most cited	133.0	5	11.3	-2.2
Foreign doctorate students as a % of all doctorate students	130.7	13	45.4	4.1
Digitalisation	**139.5**	**2**	**29.5**	**16.5**
High speed internet access	98.1	17	52.1	22.6
Individuals with above basic overall digital skills	200.3	1	11.5	11.5
Finance and support	**126.9**	**5**	**42.4**	**-7.5**
R&D expenditure in the public sector	145.0	3	13.6	10.2
Venture capital expenditures	233.3	3	205.9	-53.4
Direct and indirect government support of business R&D	32.2	19	-6.8	-6.1
Firm investments	**112.6**	**6**	**-0.5**	**-1.1**
R&D expenditure in the business sector	141.4	5	20.9	4.5
Non-R&D innovation expenditures	74.0	16	-33.0	-11.2
Innovation expenditures per person employed	108.4	8	6.1	2.0
Investments in information technologies	**162.1**	**1**	**29.5**	**2.2**
Cloud Computing	155.9	1	81.8	0.0
Employed ICT specialists	169.0	1	8.8	2.9
Innovators	**124.3**	**5**	**-24.2**	**-30.6**
SMEs introducing product innovations	142.0	6	-41.1	-21.9
SMEs introducing business process innovations	110.5	9	-7.5	-38.8
Linkages	**199.7**	**1**	**47.5**	**-9.4**
Innovative SMEs collaborating with others	213.7	3	47.8	-29.3
Public-private co-publications	332.2	5	71.7	18.1
Job-to-job mobility of HRST	133.3	8	35.3	-5.9
Intellectual assets	**128.1**	**3**	**-15.0**	**-7.8**
PCT patent applications	160.0	1	0.0	0.0
Trademark applications	107.3	13	-19.1	-12.5
Design applications	100.7	11	-29.8	-13.9
Sales and employment impacts	**123.7**	**5**	**5.5**	**-29.0**
Sales of new-to-market and new-to-firm innovations	125.3	5	34.3	-30.8
Employment in innovative enterprises	122.0	5	-22.7	-27.4
Trade impacts	**82.2**	**8**	**-2.4**	**-3.0**
Exports of medium and high-tech products	65.5	17	3.6	0.2
Knowledge-intensive services exports	104.1	6	2.4	-3.5
High-tech imports from partners outside the EU	78.7	11	-12.8	-6.2
Resource and labour productivity	**72.8**	**17**	**21.1**	**3.4**
Resource productivity	11.6	27	6.8	1.1
Production-based CO_2 productivity	90.2	19	64.0	10.6
Labour productivity	138.9	9	-4.7	-0.6

Finland ranks 4th among EU Member States, and 6th among the EU and neighbouring countries.

Relative strengths

- Public-private co-publications
- Venture capital expenditures
- International scientific co-publications

Relative weaknesses

- Resource productivity
- Direct and indirect government support of business R&D
- Exports of medium and high-tech products

Highest ranked indicators among EU Member States

- Population involved in lifelong learning
- Individuals with above basic overall digital skills
- Employed ICT specialists

Lowest ranked indicators among EU Member States

- Resource productivity
- Population with tertiary education
- Direct and indirect government support of business R&D

Strong increases since 2018

- Venture capital expenditures
- Cloud Computing
- International scientific co-publications

Strong decreases since 2018

- SMEs introducing product innovations
- New doctorate graduates
- Non-R&D innovation expenditures

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

FRANCE

Strong Innovator

Summary innovation index (indexed to EU in 2025): **108.6**
Change vs 2018: ▲ +7.4 Change vs 2024: ▲ +1.7

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**108.6**	**10**	**7.4**	**1.7**
Human resources	**135.7**	**7**	**17.1**	**18.8**
New doctorate graduates	139.2	2	0.0	34.7
Population with tertiary education	152.5	7	20.5	9.9
Population involved in lifelong learning	113.1	12	40.4	2.9
Attractive research systems	**105.3**	**13**	**-7.3**	**-1.8**
International scientific co-publications	73.8	21	7.6	4.9
Scientific publications among the top 10% most cited	84.3	15	-16.6	-5.2
Foreign doctorate students as a % of all doctorate students	170.0	7	0.0	0.0
Digitalisation	**108.4**	**12**	**52.9**	**10.0**
High speed internet access	104.4	13	123.3	26.2
Individuals with above basic overall digital skills	114.2	11	-2.8	-2.8
Finance and support	**162.8**	**1**	**20.3**	**-8.6**
R&D expenditure in the public sector	98.3	9	-5.1	0.0
Venture capital expenditures	238.8	2	120.5	-45.4
Direct and indirect government support of business R&D	185.8	1	0.0	0.0
Firm investments	**91.4**	**10**	**-5.8**	**-3.3**
R&D expenditure in the business sector	96.6	9	-0.7	-2.2
Non-R&D innovation expenditures	47.8	22	-36.0	-9.0
Innovation expenditures per person employed	112.9	7	15.2	1.0
Investments in information technologies	**72.4**	**24**	**6.1**	**1.9**
Cloud Computing	51.9	24	0.0	0.0
Employed ICT specialists	94.9	17	8.8	2.9
Innovators	**110.5**	**11**	**3.8**	**2.4**
SMEs introducing product innovations	109.1	12	2.1	0.0
SMEs introducing business process innovations	111.9	6	5.6	5.0
Linkages	**118.9**	**14**	**39.9**	**-11.2**
Innovative SMEs collaborating with others	131.3	8	31.5	5.7
Public-private co-publications	108.9	21	3.1	1.3
Job-to-job mobility of HRST	112.5	10	64.7	-32.4
Intellectual assets	**87.7**	**15**	**-11.7**	**-3.6**
PCT patent applications	110.8	7	-10.9	-0.5
Trademark applications	71.8	24	-5.2	-4.5
Design applications	69.0	16	-17.7	-6.4
Sales and employment impacts	**87.8**	**17**	**-3.0**	**8.1**
Sales of new-to-market and new-to-firm innovations	52.1	21	-24.1	5.4
Employment in innovative enterprises	118.6	7	17.4	10.8
Trade impacts	**86.0**	**7**	**-8.3**	**-2.4**
Exports of medium and high-tech products	83.8	11	-8.1	0.1
Knowledge-intensive services exports	84.1	11	4.1	0.6
High-tech imports from partners outside the EU	90.0	8	-19.7	-7.6
Resource and labour productivity	**141.1**	**5**	**32.5**	**16.0**
Resource productivity	137.3	8	41.3	25.0
Production-based CO_2 productivity	145.8	5	57.7	21.5
Labour productivity	139.3	8	-2.5	0.4

France ranks 10th among EU Member States, and 14th among the EU and neighbouring countries.

Relative strengths

- Venture capital expenditures
- Direct and indirect government support of business R&D
- Foreign doctorate students as a % of all doctorate students

Relative weaknesses

- Non-R&D innovation expenditures
- Cloud Computing
- Sales of new-to-market and new-to-firm innovations

Highest ranked indicators among EU Member States

- Direct and indirect government support of business R&D
- Venture capital expenditures
- New doctorate graduates

Lowest ranked indicators among EU Member States

- Cloud Computing
- Trademark applications
- Non-R&D innovation expenditures

Strong increases since 2018

- High speed internet access
- Venture capital expenditures
- Job-to-job mobility of HRST

Strong decreases since 2018

- Non-R&D innovation expenditures
- Sales of new-to-market and new-to-firm innovations
- High-tech imports from partners outside the EU

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

CROATIA

Moderate Innovator

Summary innovation index (indexed to EU in 2025): **71.6**
Change vs 2018: ▲ +19.4 Change vs 2024: ▼ -1.0

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**71.6**	**21**	**19.4**	**-1.0**
Human resources	**70.1**	**23**	**14.7**	**11.8**
New doctorate graduates	86.9	16	11.6	23.1
Population with tertiary education	73.4	21	21.2	4.0
Population involved in lifelong learning	46.9	25	12.5	1.9
Attractive research systems	**47.5**	**23**	**13.5**	**0.5**
International scientific co-publications	80.2	19	45.6	6.2
Scientific publications among the top 10% most cited	35.8	26	7.7	-2.4
Foreign doctorate students as a % of all doctorate students	33.9	23	-3.8	1.4
Digitalisation	**84.9**	**20**	**20.2**	**-6.3**
High speed internet access	81.4	23	80.7	20.7
Individuals with above basic overall digital skills	90.0	17	-27.5	-27.5
Finance and support	**73.9**	**14**	**51.7**	**-18.5**
R&D expenditure in the public sector	85.0	13	28.8	-3.4
Venture capital expenditures	150.6	6	190.4	-91.3
Direct and indirect government support of business R&D	7.9	24	7.6	0.1
Firm investments	**79.3**	**13**	**19.1**	**35.5**
R&D expenditure in the business sector	49.7	17	27.6	-0.7
Non-R&D innovation expenditures	80.2	13	-66.2	3.4
Innovation expenditures per person employed	107.4	9	84.4	99.9
Investments in information technologies	**99.7**	**15**	**79.4**	**28.7**
Cloud Computing	99.4	15	184.2	48.6
Employed ICT specialists	100.0	14	38.1	20.5
Innovators	**79.1**	**19**	**-7.8**	**-60.1**
SMEs introducing product innovations	68.9	19	-4.7	-81.5
SMEs introducing business process innovations	87.1	19	-10.9	-39.4
Linkages	**106.4**	**15**	**47.8**	**-1.8**
Innovative SMEs collaborating with others	91.6	15	20.3	-10.6
Public-private co-publications	146.3	17	55.1	-20.9
Job-to-job mobility of HRST	102.1	14	67.6	14.7
Intellectual assets	**50.2**	**26**	**9.7**	**-1.0**
PCT patent applications	45.6	22	4.1	1.3
Trademark applications	75.8	23	27.1	0.8
Design applications	30.4	23	3.3	-4.9
Sales and employment impacts	**79.6**	**18**	**6.5**	**-27.0**
Sales of new-to-market and new-to-firm innovations	102.1	13	38.5	-2.5
Employment in innovative enterprises	59.9	20	-24.6	-50.6
Trade impacts	**46.0**	**26**	**-1.3**	**-0.9**
Exports of medium and high-tech products	49.6	22	-3.1	0.0
Knowledge-intensive services exports	12.7	27	5.6	1.2
High-tech imports from partners outside the EU	73.5	12	-5.6	-3.6
Resource and labour productivity	**74.5**	**15**	**26.5**	**7.5**
Resource productivity	83.3	13	34.3	12.6
Production-based CO_2 productivity	94.7	16	42.3	9.4
Labour productivity	31.0	23	2.3	-0.7

Croatia ranks 21st among EU Member States, and 25th among the EU and neighbouring countries.

Relative strengths

- Venture capital expenditures
- Public-private co-publications
- Innovation expenditures per person employed

Relative weaknesses

- Direct and indirect government support of business R&D
- Knowledge-intensive services exports
- Design applications

Highest ranked indicators among EU Member States

- Venture capital expenditures
- Innovation expenditures per person employed
- High-tech imports from partners outside the EU

Lowest ranked indicators among EU Member States

- Knowledge-intensive services exports
- Scientific publications among the top 10% most cited
- Population involved in lifelong learning

Strong increases since 2018

- Venture capital expenditures
- Cloud Computing
- Innovation expenditures per person employed

Strong decreases since 2018

- Non-R&D innovation expenditures
- Individuals with above basic overall digital skills
- Employment in innovative enterprises

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HUNGARY

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **69.5**
Change vs 2018: ▲ +16.2 Change vs 2024: ▲ +1.7

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**69.5**	**22**	**16.2**	**1.7**
Human resources	**55.1**	**25**	**17.7**	**10.3**
New doctorate graduates	47.7	21	11.6	0.0
Population with tertiary education	33.3	25	-7.3	14.6
Population involved in lifelong learning	86.9	16	56.7	22.1
Attractive research systems	**81.3**	**19**	**44.0**	**2.9**
International scientific co-publications	64.2	23	36.1	10.5
Scientific publications among the top 10% most cited	57.5	20	16.3	-0.1
Foreign doctorate students as a % of all doctorate students	136.3	12	112.5	1.9
Digitalisation	**106.8**	**13**	**76.3**	**21.8**
High speed internet access	109.0	12	136.1	12.5
Individuals with above basic overall digital skills	103.5	14	29.4	29.4
Finance and support	**62.8**	**19**	**-35.8**	**-21.0**
R&D expenditure in the public sector	41.7	22	3.4	-1.7
Venture capital expenditures	51.0	15	-10.8	-20.6
Direct and indirect government support of business R&D	95.7	8	-99.3	-46.0
Firm investments	**63.4**	**17**	**-14.4**	**-7.7**
R&D expenditure in the business sector	66.2	14	-10.4	0.0
Non-R&D innovation expenditures	77.6	14	-41.9	-23.3
Innovation expenditures per person employed	52.3	19	5.3	-2.0
Investments in information technologies	**93.4**	**18**	**88.6**	**49.3**
Cloud Computing	99.0	16	268.4	151.9
Employed ICT specialists	87.2	21	17.6	8.8
Innovators	**46.7**	**24**	**18.2**	**-10.6**
SMEs introducing product innovations	64.6	21	21.1	-11.8
SMEs introducing business process innovations	32.9	25	15.4	-9.5
Linkages	**93.1**	**20**	**55.8**	**2.9**
Innovative SMEs collaborating with others	72.9	18	42.8	-7.0
Public-private co-publications	122.4	20	49.2	1.6
Job-to-job mobility of HRST	97.9	17	70.6	11.8
Intellectual assets	**56.8**	**22**	**-2.2**	**0.2**
PCT patent applications	69.2	13	-7.1	-0.8
Trademark applications	69.9	26	7.4	-1.0
Design applications	24.1	25	-3.7	2.1
Sales and employment impacts	**49.0**	**23**	**6.8**	**0.2**
Sales of new-to-market and new-to-firm innovations	70.5	19	11.3	10.5
Employment in innovative enterprises	30.2	25	2.7	-9.9
Trade impacts	**63.5**	**17**	**3.4**	**-5.9**
Exports of medium and high-tech products	117.3	1	6.0	-1.0
Knowledge-intensive services exports	62.6	15	6.4	-5.2
High-tech imports from partners outside the EU	8.6	25	-1.9	-11.7
Resource and labour productivity	**71.8**	**18**	**34.0**	**14.4**
Resource productivity	73.2	16	36.4	20.8
Production-based CO_2 productivity	96.9	15	58.1	21.5
Labour productivity	32.6	21	8.2	0.1

Hungary ranks 22nd among EU Member States, and 26th among the EU and neighbouring countries.

Relative strengths

- Foreign doctorate students as a % of all doctorate students
- Public-private co-publications
- Exports of medium and high-tech products

Relative weaknesses

- High-tech imports from partners outside the EU
- Design applications
- Employment in innovative enterprises

Highest ranked indicators among EU Member States

- Exports of medium and high-tech products
- Direct and indirect government support of business R&D
- Foreign doctorate students as a % of all doctorate students

Lowest ranked indicators among EU Member States

- Trademark applications
- High-tech imports from partners outside the EU
- Design applications

Strong increases since 2018

- Cloud Computing
- High speed internet access
- Foreign doctorate students as a % of all doctorate students

Strong decreases since 2018

- Direct and indirect government support of business R&D
- Non-R&D innovation expenditures
- Venture capital expenditures

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IRELAND

Strong Innovator

Summary innovation index (indexed to EU in 2025): **123.1**
Change vs 2018: ▲ +13.3 Change vs 2024: ▲ +4.1

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**123.1**	**5**	**13.3**	**4.1**
Human resources	**151.8**	**4**	**5.9**	**5**
New doctorate graduates	139.2	2	11.6	11.6
Population with tertiary education	205.1	1	3.3	0
Population involved in lifelong learning	109.2	14	0	0
Attractive research systems	**160.6**	**6**	**36.5**	**6.5**
International scientific co-publications	187.7	7	87.9	19.2
Scientific publications among the top 10% most cited	124.8	6	-8.7	-2.1
Foreign doctorate students as a % of all doctorate students	190.9	5	87.5	13.2
Digitalisation	**137**	**6**	**84.9**	**14.8**
High speed internet access	113.9	11	169.2	10.5
Individuals with above basic overall digital skills	170.8	3	18.4	18.4
Finance and support	**74.1**	**13**	**-23.2**	**17.4**
R&D expenditure in the public sector	16.7	26	-16.9	5.1
Venture capital expenditures	69.3	13	-41.2	-0.7
Direct and indirect government support of business R&D	144.3	5	-22.1	42.5
Firm investments	**102**	**9**	**0.9**	**-3.1**
R&D expenditure in the business sector	91	10	1.5	1.5
Non-R&D innovation expenditures	33.3	24	-46.4	-11.9
Innovation expenditures per person employed	154	1	41.1	0
Investments in information technologies	**139.9**	**5**	**62.7**	**12.3**
Cloud Computing	146	6	221.5	35.3
Employed ICT specialists	133.2	6	0	2.9
Innovators	**102.5**	**14**	**-9.3**	**-20.8**
SMEs introducing product innovations	120.5	9	6.6	0
SMEs introducing business process innovations	88.4	18	-24.5	-40.8
Linkages	**172.5**	**8**	**88**	**48.2**
Innovative SMEs collaborating with others	178.1	4	117.7	79
Public-private co-publications	265.8	9	75.9	16.1
Job-to-job mobility of HRST	N/A		N/A	N/A
Intellectual assets	**54.5**	**23**	**-17.2**	**-7**
PCT patent applications	69.7	12	-14.2	-3.8
Trademark applications	63.7	27	-26.9	-8.9
Design applications	22	26	-13	-9.3
Sales and employment impacts	**137.7**	**1**	**-17.4**	**-11.3**
Sales of new-to-market and new-to-firm innovations	195.4	1	0	0
Employment in innovative enterprises	87.1	15	-34.2	-22.3
Trade impacts	**94.8**	**4**	**-13.2**	**3.8**
Exports of medium and high-tech products	111.6	5	24.3	8.7
Knowledge-intensive services exports	128.8	2	-0.6	0
High-tech imports from partners outside the EU	45.4	20	-63.1	2.4
Resource and labour productivity	**187.8**	**1**	**84.8**	**11.9**
Resource productivity	156.8	5	90.8	33
Production-based CO_2 productivity	173	1	122.5	0
Labour productivity	256.2	1	41.2	0

Ireland ranks 5th among EU Member States, and 7th among the EU and neighbouring countries.

Relative strengths
- Public-private co-publications
- Labour productivity
- Population with tertiary education

Relative weaknesses
- R&D expenditure in the public sector
- Design applications
- Non-R&D innovation expenditures

Highest ranked indicators among EU Member States
- Labour productivity
- Population with tertiary education
- Sales of new-to-market and new-to-firm innovations

Lowest ranked indicators among EU Member States
- Trademark applications
- R&D expenditure in the public sector
- Design applications

Strong increases since 2018
- Cloud Computing
- High speed internet access
- Production-based CO_2 productivity

Strong decreases since 2018
- High-tech imports from partners outside the EU
- Non-R&D innovation expenditures
- Venture capital expenditures

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ICELAND

Strong Innovator

Summary innovation index (indexed to EU in 2025): **112.2**
Change vs 2018: ▲ +12.4 Change vs 2024: ▼ -0.1

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**112.2**	**12**	12.4	-0.1
Human resources	**123.6**	**11**	8.8	-5.7
New doctorate graduates	60.8	23	-23.1	-34.7
Population with tertiary education	115.3	16	35.1	22.5
Population involved in lifelong learning	204.6	4	30.8	9.6
Attractive research systems	**189.2**	**3**	21.9	5.2
International scientific co-publications	279.7	1	0	0
Scientific publications among the top 10% most cited	119.3	11	14.3	7.9
Foreign doctorate students as a % of all doctorate students	211.3	5	59	3.3
Digitalisation	**144.2**	**3**	15.3	4.9
High speed internet access	123.4	10	34.8	11.1
Individuals with above basic overall digital skills	174.9	4	0	0
Finance and support	**119.9**	**9**	47.7	-2.9
R&D expenditure in the public sector	90	13	-15.3	-10.2
Venture capital expenditures	74.6	16	59.5	9.4
Direct and indirect government support of business R&D	185.8	1	122.3	0
Firm investments	**91.2**	**13**	16.2	2.7
R&D expenditure in the business sector	133.8	7	46.3	7.5
Non-R&D innovation expenditures	98.6	11	0	0
Innovation expenditures per person employed	45.8	23	0	0
Investments in information technologies	**76.3**	**27**	8.6	-12.5
Cloud Computing	N/A		N/A	N/A
Employed ICT specialists	79.6	29	5.9	-8.8
Innovators	**106.5**	**19**	-3.5	**0**
SMEs introducing product innovations	114.2	16	-24.2	0
SMEs introducing business process innovations	100.7	17	16.5	0
Linkages	**221.6**	**2**	-2.9	**0**
Innovative SMEs collaborating with others	184.8	6	-10.7	0
Public-private co-publications	484.2	1	5.5	0
Job-to-job mobility of HRST	143.8	9	0	0
Intellectual assets	**64.8**	**24**	-6.1	-4.4
PCT patent applications	93.8	11	-14.1	-3.9
Trademark applications	63.9	29	-17.5	-11
Design applications	21.2	30	11.9	0
Sales and employment impacts	**87.1**	**24**	1.8	**0**
Sales of new-to-market and new-to-firm innovations	40.9	32	0	0
Employment in innovative enterprises	127.2	7	3.9	0
Trade impacts	**27.1**	**36**	-1.1	-2.1
Exports of medium and high-tech products	0	37	0	0
Knowledge-intensive services exports	57.2	23	-2.4	-4.5
High-tech imports from partners outside the EU	N/A		N/A	N/A
Resource and labour productivity	**142.1**	**7**	41.8	9.5
Resource productivity	95.7	14	35.8	11.8
Production-based CO_2 productivity	164.2	5	67.3	16.2
Labour productivity	178.4	6	23.1	0

Iceland ranks 12th among the EU and neighbouring countries.

Relative strengths

- Public-private co-publications
- International scientific co-publications
- Foreign doctorate students as a % of all doctorate students

Relative weaknesses

- Exports of medium and high-tech products
- Design applications
- Sales of new-to-market and new-to-firm innovations

Highest ranked indicators among the EU and neighbouring countries

- Public-private co-publications
- International scientific co-publications
- Direct and indirect government support of business R&D

Lowest ranked indicators among the EU and neighbouring countries

- Exports of medium and high-tech products
- Sales of new-to-market and new-to-firm innovations
- Design applications

Strong increases since 2018

- Direct and indirect government support of business R&D
- Production-based CO_2 productivity
- Venture capital expenditures

Strong decreases since 2018

- SMEs introducing product innovations
- New doctorate graduates
- Trademark applications

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ITALY

Moderate Innovator

Summary innovation index (indexed to EU in 2025): **93**
Change vs 2018: ▲ +15.4 Change vs 2024: ▲ +3.4

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**93.0**	**14**	**15.4**	**3.4**
Human resources	**69.1**	**24**	**12.9**	**3.9**
New doctorate graduates	100.0	9	11.6	11.6
Population with tertiary education	29.4	26	21.9	6.6
Population involved in lifelong learning	76.2	20	4.8	-11.5
Attractive research systems	**94.5**	**16**	**11.2**	**3.6**
International scientific co-publications	91.1	18	43.1	11.0
Scientific publications among the top 10% most cited	117.7	8	3.6	-3.1
Foreign doctorate students as a % of all doctorate students	60.2	20	-2.5	12.1
Digitalisation	**71.8**	**26**	**42.0**	**7.7**
High speed internet access	67.5	25	97.0	19.3
Individuals with above basic overall digital skills	78.1	19	-1.4	-1.4
Finance and support	**59.3**	**21**	**6.0**	**-2.0**
R&D expenditure in the public sector	66.7	20	3.4	-1.7
Venture capital expenditures	58.6	14	23.7	6.8
Direct and indirect government support of business R&D	51.1	15	0.1	-6.6
Firm investments	**58.2**	**20**	**-14.4**	**-13.8**
R&D expenditure in the business sector	49.7	17	-5.2	-3.7
Non-R&D innovation expenditures	67.1	18	-34.8	-29.2
Innovation expenditures per person employed	61.1	15	-5.8	-10.9
Investments in information technologies	**109.2**	**11**	**96.4**	**0.0**
Cloud Computing	141.6	7	326.9	7.5
Employed ICT specialists	74.4	25	5.9	-2.9
Innovators	**150.6**	**3**	**46.6**	**36.4**
SMEs introducing product innovations	154.1	4	26.4	31.3
SMEs introducing business process innovations	148.0	3	66.2	41.7
Linkages	**97.6**	**18**	**64.5**	**9.8**
Innovative SMEs collaborating with others	123.4	9	113.9	23.9
Public-private co-publications	160.3	14	73.8	5.4
Job-to-job mobility of HRST	50.0	21	17.6	0.0
Intellectual assets	**110.9**	**9**	**-13.9**	**-3.9**
PCT patent applications	78.1	11	-10.4	-7.7
Trademark applications	103.1	16	-2.2	-8.4
Design applications	167.9	1	-27.1	3.8
Sales and employment impacts	**131.9**	**3**	**26.1**	**20.7**
Sales of new-to-market and new-to-firm innovations	124.8	6	24.9	16.1
Employment in innovative enterprises	137.9	3	27.2	25.1
Trade impacts	**76.8**	**10**	**-6.0**	**-3.4**
Exports of medium and high-tech products	76.7	14	-2.2	-0.7
Knowledge-intensive services exports	57.4	17	-1.3	-1.7
High-tech imports from partners outside the EU	95.0	4	-14.2	-7.4
Resource and labour productivity	**128.4**	**7**	**26.0**	**10.1**
Resource productivity	170.3	1	36.9	11.7
Production-based CO_2 productivity	104.6	13	41.1	20.2
Labour productivity	100.5	11	-0.4	-1.7

Italy ranks 14th among EU Member States, and 18th among the EU and neighbouring countries.

Relative strengths
- Resource productivity
- Design applications
- Public-private co-publications

Relative weaknesses
- Population with tertiary education
- R&D expenditure in the business sector
- Job-to-job mobility of HRST

Highest ranked indicators among EU Member States
- Resource productivity
- Design applications
- SMEs introducing business process innovations

Lowest ranked indicators among EU Member States
- Population with tertiary education
- High speed internet access
- Employed ICT specialists

Strong increases since 2018
- Cloud Computing
- Innovative SMEs collaborating with others
- High speed internet access

Strong decreases since 2018
- Non-R&D innovation expenditures
- Design applications
- High-tech imports from partners outside the EU

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

LITHUANIA

Moderate Innovator

Summary innovation index (indexed to EU in 2025): **81**
Change vs 2018: ▲ +17.4 Change vs 2024: ▼ -3.5

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**81.0**	**18**	**17.4**	**-3.5**
Human resources	**103.7**	**14**	**4.6**	**-0.7**
New doctorate graduates	60.8	20	0.0	0.0
Population with tertiary education	179.7	4	4.6	5.3
Population involved in lifelong learning	71.5	22	12.5	-8.7
Attractive research systems	**58.8**	**21**	**29.9**	**1.3**
International scientific co-publications	74.8	20	47.0	8.9
Scientific publications among the top 10% most cited	55.5	21	17.2	-6.1
Foreign doctorate students as a % of all doctorate students	48.5	22	42.3	11.4
Digitalisation	**96.9**	**14**	**32.0**	**7.4**
High speed internet access	98.8	16	56.1	0.3
Individuals with above basic overall digital skills	93.9	16	12.9	12.9
Finance and support	**77.4**	**12**	**39.1**	**-15.5**
R&D expenditure in the public sector	81.7	15	10.2	15.3
Venture capital expenditures	138.5	8	154.5	-113.0
Direct and indirect government support of business R&D	29.9	20	14.9	-3.4
Firm investments	**67.0**	**15**	**-7.3**	**-19.3**
R&D expenditure in the business sector	26.9	23	9.7	-7.5
Non-R&D innovation expenditures	156.9	2	-35.1	-39.3
Innovation expenditures per person employed	51.2	20	-0.5	-13.8
Investments in information technologies	**94.3**	**17**	**81.9**	**19.5**
Cloud Computing	82.1	18	178.3	39.4
Employed ICT specialists	107.7	9	44.0	11.7
Innovators	**97.5**	**16**	**-5.3**	**-23.5**
SMEs introducing product innovations	89.4	18	-14.8	-39.4
SMEs introducing business process innovations	104.1	12	4.3	-7.9
Linkages	**129.3**	**13**	**42.4**	**-10.9**
Innovative SMEs collaborating with others	92.6	14	-62.7	-34.1
Public-private co-publications	73.6	24	31.7	-3.2
Job-to-job mobility of HRST	183.3	1	138.2	5.9
Intellectual assets	**81.6**	**18**	**21.3**	**0.0**
PCT patent applications	38.8	25	-1.4	-7.1
Trademark applications	146.3	5	56.7	-2.1
Design applications	78.3	14	21.7	9.7
Sales and employment impacts	**98.0**	**14**	**-12.4**	**-7.8**
Sales of new-to-market and new-to-firm innovations	74.1	18	-42.5	-16.7
Employment in innovative enterprises	118.8	6	16.9	1.1
Trade impacts	**43.8**	**27**	**5.8**	**1.8**
Exports of medium and high-tech products	44.6	24	-0.5	-1.1
Knowledge-intensive services exports	40.3	24	28.7	11.0
High-tech imports from partners outside the EU	45.9	19	-8.8	-3.7
Resource and labour productivity	**73.4**	**16**	**25.0**	**10.3**
Resource productivity	50.4	22	13.8	11.9
Production-based CO_2 productivity	124.3	8	57.1	19.0
Labour productivity	31.9	22	6.0	-0.1

Lithuania ranks 18th among EU Member States, and 22nd among the EU and neighbouring countries.

Relative strengths

- Job-to-job mobility of HRST
- Population with tertiary education
- Non-R&D innovation expenditures

Relative weaknesses

- R&D expenditure in the business sector
- Direct and indirect government support of business R&D
- Labour productivity

Highest ranked indicators among EU Member States

- Job-to-job mobility of HRST
- Non-R&D innovation expenditures
- Population with tertiary education

Lowest ranked indicators among EU Member States

- PCT patent applications
- Knowledge-intensive services exports
- Exports of medium and high-tech products

Strong increases since 2018

- Cloud Computing
- Venture capital expenditures
- Job-to-job mobility of HRST

Strong decreases since 2018

- Innovative SMEs collaborating with others
- Sales of new-to-market and new-to-firm innovations
- Non-R&D innovation expenditures

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LUXEMBOURG

Strong Innovator

Summary innovation index (indexed to EU in 2025): **114.5**
Change vs 2018: ▲ +0.9 Change vs 2024: ▲ +5.0

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**114.5**	**7**	**0.9**	**5.0**
Human resources	**172.3**	**1**	**33.7**	**28.0**
New doctorate graduates	178.4	1	80.9	46.2
Population with tertiary education	205.1	1	0.7	16.6
Population involved in lifelong learning	130.0	9	-4.8	11.5
Attractive research systems	**215.7**	**1**	**27.9**	**11.2**
International scientific co-publications	271.6	2	105.5	6.8
Scientific publications among the top 10% most cited	143.5	2	7.0	18.1
Foreign doctorate students as a % of all doctorate students	275.2	1	0.0	0.0
Digitalisation	**117.0**	**10**	**-4.2**	**-7.9**
High speed internet access	126.9	7	13.1	4.6
Individuals with above basic overall digital skills	102.3	15	-17.6	-17.6
Finance and support	**67.1**	**17**	**-19.2**	**0.4**
R&D expenditure in the public sector	71.7	17	-1.7	0.0
Venture capital expenditures	125.0	11	-92.1	2.8
Direct and indirect government support of business R&D	21.5	21	-3.7	-0.5
Firm investments	**43.2**	**23**	**-10.6**	**-2.2**
R&D expenditure in the business sector	29.7	22	-17.2	-3.7
Non-R&D innovation expenditures	46.9	23	-8.2	-10.4
Innovation expenditures per person employed	54.3	17	-6.0	6.5
Investments in information technologies	**121.9**	**8**	**63.2**	**8.4**
Cloud Computing	78.6	20	149.3	29.2
Employed ICT specialists	169.0	1	29.3	0.0
Innovators	**96.4**	**17**	**-19.5**	**13.3**
SMEs introducing product innovations	106.1	15	-18.9	15.1
SMEs introducing business process innovations	88.6	17	-20.1	11.5
Linkages	**190.7**	**2**	**72.5**	**7.2**
Innovative SMEs collaborating with others	117.8	10	56.3	49.0
Public-private co-publications	426.8	2	222.5	-14.5
Job-to-job mobility of HRST	154.2	5	14.7	-17.6
Intellectual assets	**121.3**	**5**	**-45.2**	**-4.1**
PCT patent applications	80.3	10	-10.0	-4.5
Trademark applications	172.8	4	-58.0	-12.4
Design applications	129.5	5	-77.5	2.9
Sales and employment impacts	**53.0**	**22**	**-35.3**	**1.8**
Sales of new-to-market and new-to-firm innovations	25.9	27	-8.5	0.2
Employment in innovative enterprises	76.6	17	-61.3	3.3
Trade impacts	**59.3**	**18**	**-13.9**	**1.3**
Exports of medium and high-tech products	60.5	19	-3.2	1.2
Knowledge-intensive services exports	116.5	3	-6.9	1.1
High-tech imports from partners outside the EU	4.2	26	-31.4	1.3
Resource and labour productivity	**171.2**	**2**	**39.4**	**11.3**
Resource productivity	170.3	1	48.6	23.1
Production-based CO_2 productivity	129.7	7	80.4	8.2
Labour productivity	233.3	2	-11.8	0.6

Luxembourg ranks 7th among EU Member States, and 10th among the EU and neighbouring countries.

Relative strengths

- Public-private co-publications
- Foreign doctorate students as a % of all doctorate students
- International scientific co-publications

Relative weaknesses

- High-tech imports from partners outside the EU
- Direct and indirect government support of business R&D
- Sales of new-to-market and new-to-firm innovations

Highest ranked indicators among EU Member States

- Foreign doctorate students as a % of all doctorate students
- Population with tertiary education
- New doctorate graduates

Lowest ranked indicators among EU Member States

- Sales of new-to-market and new-to-firm innovations
- High-tech imports from partners outside the EU
- Non-R&D innovation expenditures

Strong increases since 2018

- Public-private co-publications
- Cloud Computing
- International scientific co-publications

Strong decreases since 2018

- Venture capital expenditures
- Design applications
- Employment in innovative enterprises

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LATVIA

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **56.7**
Change vs 2018: ▲ +4.9 Change vs 2024: ▲ +1.5

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**56.7**	**25**	**4.9**	**1.5**
Human resources	**72.5**	**21**	**0.2**	**0.7**
New doctorate graduates	34.7	23	-11.6	0.0
Population with tertiary education	105.1	13	-3.3	-0.7
Population involved in lifelong learning	80.8	18	23.1	2.9
Attractive research systems	**44.5**	**24**	**12.8**	**-6.2**
International scientific co-publications	63.0	24	40.7	3.0
Scientific publications among the top 10% most cited	42.0	24	17.5	2.0
Foreign doctorate students as a % of all doctorate students	30.1	24	-24.4	-32.6
Digitalisation	**73.9**	**25**	**0.9**	**-5.3**
High speed internet access	87.5	21	43.0	28.5
Individuals with above basic overall digital skills	53.8	25	-32.2	-32.2
Finance and support	**35.5**	**23**	**-28.7**	**-1.5**
R&D expenditure in the public sector	68.3	19	32.2	1.7
Venture capital expenditures	24.2	22	-235.6	-14.9
Direct and indirect government support of business R&D	4.4	25	2.0	1.1
Firm investments	**25.6**	**26**	**-10.6**	**-0.7**
R&D expenditure in the business sector	17.9	26	14.2	0.7
Non-R&D innovation expenditures	58.6	21	-46.3	-8.2
Innovation expenditures per person employed	13.1	26	-4.4	4.3
Investments in information technologies	**85.9**	**20**	**86.6**	**27.3**
Cloud Computing	75.2	21	224.5	59.1
Employed ICT specialists	97.4	16	32.2	14.7
Innovators	**48.1**	**22**	**10.6**	**3.3**
SMEs introducing product innovations	45.6	25	6.7	0.0
SMEs introducing business process innovations	50.1	22	14.8	6.6
Linkages	**77.9**	**23**	**30.1**	**17.8**
Innovative SMEs collaborating with others	51.1	24	16.0	9.4
Public-private co-publications	108.6	22	75.1	2.8
Job-to-job mobility of HRST	87.5	19	20.6	32.4
Intellectual assets	**77.7**	**20**	**8.2**	**1.7**
PCT patent applications	60.3	16	3.5	2.2
Trademark applications	120.3	9	30.9	2.8
Design applications	59.4	19	-2.9	0.3
Sales and employment impacts	**39.7**	**25**	**-9.4**	**-2.8**
Sales of new-to-market and new-to-firm innovations	43.6	23	-17.4	-3.9
Employment in innovative enterprises	36.3	24	-1.8	-1.8
Trade impacts	**47.2**	**25**	**-4.8**	**-1.9**
Exports of medium and high-tech products	35.6	26	-4.4	-3.1
Knowledge-intensive services exports	70.3	12	10.5	-2.3
High-tech imports from partners outside the EU	37.4	22	-19.1	-0.5
Resource and labour productivity	**67.8**	**20**	**22.4**	**4.6**
Resource productivity	50.1	23	13.3	9.5
Production-based CO_2 productivity	111.0	10	49.5	3.5
Labour productivity	29.7	25	5.8	-0.1

Latvia ranks 25th among EU Member States, and 30th among the EU and neighbouring countries.

Relative strengths

- Trademark applications
- Production-based CO_2 productivity
- Public-private co-publications

Relative weaknesses

- Direct and indirect government support of business R&D
- Innovation expenditures per person employed
- R&D expenditure in the business sector

Highest ranked indicators among EU Member States

- Trademark applications
- Production-based CO_2 productivity
- Knowledge-intensive services exports

Lowest ranked indicators among EU Member States

- Innovation expenditures per person employed
- R&D expenditure in the business sector
- Exports of medium and high-tech products

Strong increases since 2018

- Cloud Computing
- Public-private co-publications
- Production-based CO_2 productivity

Strong decreases since 2018

- Venture capital expenditures
- Non-R&D innovation expenditures
- Individuals with above basic overall digital skills

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MOLDOVA

Emerging Innovator

Summary innovation index (indexed to EU in 2025):
19 Change vs 2018: ▼ -1.0 Change vs 2024: ▲ 0

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**19**	**39**	**-1**	**0**
Human resources	**16.4**	**38**	**-0.4**	**0.2**
New doctorate graduates	9	39	-7.6	0.5
Population with tertiary education	33.9	35	12.6	0
Population involved in lifelong learning	5.8	38	-4.2	0
Attractive research systems	**33.9**	**35**	**18.5**	**-3.6**
International scientific co-publications	7.6	37	7.3	1.8
Scientific publications among the top 10% most cited	4	39	-2.5	-5.7
Foreign doctorate students as a % of all doctorate students	107.7	21	74.9	-4.4
Digitalisation	**N/A**		**N/A**	**N/A**
High speed internet access	N/A		N/A	N/A
Individuals with above basic overall digital skills	N/A		N/A	N/A
Finance and support	**4.3**	**37**	**-4**	**-0.7**
R&D expenditure in the public sector	9.8	36	-8	-1.4
Venture capital expenditures	0	37	0	0
Direct and indirect government support of business R&D	0.9	35	-0.7	0
Firm investments	**14.1**	**37**	**-6.4**	**-2.7**
R&D expenditure in the business sector	0.1	39	-0.6	-0.1
Non-R&D innovation expenditures	58.9	26	-19.6	-9
Innovation expenditures per person employed	0.3	35	-0.6	-0.3
Investments in information technologies	**39.7**	**33**	**53.8**	**0**
Cloud Computing	N/A		N/A	N/A
Employed ICT specialists	41.5	32	37.5	0
Innovators	**18.8**	**37**	**17.1**	**4.9**
SMEs introducing product innovations	24	37	17	4.5
SMEs introducing business process innovations	14.7	37	17.3	5.5
Linkages	**21.9**	**36**	**-29.7**	**-2.9**
Innovative SMEs collaborating with others	36.7	36	-56.6	-3.3
Public-private co-publications	4.8	39	4.5	-3.9
Job-to-job mobility of HRST	N/A		N/A	N/A
Intellectual assets	**20.3**	**35**	**-2.7**	**-1.5**
PCT patent applications	25.2	36	-19.7	-4
Trademark applications	29.6	33	20	0
Design applications	2.9	34	0.8	0
Sales and employment impacts	**2.7**	**39**	**-36.2**	**-0.7**
Sales of new-to-market and new-to-firm innovations	5.7	38	-14	-1.7
Employment in innovative enterprises	0	37	-58	0
Trade impacts	**32.9**	**35**	**5.8**	**6.4**
Exports of medium and high-tech products	18.6	36	-0.7	1.6
Knowledge-intensive services exports	48.8	28	13.3	11.8
High-tech imports from partners outside the EU	N/A		N/A	N/A
Resource and labour productivity	**N/A**		**N/A**	**N/A**
Resource productivity	N/A		N/A	N/A
Production-based CO_2 productivity	N/A		N/A	N/A
Labour productivity	N/A		N/A	N/A

Moldova ranks 39th among the EU and neighbouring countries.

Relative strengths

- Foreign doctorate students as a % of all doctorate students
- Non-R&D innovation expenditures
- Knowledge-intensive services exports

Relative weaknesses

- Venture capital expenditures
- Employment in innovative enterprises
- R&D expenditure in the business sector

Highest ranked indicators among the EU and neighbouring countries

- Foreign doctorate students as a % of all doctorate students
- Non-R&D innovation expenditures
- Knowledge-intensive services exports

Lowest ranked indicators among the EU and neighbouring countries

- R&D expenditure in the business sector
- Scientific publications among the top 10% most cited
- Public-private co-publications

Strong increases since 2018

- Foreign doctorate students as a % of all doctorate students
- Employed ICT specialists
- Trademark applications

Strong decreases since 2018

- Employment in innovative enterprises
- Innovative SMEs collaborating with others
- PCT patent applications

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MONTENEGRO

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **45.3**
Change vs 2018: ▲ +4.6 Change vs 2024: ▲ +3.1

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**45.3**	**33**	**4.6**	**3.1**
Human resources	**35**	**35**	**11.6**	**3.5**
New doctorate graduates	9.8	38	4.8	8.4
Population with tertiary education	79.1	26	32.5	0
Population involved in lifelong learning	16.9	33	-1	0
Attractive research systems	**44.7**	**30**	**6.8**	**-4.4**
International scientific co-publications	59.4	29	40.2	4.3
Scientific publications among the top 10% most cited	33.2	35	17.6	-10.1
Foreign doctorate students as a % of all doctorate students	48.6	28	-48.1	0
Digitalisation	**22.7**	**34**	**7**	**7**
High speed internet access	N/A		N/A	N/A
Individuals with above basic overall digital skills	28.1	31	6.3	6.3
Finance and support	**13.1**	**33**	**4**	**0**
R&D expenditure in the public sector	31.7	29	8.5	0
Venture capital expenditures	0.5	36	0.7	0
Direct and indirect government support of business R&D	0	36	0	0
Firm investments	**20.4**	**34**	**0**	**0**
R&D expenditure in the business sector	0.7	38	0	0
Non-R&D innovation expenditures	42	31	0	0
Innovation expenditures per person employed	26.2	27	0	0
Investments in information technologies	**50.9**	**31**	**48.7**	**31.5**
Cloud Computing	64.6	26	157.7	111.8
Employed ICT specialists	36.1	33	5.9	0
Innovators	**169.9**	**2**	**0**	**0**
SMEs introducing product innovations	217.4	1	0	0
SMEs introducing business process innovations	132.6	4	0	0
Linkages	**73.3**	**31**	**-16.7**	**-2.2**
Innovative SMEs collaborating with others	146	11	0	0
Public-private co-publications	33	33	10.3	1
Job-to-job mobility of HRST	29.2	31	-44.1	-5.9
Intellectual assets	**15**	**38**	**-3.9**	**5.3**
PCT patent applications	24.7	37	-10.5	5.3
Trademark applications	14.9	37	1	11.9
Design applications	0	39	0	0
Sales and employment impacts	**98.7**	**17**	**0**	**0**
Sales of new-to-market and new-to-firm innovations	54.5	27	0	0
Employment in innovative enterprises	137	4	0	0
Trade impacts	**14.6**	**38**	**10.6**	**5.3**
Exports of medium and high-tech products	19.4	35	16.7	13
Knowledge-intensive services exports	9.5	37	4	-3.1
High-tech imports from partners outside the EU	N/A		N/A	N/A
Resource and labour productivity	**50.2**	**31**	**-6.2**	**0**
Resource productivity	N/A		N/A	N/A
Production-based CO_2 productivity	45	34	-6.5	0
Labour productivity	N/A		N/A	N/A

Montenegro ranks 33rd among the EU and neighbouring countries.

Relative strengths

- SMEs introducing product innovations
- Innovative SMEs collaborating with others
- Employment in innovative enterprises

Relative weaknesses

- Direct and indirect government support of business R&D
- Design applications
- Venture capital expenditures

Highest ranked indicators among the EU and neighbouring countries

- SMEs introducing product innovations
- Employment in innovative enterprises
- SMEs introducing business process innovations

Lowest ranked indicators among the EU and neighbouring countries

- Design applications
- R&D expenditure in the business sector
- New doctorate graduates

Strong increases since 2018

- Cloud Computing
- International scientific co-publications
- Population with tertiary education

Strong decreases since 2018

- Foreign doctorate students as a % of all doctorate students
- Job-to-job mobility of HRST
- PCT patent applications

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NORTH MACEDONIA

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **40**
Change vs 2018: ▲ +9.2 Change vs 2024: ▼ -0.8

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**40**	**34**	**9.2**	**-0.8**
Human resources	**34**	**36**	**10.3**	**5**
New doctorate graduates	21.6	34	0	11.6
Population with tertiary education	63.8	31	31.1	0
Population involved in lifelong learning	16.2	34	2.9	0
Attractive research systems	**75.8**	**24**	**19**	**-7**
International scientific co-publications	24.6	34	17.4	-0.3
Scientific publications among the top 10% most cited	42.5	31	13.8	-6.4
Foreign doctorate students as a % of all doctorate students	179.3	9	31.6	-15.1
Digitalisation	**14.4**	**35**	**0**	**0**
High speed internet access	N/A		N/A	N/A
Individuals with above basic overall digital skills	17.8	33	0	0
Finance and support	**9.9**	**36**	**-5.1**	**-2.9**
R&D expenditure in the public sector	23.3	33	-10.2	-1.7
Venture capital expenditures	1.7	34	-1.9	0.7
Direct and indirect government support of business R&D	0	36	0	-6.1
Firm investments	**39.6**	**29**	**0**	**0**
R&D expenditure in the business sector	4.1	35	0	0
Non-R&D innovation expenditures	138.6	4	0	0
Innovation expenditures per person employed	14.2	31	0	0
Investments in information technologies	**24.1**	**36**	**30.4**	**0**
Cloud Computing	17.7	35	54.8	0
Employed ICT specialists	31	35	20.5	0
Innovators	**64.8**	**30**	**0**	**0**
SMEs introducing product innovations	54.4	32	0	0
SMEs introducing business process innovations	73	28	0	0
Linkages	**49.3**	**33**	**38.8**	**-18.1**
Innovative SMEs collaborating with others	44.5	34	0	0
Public-private co-publications	26.9	35	16.3	-2.4
Job-to-job mobility of HRST	62.5	26	82.4	-41.2
Intellectual assets	**21.5**	**34**	**5.1**	**5.1**
PCT patent applications	26.7	34	4.3	9.4
Trademark applications	33.2	32	15.3	5.6
Design applications	1.6	35	-1.2	-0.1
Sales and employment impacts	**36.2**	**35**	**0**	**0**
Sales of new-to-market and new-to-firm innovations	23.8	37	0	0
Employment in innovative enterprises	46.9	32	0	0
Trade impacts	**72.4**	**14**	**15.2**	**-0.6**
Exports of medium and high-tech products	95	7	5.2	-4.4
Knowledge-intensive services exports	48.2	29	27	3.7
High-tech imports from partners outside the EU	N/A		N/A	N/A
Resource and labour productivity	**40**	**34**	**14.7**	**0.5**
Resource productivity	39.9	30	32.7	5.4
Production-based CO_2 productivity	31.1	35	-7.2	-5.5
Labour productivity	N/A		N/A	N/A

North Macedonia ranks 34th among the EU and neighbouring countries.

Relative strengths

- Foreign doctorate students as a % of all doctorate students
- Non-R&D innovation expenditures
- Exports of medium and high-tech products

Relative weaknesses

- Direct and indirect government support of business R&D
- Design applications
- Venture capital expenditures

Highest ranked indicators among the EU and neighbouring countries

- Non-R&D innovation expenditures
- Exports of medium and high-tech products
- Foreign doctorate students as a % of all doctorate students

Lowest ranked indicators among the EU and neighbouring countries

- Sales of new-to-market and new-to-firm innovations
- Direct and indirect government support of business R&D
- Design applications

Strong increases since 2018

- Job-to-job mobility of HRST
- Cloud Computing
- Resource productivity

Strong decreases since 2018

- R&D expenditure in the public sector
- Production-based CO_2 productivity
- Venture capital expenditures

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

MALTA

Moderate Innovator

Summary innovation index (indexed to EU in 2025): **95**
Change vs 2018: ▲ +16.7 Change vs 2024: ▲ +7.6

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**95.0**	**12**	**16.7**	**7.6**
Human resources	**88.9**	**17**	**19.7**	**6.3**
New doctorate graduates	21.6	27	0.0	0.0
Population with tertiary education	115.8	11	26.5	4.6
Population involved in lifelong learning	137.7	7	44.2	19.2
Attractive research systems	**136.9**	**10**	**71.4**	**-13.0**
International scientific co-publications	113.9	13	60.2	-2.7
Scientific publications among the top 10% most cited	64.3	19	-25.2	-23.6
Foreign doctorate students as a % of all doctorate students	275.2	1	293.8	0.0
Digitalisation	**138.2**	**4**	**3.7**	**3.7**
High speed internet access	135.9	1	0.0	0.0
Individuals with above basic overall digital skills	141.4	6	6.6	6.6
Finance and support	**12.1**	**27**	**-62.7**	**3.8**
R&D expenditure in the public sector	25.0	25	10.2	8.5
Venture capital expenditures	5.8	27	-328.7	0.2
Direct and indirect government support of business R&D	1.2	27	-16.2	-0.3
Firm investments	**128.6**	**4**	**75.6**	**87.2**
R&D expenditure in the business sector	22.8	24	3.0	0.7
Non-R&D innovation expenditures	254.9	1	96.1	132.4
Innovation expenditures per person employed	154.0	1	130.4	134.9
Investments in information technologies	**131.3**	**7**	**97.2**	**32.9**
Cloud Computing	155.5	4	313.9	79.1
Employed ICT specialists	105.1	12	11.7	14.7
Innovators	**70.5**	**20**	**25.3**	**-2.9**
SMEs introducing product innovations	68.8	20	16.5	4.2
SMEs introducing business process innovations	71.9	20	33.7	-9.5
Linkages	**102.7**	**16**	**59.8**	**-12.0**
Innovative SMEs collaborating with others	52.4	23	45.6	-8.2
Public-private co-publications	170.2	13	124.1	40.9
Job-to-job mobility of HRST	116.7	9	41.2	-41.2
Intellectual assets	**109.8**	**10**	**-43.2**	**-27.6**
PCT patent applications	61.3	15	1.9	-13.9
Trademark applications	233.0	1	0.0	0.0
Design applications	55.0	20	-128.5	-63.7
Sales and employment impacts	**55.6**	**21**	**2.2**	**-3.5**
Sales of new-to-market and new-to-firm innovations	46.3	22	-16.4	-2.7
Employment in innovative enterprises	63.4	19	20.1	-4.3
Trade impacts	**54.9**	**21**	**-8.7**	**-2.3**
Exports of medium and high-tech products	91.1	9	5.0	-9.6
Knowledge-intensive services exports	26.1	26	-41.1	0.0
High-tech imports from partners outside the EU	44.5	21	6.7	3.5
Resource and labour productivity	**136.7**	**6**	**47.2**	**13.9**
Resource productivity	159.1	4	122.4	45.6
Production-based CO_2 productivity	160.3	4	1.4	-11.0
Labour productivity	67.3	14	5.7	2.2

Malta ranks 12th among EU Member States, and 16th among the EU and neighbouring countries.

Relative strengths

- Foreign doctorate students as a % of all doctorate students
- Non-R&D innovation expenditures
- Trademark applications

Relative weaknesses

- Direct and indirect government support of business R&D
- Venture capital expenditures
- New doctorate graduates

Highest ranked indicators among EU Member States

- Foreign doctorate students as a % of all doctorate students
- Non-R&D innovation expenditures
- Trademark applications

Lowest ranked indicators among EU Member States

- Direct and indirect government support of business R&D
- Venture capital expenditures
- New doctorate graduates

Strong increases since 2018

- Cloud Computing
- Foreign doctorate students as a % of all doctorate students
- Innovation expenditures per person employed

Strong decreases since 2018

- Venture capital expenditures
- Design applications
- Knowledge-intensive services exports

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NETHERLANDS

Innovation Leader

Summary innovation index (indexed to EU in 2025): **129.1**
Change vs 2018: ▲ +11.0 Change vs 2024: ▼ -2.8

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**129.1**	**3**	11	-2.8
Human resources	**147.1**	**5**	-1.3	1.5
New doctorate graduates	86.9	16	0	0
Population with tertiary education	162.1	5	-3.3	4
Population involved in lifelong learning	200	4	-1	1
Attractive research systems	**187.6**	**3**	20.3	1.6
International scientific co-publications	193.1	6	55.2	15
Scientific publications among the top 10% most cited	159.2	1	-9	-3.4
Foreign doctorate students as a % of all doctorate students	227	3	51.8	0
Digitalisation	**160.3**	**1**	13.9	0.7
High speed internet access	133.1	2	31.8	1.6
Individuals with above basic overall digital skills	200.3	1	0	0
Finance and support	**117.3**	**8**	11.5	-25.4
R&D expenditure in the public sector	91.7	10	-1.7	-1.7
Venture capital expenditures	149.3	7	50.9	-108.3
Direct and indirect government support of business R&D	125.2	6	7.4	-12
Firm investments	**107.4**	**8**	2.7	2.7
R&D expenditure in the business sector	104.8	7	5.2	5.2
Non-R&D innovation expenditures	N/A		N/A	N/A
Innovation expenditures per person employed	83.1	11	0	0
Investments in information technologies	**149.9**	**3**	74.9	0.6
Cloud Computing	148.9	5	243.1	-6.1
Employed ICT specialists	151.1	5	8.8	2.9
Innovators	**108.8**	**13**	-9.8	0
SMEs introducing product innovations	114	11	-38.1	0
SMEs introducing business process innovations	104.9	11	18	0.1
Linkages	**178.4**	**5**	15.6	-11.2
Innovative SMEs collaborating with others	154	6	49.6	6.1
Public-private co-publications	321.6	6	54.7	1.4
Job-to-job mobility of HRST	139.6	7	-32.4	-32.4
Intellectual assets	**115.2**	**8**	-11.7	-5.3
PCT patent applications	126	5	-19.4	-4.7
Trademark applications	106.4	14	-8.8	-6.4
Design applications	107.1	9	-5.1	-5.3
Sales and employment impacts	**93.8**	**16**	-12.4	-0.6
Sales of new-to-market and new-to-firm innovations	67.5	20	-13.9	-2.1
Employment in innovative enterprises	116.8	10	-10.8	1.1
Trade impacts	**81.1**	**9**	17.5	-0.8
Exports of medium and high-tech products	75.3	15	1.8	0.8
Knowledge-intensive services exports	102.4	8	0.4	0.3
High-tech imports from partners outside the EU	67	16	49	-3.1
Resource and labour productivity	**141.7**	**4**	37.9	5.9
Resource productivity	170.3	1	27.9	0
Production-based CO_2 productivity	108.3	11	86.5	19
Labour productivity	147.4	6	1.3	-0.3

The Netherlands ranks 3rd among EU Member States, and 4th among the EU and neighbouring countries.

Relative strengths

- Public-private co-publications
- Foreign doctorate students as a % of all doctorate students
- Individuals with above basic overall digital skills

Relative weaknesses

- High-tech imports from partners outside the EU
- Sales of new-to-market and new-to-firm innovations
- Exports of medium and high-tech products

Highest ranked indicators among EU Member States

- Individuals with above basic overall digital skills
- Resource productivity
- Scientific publications among the top 10% most cited

Lowest ranked indicators among EU Member States

- Sales of new-to-market and new-to-firm innovations
- High-tech imports from partners outside the EU
- New doctorate graduates

Strong increases since 2018

- Cloud Computing
- Production-based CO_2 productivity
- International scientific co-publications

Strong decreases since 2018

- SMEs introducing product innovations
- Job-to-job mobility of HRST
- PCT patent applications

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NORWAY

Strong Innovator

Summary innovation index (indexed to EU in 2025): **121.6**
Change vs 2018: ▲ +13.0 Change vs 2024: ▼ -0.9

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**121.6**	**9**	**13.0**	**-0.9**
Human resources	**144.9**	**7**	**10.7**	**-4.2**
New doctorate graduates	100.0	11	0.0	-11.6
Population with tertiary education	171.8	6	11.9	1.3
Population involved in lifelong learning	167.7	9	26.9	1.9
Attractive research systems	**160.4**	**10**	**24.2**	**4.7**
International scientific co-publications	261.1	5	99.9	7.7
Scientific publications among the top 10% most cited	129.2	8	-6.1	2.6
Foreign doctorate students as a % of all doctorate students	111.0	20	20.2	6.6
Digitalisation	**155.1**	**2**	**51.5**	**36.4**
High speed internet access	124.2	9	71.1	36.7
Individuals with above basic overall digital skills	200.3	1	36.2	36.2
Finance and support	**105.1**	**13**	**-10.6**	**-39.3**
R&D expenditure in the public sector	113.3	8	-25.4	16.9
Venture capital expenditures	121.0	14	40.0	-197.1
Direct and indirect government support of business R&D	84.2	13	-18.5	-28.3
Firm investments	**91.7**	**11**	**8.7**	**13.8**
R&D expenditure in the business sector	69.7	17	-2.2	14.2
Non-R&D innovation expenditures	113.7	8	2.4	4.4
Innovation expenditures per person employed	99.9	11	25.7	21.8
Investments in information technologies	**135.2**	**7**	**64.9**	**10.9**
Cloud Computing	155.9	1	222.6	23.6
Employed ICT specialists	112.8	11	2.9	5.9
Innovators	**138.1**	**6**	**-19.5**	**-25.1**
SMEs introducing product innovations	168.6	4	-22.2	-27.3
SMEs introducing business process innovations	114.2	7	-16.6	-22.7
Linkages	**240.0**	**1**	**50.0**	**-11.2**
Innovative SMEs collaborating with others	238.9	1	78.6	0.0
Public-private co-publications	459.3	4	77.8	-24.6
Job-to-job mobility of HRST	150.0	8	11.8	-14.7
Intellectual assets	**48.4**	**30**	**-10.9**	**-9.2**
PCT patent applications	78.7	14	-21.4	-16.1
Trademark applications	40.8	31	-5.5	-8.9
Design applications	10.1	32	-2.2	-1.3
Sales and employment impacts	**92.7**	**22**	**-13.3**	**-6.1**
Sales of new-to-market and new-to-firm innovations	47.8	29	-7.2	2.7
Employment in innovative enterprises	131.9	6	-19.0	-14.6
Trade impacts	**61.8**	**23**	**-3.9**	**-1.0**
Exports of medium and high-tech products	0.0	37	0.0	0.0
Knowledge-intensive services exports	105.4	6	1.9	3.8
High-tech imports from partners outside the EU	84.6	11	-13.4	-6.6
Resource and labour productivity	**165.1**	**5**	**71.1**	**30.2**
Resource productivity	150.4	8	146.5	66.9
Production-based CO_2 productivity	117.7	13	55.6	17.6
Labour productivity	256.2	1	0.0	0.0

Norway ranks 9th among the EU and neighbouring countries.

Relative strengths
- Public-private co-publications
- International scientific co-publications
- Labour productivity

Relative weaknesses
- Exports of medium and high-tech products
- Design applications
- Trademark applications

Highest ranked indicators among the EU and neighbouring countries
- Labour productivity
- Innovative SMEs collaborating with others
- Individuals with above basic overall digital skills

Lowest ranked indicators among the EU and neighbouring countries
- Exports of medium and high-tech products
- Design applications
- Trademark applications

Strong increases since 2018
- Cloud Computing
- Resource productivity
- International scientific co-publications

Strong decreases since 2018
- R&D expenditure in the public sector
- SMEs introducing product innovations
- PCT patent applications

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POLAND

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **65.9**
Change vs 2018: ▲ +18.0 Change vs 2024: ▲ +2.6

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**65.9**	**23**	**18.0**	**2.6**
Human resources	**71.3**	**22**	**19.0**	**7.0**
New doctorate graduates	34.7	23	0.0	11.6
Population with tertiary education	109.0	12	25.8	-4.0
Population involved in lifelong learning	73.1	21	42.3	12.5
Attractive research systems	**40.8**	**25**	**19.0**	**4.2**
International scientific co-publications	47.3	25	32.2	6.9
Scientific publications among the top 10% most cited	53.0	23	15.4	2.0
Foreign doctorate students as a % of all doctorate students	14.5	25	14.6	6.5
Digitalisation	**89.8**	**17**	**28.5**	**13.7**
High speed internet access	103.9	14	68.2	34.1
Individuals with above basic overall digital skills	68.8	21	-2.6	-2.6
Finance and support	**61.0**	**20**	**35.5**	**2.0**
R&D expenditure in the public sector	71.7	17	39.0	10.2
Venture capital expenditures	20.1	23	-13.9	-7.0
Direct and indirect government support of business R&D	76.4	10	57.0	-4.1
Firm investments	**60.4**	**19**	**-7.1**	**-2.0**
R&D expenditure in the business sector	66.2	14	27.6	3.7
Non-R&D innovation expenditures	84.6	11	-48.5	-12.1
Innovation expenditures per person employed	40.4	22	-5.9	1.4
Investments in information technologies	**107.8**	**12**	**126.7**	**66.6**
Cloud Computing	126.8	9	389.3	221.1
Employed ICT specialists	87.2	21	23.4	5.9
Innovators	**41.0**	**25**	**26.8**	**-7.3**
SMEs introducing product innovations	28.5	26	7.6	-20.2
SMEs introducing business process innovations	50.8	21	45.3	5.1
Linkages	**73.9**	**24**	**27.5**	**-10.5**
Innovative SMEs collaborating with others	48.1	25	25.6	-1.4
Public-private co-publications	62.6	25	33.1	5.8
Job-to-job mobility of HRST	100.0	16	26.5	-26.5
Intellectual assets	**85.9**	**16**	**-13.6**	**-7.8**
PCT patent applications	41.4	24	-10.0	-2.8
Trademark applications	99.4	18	11.3	-0.4
Design applications	139.3	4	-35.9	-19.1
Sales and employment impacts	**40.4**	**24**	**12.2**	**-13.1**
Sales of new-to-market and new-to-firm innovations	28.7	24	-17.6	-27.5
Employment in innovative enterprises	50.7	22	41.4	1.0
Trade impacts	**70.0**	**14**	**3.5**	**-0.3**
Exports of medium and high-tech products	72.5	16	0.8	-1.0
Knowledge-intensive services exports	57.2	18	16.2	5.0
High-tech imports from partners outside the EU	79.4	10	-5.2	-4.2
Resource and labour productivity	**44.0**	**25**	**25.5**	**8.2**
Resource productivity	50.9	21	30.1	11.4
Production-based CO_2 productivity	46.3	27	37.0	10.2
Labour productivity	30.0	24	8.9	2.5

Poland ranks 23rd among EU Member States, and 27th among the EU and neighbouring countries.

Relative strengths
- Design applications
- Cloud Computing
- Population with tertiary education

Relative weaknesses
- Foreign doctorate students as a % of all doctorate students
- Venture capital expenditures
- SMEs introducing product innovations

Highest ranked indicators among EU Member States
- Design applications
- Cloud Computing
- High-tech imports from partners outside the EU

Lowest ranked indicators among EU Member States
- Production-based CO_2 productivity
- SMEs introducing product innovations
- Foreign doctorate students as a % of all doctorate students

Strong increases since 2018
- Cloud Computing
- High speed internet access
- Direct and indirect government support of business R&D

Strong decreases since 2018
- Non-R&D innovation expenditures
- Design applications
- Sales of new-to-market and new-to-firm innovations

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PORTUGAL

Moderate Innovator

Summary innovation index (indexed to EU in 2025): **90.7**
Change vs 2018: ▲ +9.0 Change vs 2024: ▲ +3.0

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**90.7**	**16**	**9.0**	**3.0**
Human resources	**104.5**	**13**	**3.7**	**15.5**
New doctorate graduates	100.0	9	0.0	11.6
Population with tertiary education	94.9	16	-17.9	11.3
Population involved in lifelong learning	120.0	10	34.6	26.9
Attractive research systems	**114.7**	**12**	**15.9**	**-1.6**
International scientific co-publications	133.9	12	60.8	10.1
Scientific publications among the top 10% most cited	79.8	16	-16.5	-5.6
Foreign doctorate students as a % of all doctorate students	151.3	11	44.1	-4.0
Digitalisation	**120.1**	**8**	**19.5**	**5.1**
High speed internet access	126.1	8	36.7	3.9
Individuals with above basic overall digital skills	111.2	12	6.2	6.2
Finance and support	**105.8**	**10**	**39.7**	**0.4**
R&D expenditure in the public sector	78.3	16	-8.5	-1.7
Venture capital expenditures	36.2	18	4.1	5.9
Direct and indirect government support of business R&D	185.8	1	120.9	0.0
Firm investments	**56.6**	**21**	**-9.5**	**0.2**
R&D expenditure in the business sector	70.3	12	32.8	0.7
Non-R&D innovation expenditures	69.1	17	-55.3	-6.9
Innovation expenditures per person employed	36.1	23	-12.0	6.1
Investments in information technologies	**91.9**	**19**	**57.9**	**22.3**
Cloud Computing	79.8	19	160.2	33.9
Employed ICT specialists	105.1	12	17.6	17.6
Innovators	**109.6**	**12**	**-52.5**	**7.3**
SMEs introducing product innovations	108.1	14	-65.2	8.4
SMEs introducing business process innovations	110.8	8	-40.2	6.4
Linkages	**98.1**	**17**	**38.4**	**-18.1**
Innovative SMEs collaborating with others	67.1	21	-12.5	25.8
Public-private co-publications	146.5	16	74.9	-6.4
Job-to-job mobility of HRST	104.2	13	64.7	-61.8
Intellectual assets	**78.3**	**19**	**-15.0**	**-6.8**
PCT patent applications	58.6	17	-2.0	-6.0
Trademark applications	103.7	15	0.0	-10.1
Design applications	81.4	13	-41.5	-5.4
Sales and employment impacts	**114.8**	**8**	**2.2**	**5.0**
Sales of new-to-market and new-to-firm innovations	133.0	4	54.1	15.7
Employment in innovative enterprises	98.8	14	-48.0	-5.2
Trade impacts	**56.2**	**20**	**0.9**	**-1.8**
Exports of medium and high-tech products	56.0	21	6.2	-1.1
Knowledge-intensive services exports	42.0	22	2.3	-0.3
High-tech imports from partners outside the EU	69.9	13	-5.9	-3.6
Resource and labour productivity	**85.9**	**13**	**46.1**	**20.9**
Resource productivity	60.6	18	29.3	27.1
Production-based CO_2 productivity	138.5	6	108.4	33.7
Labour productivity	45.6	17	3.7	1.0

Portugal ranks 16th among EU Member States, and 20th among the EU and neighbouring countries.

Relative strengths

- Direct and indirect government support of business R&D
- Foreign doctorate students as a % of all doctorate students
- Public-private co-publications

Relative weaknesses

- Innovation expenditures per person employed
- Venture capital expenditures
- Knowledge-intensive services exports

Highest ranked indicators among EU Member States

- Direct and indirect government support of business R&D
- Sales of new-to-market and new-to-firm innovations
- Production-based CO_2 productivity

Lowest ranked indicators among EU Member States

- Innovation expenditures per person employed
- Knowledge-intensive services exports
- Exports of medium and high-tech products

Strong increases since 2018

- Cloud Computing
- Direct and indirect government support of business R&D
- Production-based CO_2 productivity

Strong decreases since 2018

- SMEs introducing product innovations
- Non-R&D innovation expenditures
- Employment in innovative enterprises

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

ROMANIA

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **37.7**
Change vs 2018: ▲ +8.2 Change vs 2024: ▲ +2.7

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**37.7**	**27**	**8.2**	**2.7**
Human resources	**32.4**	**27**	**0.2**	**5.5**
New doctorate graduates	34.7	23	-23.1	0.0
Population with tertiary education	0.0	27	0.0	0.0
Population involved in lifelong learning	64.6	24	38.5	21.2
Attractive research systems	**40.6**	**26**	**25.0**	**4.4**
International scientific co-publications	25.5	27	16.6	1.6
Scientific publications among the top 10% most cited	66.4	18	38.9	8.1
Foreign doctorate students as a % of all doctorate students	13.6	26	2.0	-1.5
Digitalisation	**84.6**	**21**	**39.4**	**-0.2**
High speed internet access	127.5	6	88.2	-2.0
Individuals with above basic overall digital skills	21.3	26	1.1	1.1
Finance and support	**12.9**	**26**	**-8.2**	**0.9**
R&D expenditure in the public sector	13.3	27	-3.4	5.1
Venture capital expenditures	12.6	26	-20.2	-7.8
Direct and indirect government support of business R&D	12.3	23	-7.9	0.0
Firm investments	**14.2**	**27**	**-0.5**	**-0.4**
R&D expenditure in the business sector	19.3	25	3.7	2.2
Non-R&D innovation expenditures	15.5	26	-14.2	-0.9
Innovation expenditures per person employed	8.4	27	6.9	-2.9
Investments in information technologies	**36.8**	**27**	**30.1**	**14.2**
Cloud Computing	30.3	26	91.1	34.9
Employed ICT specialists	43.8	26	5.9	5.9
Innovators	**5.2**	**27**	**6.0**	**0.4**
SMEs introducing product innovations	11.8	27	12.3	0.8
SMEs introducing business process innovations	0.0	27	0.0	0.0
Linkages	**6.7**	**27**	**-4.7**	**-2.2**
Innovative SMEs collaborating with others	0.0	27	-7.0	-3.9
Public-private co-publications	36.5	27	14.1	-3.9
Job-to-job mobility of HRST	0.0	26	-11.8	0.0
Intellectual assets	**42.0**	**27**	**4.4**	**3.2**
PCT patent applications	25.6	27	-7.3	0.4
Trademark applications	71.6	25	20.3	4.1
Design applications	35.6	22	6.3	5.7
Sales and employment impacts	**12.2**	**27**	**-3.7**	**-5.7**
Sales of new-to-market and new-to-firm innovations	26.1	26	-7.6	-11.6
Employment in innovative enterprises	0.0	27	0.0	0.0
Trade impacts	**72.9**	**11**	**4.6**	**3.3**
Exports of medium and high-tech products	91.2	8	6.3	7.6
Knowledge-intensive services exports	61.9	16	13.2	2.0
High-tech imports from partners outside the EU	64.2	17	-4.7	0.1
Resource and labour productivity	**56.8**	**24**	**31.4**	**11.3**
Resource productivity	15.5	25	16.1	7.3
Production-based CO_2 productivity	123.3	9	75.0	27.6
Labour productivity	19.8	26	6.4	-0.5

Romania ranks 27th among EU Member States, and 36th among the EU and neighbouring countries.

Relative strengths

- High speed internet access
- Production-based CO_2 productivity
- Exports of medium and high-tech products

Relative weaknesses

- Population with tertiary education
- SMEs introducing business process innovations
- Innovative SMEs collaborating with others

Highest ranked indicators among EU Member States

- High speed internet access
- Exports of medium and high-tech products
- Production-based CO_2 productivity

Lowest ranked indicators among EU Member States

- Population with tertiary education
- SMEs introducing business process innovations
- Innovative SMEs collaborating with others

Strong increases since 2018

- Cloud Computing
- High speed internet access
- Production-based CO_2 productivity

Strong decreases since 2018

- New doctorate graduates
- Venture capital expenditures
- Non-R&D innovation expenditures

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SERBIA

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **51.5**
Change vs 2018: ▲ +10.2 Change vs 2024: ▲ +2.3

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**51.5**	**31**	**10.2**	**2.3**
Human resources	**49.4**	**32**	**2.6**	**3.5**
New doctorate graduates	47.7	25	-11.6	0
Population with tertiary education	61	32	18.5	16.6
Population involved in lifelong learning	38.5	31	6.7	-5.8
Attractive research systems	**42.6**	**32**	**12.5**	**-2.1**
International scientific co-publications	53.6	30	30.8	5.4
Scientific publications among the top 10% most cited	47.5	29	12.4	-5.3
Foreign doctorate students as a % of all doctorate students	23.6	33	-4.4	-2
Digitalisation	**25.4**	**32**	**-4.9**	**-4.9**
High speed internet access	N/A		N/A	N/A
Individuals with above basic overall digital skills	31.4	29	-4.5	-4.5
Finance and support	**32.4**	**29**	**2.4**	**-4.6**
R&D expenditure in the public sector	61.7	26	-1.7	-5.1
Venture capital expenditures	13.3	30	16.8	-13.1
Direct and indirect government support of business R&D	10.9	30	0	0
Firm investments	**31.4**	**32**	**-41.7**	**-44.3**
R&D expenditure in the business sector	23.4	29	6	-1.5
Non-R&D innovation expenditures	71.3	21	-145.1	-145.1
Innovation expenditures per person employed	15	30	0	0
Investments in information technologies	**80.2**	**26**	**81.1**	**18.9**
Cloud Computing	78.5	23	227.5	66.5
Employed ICT specialists	82.1	27	23.4	0
Innovators	**154.6**	**4**	**78.5**	**78.5**
SMEs introducing product innovations	217.4	1	101.7	101.7
SMEs introducing business process innovations	105.3	13	56	56
Linkages	**79.7**	**27**	**39.5**	**9.8**
Innovative SMEs collaborating with others	91.9	19	34.3	34.3
Public-private co-publications	61.4	30	26.5	10.9
Job-to-job mobility of HRST	77.1	25	50	-11.8
Intellectual assets	**26.6**	**33**	**0.3**	**3.2**
PCT patent applications	44.2	29	2.6	8
Trademark applications	23.8	34	-0.3	-1
Design applications	3.1	33	-1.7	1.1
Sales and employment impacts	**100.5**	**15**	**15.3**	**15.3**
Sales of new-to-market and new-to-firm innovations	94	18	0	0
Employment in innovative enterprises	105.9	17	30.2	30.2
Trade impacts	**40.9**	**34**	**6.4**	**0**
Exports of medium and high-tech products	47.9	28	-0.7	-4.4
Knowledge-intensive services exports	76.5	16	21.7	4.9
High-tech imports from partners outside the EU	0	32	0	0
Resource and labour productivity	**7.3**	**38**	**4.9**	**-1.8**
Resource productivity	6.2	36	2.9	0
Production-based CO_2 productivity	9.3	37	5.9	-7
Labour productivity	6	31	6.3	0.8

Serbia ranks 31st among the EU and neighbouring countries.

Relative strengths

- SMEs introducing product innovations
- Employment in innovative enterprises
- SMEs introducing business process innovations

Relative weaknesses

- High-tech imports from partners outside the EU
- Design applications
- Labour productivity

Highest ranked indicators among the EU and neighbouring countries

- SMEs introducing product innovations
- SMEs introducing business process innovations
- Knowledge-intensive services exports

Lowest ranked indicators among the EU and neighbouring countries

- Production-based CO_2 productivity
- Resource productivity
- Trademark applications

Strong increases since 2018

- Cloud Computing
- SMEs introducing product innovations
- SMEs introducing business process innovations

Strong decreases since 2018

- Non-R&D innovation expenditures
- New doctorate graduates
- Individuals with above basic overall digital skills

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SWEDEN

Innovation Leader

Summary innovation index (indexed to EU in 2025): **138.1**
Change vs 2018: ▲ +12.9 Change vs 2024: ▲ +2.0

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**138.1**	**1**	**12.9**	**2.0**
Human resources	**170.7**	**2**	**-9.6**	**5.7**
New doctorate graduates	139.2	2	-46.2	11.6
Population with tertiary education	158.2	6	33.8	2.0
Population involved in lifelong learning	220.0	1	0.0	0.0
Attractive research systems	**172.6**	**4**	**14.6**	**5.7**
International scientific co-publications	236.0	4	61.1	20.7
Scientific publications among the top 10% most cited	136.6	4	-2.2	1.2
Foreign doctorate students as a % of all doctorate students	167.7	9	8.5	1.6
Digitalisation	**125.8**	**7**	**18.6**	**12.1**
High speed internet access	116.4	10	37.4	22.6
Individuals with above basic overall digital skills	139.4	7	3.7	3.7
Finance and support	**134.5**	**3**	**43.0**	**-7.1**
R&D expenditure in the public sector	133.3	4	-5.1	1.7
Venture capital expenditures	228.0	4	244.8	-47.4
Direct and indirect government support of business R&D	71.2	12	-1.5	2.7
Firm investments	**149.0**	**1**	**4.0**	**10.4**
R&D expenditure in the business sector	160.7	1	7.5	0.0
Non-R&D innovation expenditures	122.8	5	2.9	27.5
Innovation expenditures per person employed	154.0	1	1.5	6.2
Investments in information technologies	**162.1**	**1**	**0.0**	**0.0**
Cloud Computing	155.9	1	0.0	0.0
Employed ICT specialists	169.0	1	0.0	0.0
Innovators	**131.8**	**4**	**43.0**	**-16.6**
SMEs introducing product innovations	157.1	3	40.2	-7.7
SMEs introducing business process innovations	111.8	7	45.8	-25.3
Linkages	**181.1**	**4**	**56.5**	**31.5**
Innovative SMEs collaborating with others	238.9	1	181.9	158.6
Public-private co-publications	402.0	3	80.7	18.8
Job-to-job mobility of HRST	41.7	23	-61.8	-70.6
Intellectual assets	**131.8**	**2**	**-15.1**	**-3.7**
PCT patent applications	160.0	1	0.0	0.0
Trademark applications	118.8	10	-8.7	-12.1
Design applications	102.1	10	-37.6	-2.1
Sales and employment impacts	**112.2**	**9**	**22.4**	**-9.4**
Sales of new-to-market and new-to-firm innovations	111.9	8	42.5	9.8
Employment in innovative enterprises	112.4	12	2.9	-28.2
Trade impacts	**94.6**	**5**	**5.4**	**-0.1**
Exports of medium and high-tech products	87.6	10	3.6	0.8
Knowledge-intensive services exports	105.0	5	10.3	1.9
High-tech imports from partners outside the EU	91.7	5	2.9	-3.0
Resource and labour productivity	**126.6**	**9**	**13.7**	**3.4**
Resource productivity	57.0	20	12.5	6.8
Production-based CO_2 productivity	173.0	1	16.6	0.0
Labour productivity	161.9	4	11.6	2.5

Sweden ranks 1st among EU Member States, and 2nd among the EU and neighbouring countries.

Relative strengths

- Public-private co-publications
- Innovative SMEs collaborating with others
- International scientific co-publications

Relative weaknesses

- Job-to-job mobility of HRST
- Resource productivity
- Direct and indirect government support of business R&D

Highest ranked indicators among EU Member States

- Innovative SMEs collaborating with others
- Population involved in lifelong learning
- Production-based CO_2 productivity

Lowest ranked indicators among EU Member States

- Job-to-job mobility of HRST
- Resource productivity
- Direct and indirect government support of business R&D

Strong increases since 2018

- Venture capital expenditures
- Innovative SMEs collaborating with others
- Public-private co-publications

Strong decreases since 2018

- Job-to-job mobility of HRST
- New doctorate graduates
- Design applications

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SLOVENIA

Moderate Innovator

Summary innovation index (indexed to EU in 2025): **94.7**
Change vs 2018: ▲ +16.8 Change vs 2024: ▲ +3.4

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**94.7**	**13**	**16.8**	**3.4**
Human resources	**121.1**	**9**	**-16.8**	**17.9**
New doctorate graduates	100.0	9	-69.4	11.6
Population with tertiary education	94.4	17	15.9	15.9
Population involved in lifelong learning	173.8	6	30.8	30.8
Attractive research systems	**105.3**	**13**	**40.9**	**6.0**
International scientific co-publications	165.7	10	77.6	32.2
Scientific publications among the top 10% most cited	67.7	17	5.0	-6.3
Foreign doctorate students as a % of all doctorate students	105.6	17	84.4	7.7
Digitalisation	**85.1**	**19**	**19.0**	**2.3**
High speed internet access	99.5	15	48.2	9.8
Individuals with above basic overall digital skills	63.8	24	-3.7	-3.7
Finance and support	**71.5**	**16**	**9.3**	**-6.2**
R&D expenditure in the public sector	86.7	12	25.4	6.8
Venture capital expenditures	27.3	21	30.7	-2.8
Direct and indirect government support of business R&D	84.3	9	-22.8	-24.6
Firm investments	**65.0**	**16**	**-18.4**	**3.1**
R&D expenditure in the business sector	98.6	8	-5.2	-0.7
Non-R&D innovation expenditures	32.0	25	-63.0	-0.5
Innovation expenditures per person employed	52.8	18	7.0	9.9
Investments in information technologies	**84.4**	**21**	**31.2**	**4.7**
Cloud Computing	86.8	17	147.9	-20.3
Employed ICT specialists	82.1	24	-14.7	14.7
Innovators	**119.7**	**6**	**50.1**	**-1.6**
SMEs introducing product innovations	153.6	5	86.2	5.3
SMEs introducing business process innovations	93.1	14	15.3	-8.3
Linkages	**130.1**	**12**	**48.9**	**3.6**
Innovative SMEs collaborating with others	97.5	13	-0.5	-12.1
Public-private co-publications	243.3	10	79.0	-4.5
Job-to-job mobility of HRST	110.4	11	76.5	20.6
Intellectual assets	**96.3**	**13**	**0.0**	**-0.2**
PCT patent applications	82.6	9	-0.7	-0.3
Trademark applications	121.5	8	9.1	-6.9
Design applications	90.8	12	-5.7	5.3
Sales and employment impacts	**106.2**	**11**	**36.4**	**-2.0**
Sales of new-to-market and new-to-firm innovations	96.6	14	28.0	-1.3
Employment in innovative enterprises	114.4	11	44.4	-2.8
Trade impacts	**95.1**	**3**	**19.1**	**3.9**
Exports of medium and high-tech products	117.0	2	28.1	9.5
Knowledge-intensive services exports	41.6	23	8.3	1.7
High-tech imports from partners outside the EU	122.5	1	19.7	0.0
Resource and labour productivity	**78.6**	**14**	**34.3**	**8.5**
Resource productivity	81.9	14	33.6	6.8
Production-based CO_2 productivity	85.0	20	63.0	19.2
Labour productivity	63.9	15	7.2	0.5

Slovenia ranks 13th among EU Member States, and 17th among the EU and neighbouring countries.

Relative strengths

- Public-private co-publications
- Population involved in lifelong learning
- International scientific co-publications

Relative weaknesses

- Venture capital expenditures
- Non-R&D innovation expenditures
- Knowledge-intensive services exports

Highest ranked indicators among EU Member States

- High-tech imports from partners outside the EU
- Exports of medium and high-tech products
- SMEs introducing product innovations

Lowest ranked indicators among EU Member States

- Non-R&D innovation expenditures
- Individuals with above basic overall digital skills
- Employed ICT specialists

Strong increases since 2018

- Cloud Computing
- SMEs introducing product innovations
- Foreign doctorate students as a % of all doctorate students

Strong decreases since 2018

- New doctorate graduates
- Non-R&D innovation expenditures
- Direct and indirect government support of business R&D

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SLOVAKIA

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **62.6**
Change vs 2018: ▲ +8.3 Change vs 2024: ▼ -1.0

Indicator	Performance indexed to the EU in 2025	Rank among EU Member States	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**62.6**	**24**	**8.3**	**-1.0**
Human resources	**76.0**	**18**	**-19.5**	**-4.4**
New doctorate graduates	73.9	19	-34.7	-11.6
Population with tertiary education	61.0	23	-15.2	-17.2
Population involved in lifelong learning	94.6	15	0.0	22.1
Attractive research systems	**54.6**	**22**	**23.4**	**5.2**
International scientific co-publications	66.3	22	27.4	4.0
Scientific publications among the top 10% most cited	42.0	24	17.2	6.0
Foreign doctorate students as a % of all doctorate students	63.0	19	33.1	4.9
Digitalisation	**80.6**	**23**	**36.4**	**-0.9**
High speed internet access	83.6	22	77.4	-7.2
Individuals with above basic overall digital skills	75.9	20	3.9	3.9
Finance and support	**38.4**	**22**	**14.1**	**-4.4**
R&D expenditure in the public sector	55.0	21	10.2	5.1
Venture capital expenditures	18.6	24	9.6	-7.1
Direct and indirect government support of business R&D	32.4	18	21.8	-15.6
Firm investments	**52.6**	**22**	**2.9**	**-5.8**
R&D expenditure in the business sector	37.2	20	13.4	1.5
Non-R&D innovation expenditures	94.5	9	-17.8	-20.6
Innovation expenditures per person employed	42.0	21	10.2	-0.5
Investments in information technologies	**80.4**	**22**	**44.6**	**4.5**
Cloud Computing	71.8	22	135.5	-14.1
Employed ICT specialists	89.8	19	8.8	11.7
Innovators	**47.3**	**23**	**14.9**	**-0.9**
SMEs introducing product innovations	53.2	23	14.2	6.0
SMEs introducing business process innovations	42.6	24	15.5	-7.8
Linkages	**53.9**	**25**	**15.6**	**5.8**
Innovative SMEs collaborating with others	71.2	19	12.0	20.3
Public-private co-publications	78.7	23	18.7	-13.2
Job-to-job mobility of HRST	29.2	24	17.6	2.9
Intellectual assets	**51.8**	**25**	**-1.0**	**-5.6**
PCT patent applications	45.0	23	-4.8	-7.3
Trademark applications	84.8	22	12.3	-0.3
Design applications	27.4	24	-6.6	-7.9
Sales and employment impacts	**72.9**	**20**	**-24.6**	**-10.7**
Sales of new-to-market and new-to-firm innovations	113.3	7	-50.0	-6.8
Employment in innovative enterprises	37.5	23	0.2	-14.6
Trade impacts	**71.8**	**12**	**4.8**	**2.4**
Exports of medium and high-tech products	114.2	4	3.6	-2.1
Knowledge-intensive services exports	51.6	20	20.7	8.0
High-tech imports from partners outside the EU	47.0	18	-8.5	2.3
Resource and labour productivity	**68.7**	**19**	**25.5**	**7.7**
Resource productivity	86.3	11	38.0	19.9
Production-based CO_2 productivity	61.6	22	24.9	0.0
Labour productivity	52.6	16	11.9	1.5

Slovakia ranks 24th among EU Member States, and 28th among the EU and neighbouring countries.

Relative strengths

- Exports of medium and high-tech products
- Sales of new-to-market and new-to-firm innovations
- Population involved in lifelong learning

Relative weaknesses

- Venture capital expenditures
- Design applications
- Job-to-job mobility of HRST

Highest ranked indicators among EU Member States

- Exports of medium and high-tech products
- Sales of new-to-market and new-to-firm innovations
- Non-R&D innovation expenditures

Lowest ranked indicators among EU Member States

- Venture capital expenditures
- Design applications
- Job-to-job mobility of HRST

Strong increases since 2018

- Cloud Computing
- High speed internet access
- Resource productivity

Strong decreases since 2018

- Sales of new-to-market and new-to-firm innovations
- New doctorate graduates
- Non-R&D innovation expenditures

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TÜRKIYE

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **58**
Change vs 2018: ▲ +6.6 Change vs 2024: ▲ +2.7

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**58**	**29**	**6.6**	**2.7**
Human resources	**62.1**	**30**	**23.2**	**9.8**
New doctorate graduates	34.7	28	23.1	11.6
Population with tertiary education	95.5	21	31.1	10.6
Population involved in lifelong learning	57.7	29	14.4	5.8
Attractive research systems	**45.2**	**29**	**16.9**	**-3.9**
International scientific co-publications	16.2	36	18	4.6
Scientific publications among the top 10% most cited	74.3	21	26	-0.9
Foreign doctorate students as a % of all doctorate students	27.3	32	-3.1	-17.5
Digitalisation	**22.9**	**33**	**3.7**	**3.7**
High speed internet access	N/A		N/A	N/A
Individuals with above basic overall digital skills	28.3	30	3.3	3.3
Finance and support	**77**	**17**	**31.8**	**6.6**
R&D expenditure in the public sector	63.3	25	-11.9	-1.7
Venture capital expenditures	1.3	35	1.5	-0.5
Direct and indirect government support of business R&D	145.2	7	104.5	21.5
Firm investments	**55.1**	**26**	**9.3**	**6.2**
R&D expenditure in the business sector	61.4	20	27.6	9
Non-R&D innovation expenditures	56	28	-14.6	-4.1
Innovation expenditures per person employed	48.7	22	11.7	12.4
Investments in information technologies	**18.2**	**38**	**16.2**	**13.1**
Cloud Computing	25.1	34	49.7	45.6
Employed ICT specialists	10.5	37	2.9	0
Innovators	**73.8**	**28**	**-59.4**	**10.6**
SMEs introducing product innovations	71.9	27	-62.4	0.6
SMEs introducing business process innovations	75.4	27	-56.6	20.4
Linkages	**77.3**	**29**	**-19.9**	**-2.5**
Innovative SMEs collaborating with others	72.9	24	-13.3	36.1
Public-private co-publications	16.2	36	12.5	3.2
Job-to-job mobility of HRST	106.3	17	-41.2	-38.2
Intellectual assets	**29.1**	**32**	**2.6**	**-1.4**
PCT patent applications	54.4	24	3.7	-3.4
Trademark applications	18.4	35	7	0.5
Design applications	1.5	36	-2.1	-0.4
Sales and employment impacts	**76**	**26**	**17**	**-11.5**
Sales of new-to-market and new-to-firm innovations	98.9	16	19.5	-29.3
Employment in innovative enterprises	55.7	29	14.5	5.7
Trade impacts	**67.7**	**20**	**-4.5**	**-2.3**
Exports of medium and high-tech products	51.7	26	0.3	1.1
Knowledge-intensive services exports	46.7	30	4	0
High-tech imports from partners outside the EU	104	3	-17.4	-7.8
Resource and labour productivity	**79.5**	**18**	**37.1**	**16.5**
Resource productivity	75.6	20	44	23.3
Production-based CO_2 productivity	65.7	27	27.2	7.6
Labour productivity	N/A		N/A	N/A

Türkiye ranks 29th among the EU and neighbouring countries.

Relative strengths

- Direct and indirect government support of business R&D
- Job-to-job mobility of HRST
- High-tech imports from partners outside the EU

Relative weaknesses

- Venture capital expenditures
- Design applications
- Employed ICT specialists

Highest ranked indicators among the EU and neighbouring countries

- High-tech imports from partners outside the EU
- Direct and indirect government support of business R&D
- Sales of new-to-market and new-to-firm innovations

Lowest ranked indicators among the EU and neighbouring countries

- Employed ICT specialists
- Design applications
- International scientific co-publications

Strong increases since 2018

- Direct and indirect government support of business R&D
- Cloud Computing
- Resource productivity

Strong decreases since 2018

- SMEs introducing product innovations
- SMEs introducing business process innovations
- Job-to-job mobility of HRST

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

UKRAINE

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **29**
Change vs 2018: ▲ +7.6 Change vs 2024: ▼ -1.3

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**29**	**37**	7.6	-1.3
Human resources	**69.3**	**28**	**-2.6**	**0**
New doctorate graduates	28	33	-6	0
Population with tertiary education	178	5	0	0
Population involved in lifelong learning	0	39	0	0
Attractive research systems	**12**	**39**	9.6	2.3
International scientific co-publications	5.7	39	5.5	0
Scientific publications among the top 10% most cited	18.2	38	14.2	6.4
Foreign doctorate students as a % of all doctorate students	7.8	37	2.5	-5
Digitalisation	**N/A**		**N/A**	**N/A**
High speed internet access	N/A		N/A	N/A
Individuals with above basic overall digital skills	N/A		N/A	N/A
Finance and support	**16.4**	**32**	6	**0**
R&D expenditure in the public sector	5	37	-5.1	0
Venture capital expenditures	43.5	20	44.7	0
Direct and indirect government support of business R&D	11.1	29	0	0
Firm investments	**18.7**	**35**	**-11.1**	**-9.8**
R&D expenditure in the business sector	10.4	34	-1.5	1
Non-R&D innovation expenditures	36.5	32	-23.1	-23.1
Innovation expenditures per person employed	N/A		N/A	N/A
Investments in information technologies	**N/A**		**N/A**	**N/A**
Cloud Computing	N/A		N/A	N/A
Employed ICT specialists	N/A		N/A	N/A
Innovators	**0**	**39**	**0**	**0**
SMEs introducing product innovations	0	39	0	0
SMEs introducing business process innovations	0	38	0	0
Linkages	**8**	**38**	**-14.5**	**-18.1**
Innovative SMEs collaborating with others	7.6	37	-33	-33
Public-private co-publications	13.8	37	12.3	0
Job-to-job mobility of HRST	N/A		N/A	N/A
Intellectual assets	**18.9**	**36**	**-4.9**	0.3
PCT patent applications	33.3	33	-13.1	0.9
Trademark applications	15.4	36	11	0
Design applications	0.5	38	-7.2	0
Sales and employment impacts	**3.1**	**38**	3.1	**0**
Sales of new-to-market and new-to-firm innovations	3.2	39	3.1	0
Employment in innovative enterprises	N/A		N/A	N/A
Trade impacts	**77.9**	**11**	50.4	2.6
Exports of medium and high-tech products	72	19	63.5	5.1
Knowledge-intensive services exports	84.9	13	36.5	-0.2
High-tech imports from partners outside the EU	N/A		N/A	N/A
Resource and labour productivity	**34.2**	**35**	29.6	**0**
Resource productivity	N/A		N/A	N/A
Production-based CO_2 productivity	30.7	36	31.5	0
Labour productivity	N/A		N/A	N/A

Ukraine ranks 37th among the EU and neighbouring countries.

Relative strengths
- Population with tertiary education
- Knowledge-intensive services exports
- Exports of medium and high-tech products

Relative weaknesses
- Population involved in lifelong learning
- SMEs introducing product innovations
- SMEs introducing business process innovations

Highest ranked indicators among the EU and neighbouring countries
- Population with tertiary education
- Knowledge-intensive services exports
- Exports of medium and high-tech products

Lowest ranked indicators among the EU and neighbouring countries
- Population involved in lifelong learning
- SMEs introducing product innovations
- Sales of new-to-market and new-to-firm innovations

Strong increases since 2018
- Exports of medium and high-tech products
- Venture capital expenditures
- Knowledge-intensive services exports

Strong decreases since 2018
- Innovative SMEs collaborating with others
- Non-R&D innovation expenditures
- PCT patent applications

Footnote: *Performance changes are indexed to the EU average in 2018. Since the reference years differ between the first column (2025) and the last two columns (2018), scores cannot be directly compared or subtracted across columns. For a complete overview, refer to the published country profiles.*

UNITED KINGDOM

Innovation Leader

Summary innovation index (indexed to EU in 2025): **125.5**
Change vs 2018: ▲ +12.2 Change vs 2024: ▲ +1.2

Indicator	Performance indexed to the EU in 2025	Rank among the EU and neighbouring countries	Performance change 2018-2025	Performance change 2024-2025
SUMMARY INNOVATION INDEX	**125.5**	**5**	**12.2**	**1.2**
Human resources	**140**	**8**	**4.2**	**7.4**
New doctorate graduates	175.3	3	-3.8	17.4
Population with tertiary education	129.9	14	14.6	0
Population involved in lifelong learning	110	17	4.8	0
Attractive research systems	**161.5**	**8**	**2.6**	**-2.3**
International scientific co-publications	145.6	15	40	0
Scientific publications among the top 10% most cited	151.7	2	-6.8	-4.4
Foreign doctorate students as a % of all doctorate students	192.3	7	-12.6	0
Digitalisation	**111**	**15**	**158.9**	**24.6**
High speed internet access	93.1	23	180	27.9
Individuals with above basic overall digital skills	N/A		N/A	N/A
Finance and support	**158.1**	**2**	**40.4**	**0**
R&D expenditure in the public sector	68.3	22	3.4	0
Venture capital expenditures	270	1	206	0
Direct and indirect government support of business R&D	185.8	1	0	0
Firm investments	**87.4**	**14**	**20.2**	**0**
R&D expenditure in the business sector	79.3	13	6	0
Non-R&D innovation expenditures	121.3	7	37.5	0
Innovation expenditures per person employed	N/A		N/A	N/A
Investments in information technologies	**117.7**	**10**	**51**	**0**
Cloud Computing	120	11	150.6	0
Employed ICT specialists	115.3	10	11.7	0
Innovators	**99.4**	**21**	**0.9**	**0**
SMEs introducing product innovations	113.4	18	-13.2	0
SMEs introducing business process innovations	88.5	22	14.8	0
Linkages	**214.1**	**3**	**18.8**	**0**
Innovative SMEs collaborating with others	238.9	1	0	0
Public-private co-publications	213.2	14	42.1	0
Job-to-job mobility of HRST	193.8	1	23.5	0
Intellectual assets	**73.8**	**22**	**-25.5**	**-4.4**
PCT patent applications	99.8	10	-9.3	-6.2
Trademark applications	69.7	28	-30.1	-6.2
Design applications	38	22	-41.4	-0.9
Sales and employment impacts	**93.8**	**20**	**-32.5**	**0**
Sales of new-to-market and new-to-firm innovations	63.3	26	-59.4	0
Employment in innovative enterprises	120.3	9	-6.1	0
Trade impacts	**104.2**	**2**	**2.9**	**0.3**
Exports of medium and high-tech products	80.4	13	-7.7	0
Knowledge-intensive services exports	110.9	4	5.2	0.8
High-tech imports from partners outside the EU	122.4	2	11.7	-0.1
Resource and labour productivity	**168.5**	**4**	**45.6**	**7.5**
Resource productivity	170.3	1	23.1	0
Production-based CO_2 productivity	129	10	69.7	15.9
Labour productivity	N/A		N/A	N/A

The United Kingdom ranks 5th among the EU and neighbouring countries.

Relative strengths

- Venture capital expenditures
- Innovative SMEs collaborating with others
- Public-private co-publications

Relative weaknesses

- Design applications
- Sales of new-to-market and new-to-firm innovations
- R&D expenditure in the public sector

Highest ranked indicators among the EU and neighbouring countries

- Venture capital expenditures
- Innovative SMEs collaborating with others
- Job-to-job mobility of HRST

Lowest ranked indicators among the EU and neighbouring countries

- Trademark applications
- Sales of new-to-market and new-to-firm innovations
- High speed internet access

Strong increases since 2018

- Venture capital expenditures
- High speed internet access
- Cloud Computing

Strong decreases since 2018

- Sales of new-to-market and new-to-firm innovations
- Design applications
- Trademark applications

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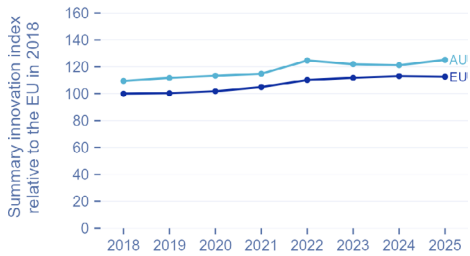
AUSTRALIA

Strong Innovator

Summary innovation index (indexed to EU in 2025): **111.1**
Change vs 2018: ▲ +15.7 Change vs 2024: ▲ +3.8

Indicator	Performance in 2025	Change 2018-2025
Summary Innovation Index	111.1	15.7
New doctorate graduates	147.1	15.8
Population with tertiary education	145.3	49.5
International scientific co-publications	181.8	35.3
Scientific publications among the top 10% most cited	159.3	-7.3
R&D expenditure in the public sector	104.6	-16.3
Direct and indirect government support of business R&D	80.4	-28.6
R&D expenditure in the business sector	60.0	-12.9
Employed ICT specialists	97.9	24.9
SMEs introducing product innovations	101.4	-73.5
SMEs introducing business process innovations	158.0	77.1
Innovative SMEs collaborating with others	326.7	-106.7
Public-private co-publications	200.0	43.6
PCT patent applications	65.1	-20.0
Trademark applications	450.0	144.9
Design applications	106.5	7.9
Exports of medium and high-tech products	4.8	-2.4
Knowledge-intensive services exports	6.2	6.4

Australia is the fifth most innovative global competitor, classified as a Strong Innovator and performing at 111.1% of the EU average in 2025. The country's relative strengths are Trademark applications, Innovative SMEs collaborating with others, and Public-private co-publications. Its relative weaknesses are Exports of medium and high-tech products, Knowledge-intensive services exports, and R&D expenditure in the business sector.



Structural differences	AU	EU
Performance and structure of the economy		
GDP per capita (2021-23 average)	64850.4	56159.9
Average annual GDP growth (2021-23 average)	3.8	2
Employment share Agriculture (2021-23 average)	2.3	4
Employment share Industry (2021-23 average)	18.9	24.5
Employment share Services (2021-23 average)	78.9	71.6
Employment share Knowledge-intensive services (2021-23 average)	5.4	14.8
Business and entrepreneurship		
FDI net inflows (2021-23 average)	2.7	1
Top R&D spending enterprises per 10 million population (2022-24 average)	3.4	7.8
Top R&D spending enterprises, average R&D spending (2022-24 average)	416.6	616.4
Number of unicorns (January 2025)	9	111
Buyer sophistication (2015-17 average)	3.9	3.7
Total early-stage Entrepreneurial Activity (TEA) (2021-23 average)		7.1
Governance and policy frameworks		
Corruption Perceptions Index (2022-24 average)	75.7	62.6
Government procurement of advanced technology products (2015-17 average)	3.3	3.4
Rule of law (2020-23 average)	1.6	1
Basic-school entrepreneurial education and training (2022-24 average)		2.4
Demography		
Population size (2021-23 average, in millions)	26.1	447.7
Average annual population growth (2021-23 average)	1.9	0.3
Population density (2020-22 average)	3.4	111.9

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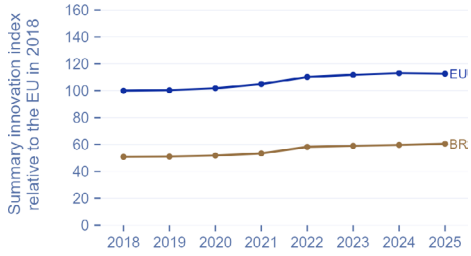
BRAZIL

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **53.7**
Change vs 2018: ▲ +9.5 Change vs 2024: ▲ +0.9

Indicator	Performance in 2025	Change 2018-2025
Summary Innovation Index	53.7	9.5
New doctorate graduates	22.1	3.9
Population with tertiary education	41.5	27.9
International scientific co-publications	36.4	15.6
Scientific publications among the top 10% most cited	13	-8.4
R&D expenditure in the public sector	N/A	N/A
Direct and indirect government support of business R&D	44.6	-5.2
R&D expenditure in the business sector	N/A	N/A
Employed ICT specialists	32.6	14.3
SMEs introducing product innovations	59.7	-11.3
SMEs introducing business process innovations	184	-44.3
Innovative SMEs collaborating with others	120	-91.7
Public-private co-publications	10	4.7
PCT patent applications	11.6	-4.1
Trademark applications	391.7	294.6
Design applications	35.5	0.1
Exports of medium and high-tech products	21.7	-14.3
Knowledge-intensive services exports	102.5	2.9

Brazil is an Emerging Innovator, performing at 53.7% of the EU average in 2025. The country's relative strengths are Trademark applications, SMEs introducing business process innovations, and Innovative SMEs collaborating with others. Its relative weaknesses are Public-private co-publications, PCT patent applications, and Scientific publications among the top 10% most cited.



Structural differences	BR	EU
Performance and structure of the economy		
GDP per capita (2021-23 average)	19686.6	56159.9
Average annual GDP growth (2021-23 average)	3	2
Employment share Agriculture (2021-23 average)	8.8	4
Employment share Industry (2021-23 average)	20.5	24.5
Employment share Services (2021-23 average)	70.7	71.6
Employment share Knowledge-intensive services (2021-23 average)	12.5	14.8
Business and entrepreneurship		
Total early-stage Entrepreneurial Activity (TEA) (2021-23 average)	19.7	7.1
FDI net inflows (2021-23 average)	3.2	1
Top R&D spending enterprises per 10 million population (2022-24 average)	0.2	7.8
Top R&D spending enterprises, average R&D spending (2022-24 average)	219.2	616.4
Number of unicorns (January 2025)	18	111
Buyer sophistication (2015-17 average)	3.4	3.7
Governance and policy frameworks		
Corruption Perceptions Index (2022-24 average)	36	62.6
Basic-school entrepreneurial education and training (2022-24 average)	2.2	2.4
Government procurement of advanced technology products (2015-17 average)	2.8	3.4
Rule of law (2020-23 average)	-0.3	1
Demography		
Population size (2021-23 average, in millions)	210.3	447.7
Average annual population growth (2021-23 average)	0.4	0.3
Population density (2020-22 average)	25.1	111.9

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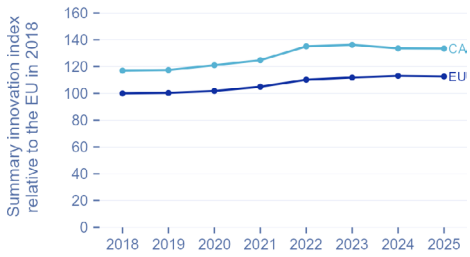
CANADA

Strong Innovator

Summary innovation index (indexed to EU in 2025): **118.5**
Change vs 2018: ▲ +16.5 Change vs 2024: ▼ -0.1

Indicator	Performance in 2025	Change 2018-2025
Summary Innovation Index	118.5	16.5
New doctorate graduates	95.6	-2.5
Population with tertiary education	179.2	55.4
International scientific co-publications	167.3	51.6
Scientific publications among the top 10% most cited	120.4	-23.6
R&D expenditure in the public sector	103.1	-11.8
Direct and indirect government support of business R&D	117.9	23.5
R&D expenditure in the business sector	75	11.7
Employed ICT specialists	N/A	N/A
SMEs introducing product innovations	138.9	-34.6
SMEs introducing business process innovations	200	-11.8
Innovative SMEs collaborating with others	253.3	-193.5
Public-private co-publications	182	39.2
PCT patent applications	90.7	-6.6
Trademark applications	275	41.2
Design applications	90.3	19.1
Exports of medium and high-tech products	49.4	-6.8
Knowledge-intensive services exports	82.7	3.1

Canada is the second most innovative global competitor, tied with China. It is classified as a Strong Innovator, performing at 118.5% of the EU average in 2025. The country's relative strengths are Trademark applications, Innovative SMEs collaborating with others, and SMEs introducing business process innovations. Its relative weaknesses are Exports of medium and high-tech products, R&D expenditure in the business sector, and Knowledge-intensive services exports.



Structural differences	CA	EU
Performance and structure of the economy		
GDP per capita (2021-23 average)	60944.5	56159.9
Average annual GDP growth (2021-23 average)	2.5	2
Employment share Agriculture (2021-23 average)	1.3	4
Employment share Industry (2021-23 average)	19.3	24.5
Employment share Services (2021-23 average)	79.4	71.6
Employment share Knowledge-intensive services (2021-23 average)		14.8
Business and entrepreneurship		
Total early-stage Entrepreneurial Activity (TEA) (2021-23 average)	20.6	7.1
FDI net inflows (2021-23 average)	2.4	1
Top R&D spending enterprises per 10 million population (2022-24 average)	6.9	7.8
Top R&D spending enterprises, average R&D spending (2022-24 average)	259.2	616.4
Number of unicorns (January 2025)	21	111
Buyer sophistication (2015-17 average)	4.4	3.7
Governance and policy frameworks		
Corruption Perceptions Index (2022-24 average)	75	62.6
Basic-school entrepreneurial education and training (2022-24 average)	3.6	2.4
Government procurement of advanced technology products (2015-17 average)	3.4	3.4
Rule of law (2020-23 average)	1.5	1
Demography		
Population size (2021-23 average, in millions)	39.1	447.7
Average annual population growth (2021-23 average)	2.4	0.3
Population density (2020-22 average)	4.3	111.9

Footnote: *Performance in 2025 is indexed to the EU in 2025. Performance change is indexed to the EU average in 2018. Since the reference years differ between columns, scores cannot be directly compared or subtracted. Relative strengths (purple) and weaknesses (red) refer to the three indicators where the country's scores are furthest above or below the EU average in 2025. These highlight the areas where the country stands out most positively or faces the greatest relative challenges compared to the EU.*

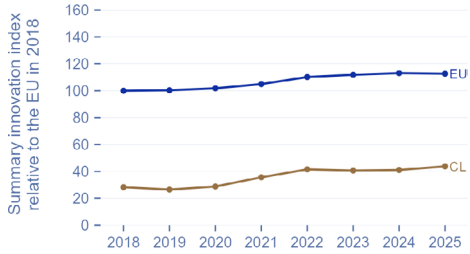
CHILE

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **38.9**
Change vs 2018: ▲ +15.5 Change vs 2024: ▲ +2.7

Indicator	Performance in 2025	Change 2018-2025
Summary Innovation Index	38.9	15.5
New doctorate graduates	13.2	0.0
Population with tertiary education	96.2	50.5
International scientific co-publications	92.7	39.3
Scientific publications among the top 10% most cited	24.1	-1.3
R&D expenditure in the public sector	1.5	1.6
Direct and indirect government support of business R&D	5.4	1.9
R&D expenditure in the business sector	2.5	-2.9
Employed ICT specialists	57.9	19.0
SMEs introducing product innovations	22.2	23.0
SMEs introducing business process innovations	34.0	43.3
Innovative SMEs collaborating with others	153.3	211.4
Public-private co-publications	26.0	11.7
PCT patent applications	25.6	-6.3
Trademark applications	483.3	182.9
Design applications	0.0	-9.3
Exports of medium and high-tech products	0.0	-2.4
Knowledge-intensive services exports	39.5	11.3

Chile is an Emerging Innovator, performing at 38.9% of the EU average in 2025. The country's relative strengths are Trademark applications, Innovative SMEs collaborating with others, and Population with tertiary education. Its relative weaknesses are Design applications, Exports of medium and high-tech products, and R&D expenditure in the public sector.



Structural differences	CL	EU
Performance and structure of the economy		
GDP per capita (2021-23 average)	30940.5	56159.9
Average annual GDP growth (2021-23 average)	1.1	2
Employment share Agriculture (2021-23 average)	6.4	4
Employment share Industry (2021-23 average)	22.6	24.5
Employment share Services (2021-23 average)	71	71.6
Employment share Knowledge-intensive services (2021-23 average)	9	14.8
Business and entrepreneurship		
Total early-stage Entrepreneurial Activity (TEA) (2021-23 average)	28.4	7.1
FDI net inflows (2021-23 average)	5.8	1
Number of unicorns (January 2025)	2	111
Buyer sophistication (2015-17 average)	3.9	3.7
Top R&D spending enterprises per 10 million population (2022-24 average)		7.8
Top R&D spending enterprises, average R&D spending (2022-24 average)		616.4
Governance and policy frameworks		
Corruption Perceptions Index (2022-24 average)	65.3	62.6
Basic-school entrepreneurial education and training (2022-24 average)	2.7	2.4
Government procurement of advanced technology products (2015-17 average)	2.9	3.4
Rule of law (2020-23 average)	0.7	1
Demography		
Population size (2021-23 average, in millions)	19.6	447.7
Average annual population growth (2021-23 average)	0.5	0.3
Population density (2020-22 average)	26.2	111.9

Footnote: *Performance in 2025 is indexed to the EU in 2025. Performance change is indexed to the EU average in 2018. Since the reference years differ between columns, scores cannot be directly compared or subtracted. Relative strengths (purple) and weaknesses (red) refer to the three indicators where the country's scores are furthest above or below the EU average in 2025. These highlight the areas where the country stands out most positively or faces the greatest relative challenges compared to the EU.*

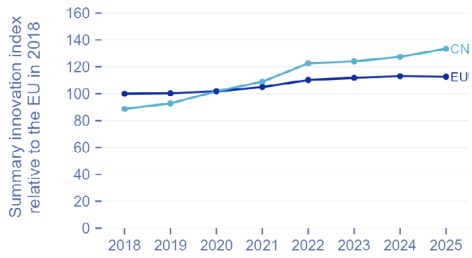
CHINA

Strong Innovator

Summary innovation index (indexed to EU in 2025): **118.5**
Change vs 2018: ▲ +44.8 Change vs 2024: ▲ +6.0

Indicator	Performance in 2025	Change 2018-2025
Summary Innovation Index	118.5	44.8
New doctorate graduates	N/A	N/A
Population with tertiary education	81.1	14
International scientific co-publications	34.5	21.6
Scientific publications among the top 10% most cited	135.2	54.3
R&D expenditure in the public sector	76.9	20.7
Direct and indirect government support of business R&D	158.9	98
R&D expenditure in the business sector	135	21.1
Employed ICT specialists	N/A	N/A
SMEs introducing product innovations	N/A	N/A
SMEs introducing business process innovations	N/A	N/A
Innovative SMEs collaborating with others	N/A	N/A
Public-private co-publications	56	48.2
PCT patent applications	111.6	18.7
Trademark applications	833.3	431.5
Design applications	312.9	28.4
Exports of medium and high-tech products	92.8	2
Knowledge-intensive services exports	108.6	39.2

China is the second most innovative global competitor, tied with Canada. It is classified as a Strong Innovator, performing at 118.5% of the EU average in 2025. The country's relative strengths are Trademark applications, Design applications, and Direct and indirect government support of business R&D. Its relative weaknesses are International scientific co-publications, Public-private co-publications, and R&D expenditure in the public sector.



Structural differences	CN	EU
Performance and structure of the economy		
GDP per capita (2021-23 average)	22495.2	56159.9
Average annual GDP growth (2021-23 average)	4.1	2
Employment share Agriculture (2021-23 average)	22.8	4
Employment share Industry (2021-23 average)	31.7	24.5
Employment share Services (2021-23 average)	45.4	71.6
Employment share Knowledge-intensive services (2021-23 average)	27.3	14.8
Business and entrepreneurship		
Total early-stage Entrepreneurial Activity (TEA) (2021-23 average)	6.1	7.1
FDI net inflows (2021-23 average)	1.1	1
Top R&D spending enterprises per 10 million population (2022-24 average)	4.4	7.8
Top R&D spending enterprises, average R&D spending (2022-24 average)	336.9	616.4
Number of unicorns (January 2025)	162	111
Buyer sophistication (2015-17 average)	4.3	3.7
Governance and policy frameworks		
Corruption Perceptions Index (2022-24 average)	43.3	62.6
Government procurement of advanced technology products (2015-17 average)	4.4	3.4
Rule of law (2020-23 average)	0	1
Basic-school entrepreneurial education and training (2022-24 average)		2.4
Demography		
Population size (2021-23 average, in millions)	1411.7	447.7
Average annual population growth (2021-23 average)	-0.1	0.3
Population density (2020-22 average)	150.4	111.9

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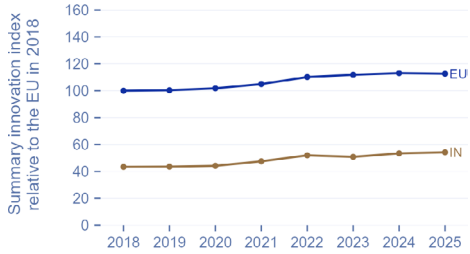
INDIA

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **48.1**
Change vs 2018: ▲ +10.8 Change vs 2024: ▲ +0.8

Indicator	Performance in 2025	Change 2018-2025
Summary Innovation Index	48.1	10.8
New doctorate graduates	1.5	1.3
Population with tertiary education	32.1	13.1
International scientific co-publications	10.9	14.9
Scientific publications among the top 10% most cited	74.1	23.8
R&D expenditure in the public sector	46.2	-1.5
Direct and indirect government support of business R&D	N/A	N/A
R&D expenditure in the business sector	22.5	-3.4
Employed ICT specialists	N/A	N/A
SMEs introducing product innovations	36.1	-9
SMEs introducing business process innovations	16	-3.9
Innovative SMEs collaborating with others	546.7	-417.6
Public-private co-publications	2	2.4
PCT patent applications	25.6	-0.9
Trademark applications	83.3	50.8
Design applications	38.7	13.5
Exports of medium and high-tech products	51.8	7.7
Knowledge-intensive services exports	121	10.6

India is an Emerging Innovator, performing at 48.1% of the EU average in 2025. The country's relative strengths are Innovative SMEs collaborating with others, Knowledge-intensive services exports, and Trademark applications. Its relative weaknesses are New doctorate graduates, Public-private co-publications, and International scientific co-publications.



Structural differences	IN	EU
Performance and structure of the economy		
GDP per capita (2021-23 average)	9123.4	56159.9
Average annual GDP growth (2021-23 average)	7.6	2
Employment share Agriculture (2021-23 average)	43.5	4
Employment share Industry (2021-23 average)	25.2	24.5
Employment share Services (2021-23 average)	31.3	71.6
Employment share Knowledge-intensive services (2021-23 average)	13.7	14.8
Business and entrepreneurship		
Total early-stage Entrepreneurial Activity (TEA) (2021-23 average)	11.9	7.1
FDI net inflows (2021-23 average)	1.2	1
Top R&D spending enterprises per 10 million population (2022-24 average)	0.1	7.8
Top R&D spending enterprises, average R&D spending (2022-24 average)	256.5	616.4
Number of unicorns (January 2025)	68	111
Buyer sophistication (2015-17 average)	4.4	3.7
Governance and policy frameworks		
Corruption Perceptions Index (2022-24 average)	39	62.6
Basic-school entrepreneurial education and training (2022-24 average)	5.6	2.4
Government procurement of advanced technology products (2015-17 average)	4.3	3.4
Rule of law (2020-23 average)	0.1	1
Demography		
Population size (2021-23 average, in millions)	1425.9	447.7
Average annual population growth (2021-23 average)	0.8	0.3
Population density (2020-22 average)	475.6	111.9

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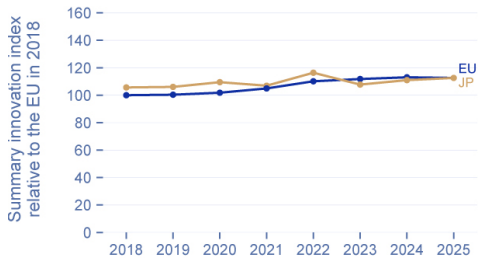
JAPAN

Strong Innovator

Summary innovation index (indexed to EU in 2025): **100**
Change vs 2018: ▲ +6.9 Change vs 2024: ▲ +1.6

Indicator	Performance in 2025	Change 2018-2025
Summary Innovation Index	100.0	6.9
New doctorate graduates	48.5	-2.5
Population with tertiary education	175.5	49.1
International scientific co-publications	63.6	20.9
Scientific publications among the top 10% most cited	24.1	-9.9
R&D expenditure in the public sector	93.8	4.5
Direct and indirect government support of business R&D	92.9	18.0
R&D expenditure in the business sector	187.5	-8.2
Employed ICT specialists	105.3	37.5
SMEs introducing product innovations	31.9	-18.7
SMEs introducing business process innovations	60.0	-38.7
Innovative SMEs collaborating with others	146.7	-1,226.3
Public-private co-publications	84.0	12.3
PCT patent applications	232.6	24.2
Trademark applications	191.7	108.0
Design applications	112.9	12.3
Exports of medium and high-tech products	114.5	-3.8
Knowledge-intensive services exports	96.3	1.7

Japan is a Strong Innovator, with performance matching the EU average in 2025 (100%). The country's relative strengths are PCT patent applications, Trademark applications, and R&D expenditure in the business sector. Its relative weaknesses are Scientific publications among the top 10% most cited, SMEs introducing product innovations, and New doctorate graduates.



Structural differences	JP	EU
Performance and structure of the economy		
GDP per capita (2021-23 average)	47146	56159.9
Average annual GDP growth (2021-23 average)	1.3	2
Employment share Agriculture (2021-23 average)	3.1	4
Employment share Industry (2021-23 average)	23.7	24.5
Employment share Services (2021-23 average)	73.2	71.6
Employment share Knowledge-intensive services (2021-23 average)	20	14.8
Business and entrepreneurship		
Total early-stage Entrepreneurial Activity (TEA) (2021-23 average)	6.3	7.1
FDI net inflows (2021-23 average)	0.8	1
Top R&D spending enterprises per 10 million population (2022-24 average)	17.2	7.8
Top R&D spending enterprises, average R&D spending (2022-24 average)	517.5	616.4
Number of unicorns (January 2025)	8	111
Buyer sophistication (2015-17 average)	5	3.7
Governance and policy frameworks		
Corruption Perceptions Index (2022-24 average)	72.3	62.6
Basic-school entrepreneurial education and training (2022-24 average)	2.4	2.4
Government procurement of advanced technology products (2015-17 average)	4	3.4
Rule of law (2020-23 average)	1.5	1
Demography		
Population size (2021-23 average, in millions)	125.1	447.7
Average annual population growth (2021-23 average)	-0.5	0.3
Population density (2020-22 average)	344.8	111.9

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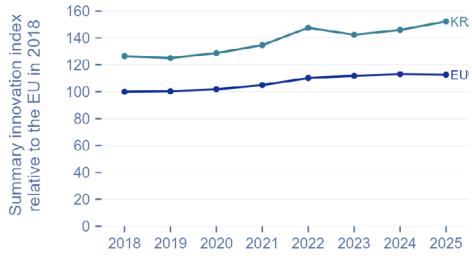
SOUTH KOREA

Innovation Leader

Summary innovation index (indexed to EU in 2025): **135.2**
Change vs 2018: ▲ +25.8 Change vs 2024: ▲ +6.3

Indicator	Performance in 2025	Change 2018-2025
Summary Innovation Index	135.2	25.8
New doctorate graduates	129.4	32.6
Population with tertiary education	188.7	36.3
International scientific co-publications	96.4	44.2
Scientific publications among the top 10% most cited	77.8	11.8
R&D expenditure in the public sector	153.8	30.7
Direct and indirect government support of business R&D	178.6	-2.6
R&D expenditure in the business sector	250.0	12.2
Employed ICT specialists	87.4	30.7
SMEs introducing product innovations	29.2	-35.8
SMEs introducing business process innovations	12.0	-78.6
Innovative SMEs collaborating with others	126.7	-168.2
Public-private co-publications	146.0	60.3
PCT patent applications	232.6	27.8
Trademark applications	591.7	251.9
Design applications	312.9	28.4
Exports of medium and high-tech products	118.1	-1.4
Knowledge-intensive services exports	109.9	31.4

South Korea remains the most innovative global competitor. It is classified as an Innovation Leader, performing at 135.2% of the EU average in 2025. The country's relative strengths are Trademark applications, Design applications, and R&D expenditure in the business sector. Its relative weaknesses are SMEs introducing business process innovations, SMEs introducing product innovations, and Scientific publications among the top 10% most cited.



Structural differences	KR	EU
Performance and structure of the economy		
GDP per capita (2021-23 average)	50618.4	56159.9
Average annual GDP growth (2021-23 average)	2	2
Employment share Agriculture (2021-23 average)	5.4	4
Employment share Industry (2021-23 average)	24.4	24.5
Employment share Services (2021-23 average)	70.3	71.6
Employment share Knowledge-intensive services (2021-23 average)	25.6	14.8
Business and entrepreneurship		
Total early-stage Entrepreneurial Activity (TEA) (2021-23 average)	11.3	7.1
FDI net inflows (2021-23 average)	1.2	1
Top R&D spending enterprises per 10 million population (2022-24 average)	9	7.8
Top R&D spending enterprises, average R&D spending (2022-24 average)	813.1	616.4
Number of unicorns (January 2025)	13	111
Buyer sophistication (2015-17 average)	5	3.7
Governance and policy frameworks		
Corruption Perceptions Index (2022-24 average)	63.3	62.6
Government procurement of advanced technology products (2015-17 average)	3.8	3.4
Rule of law (2020-23 average)	1.2	1
Basic-school entrepreneurial education and training (2022-24 average)		2.4
Demography		
Population size (2021-23 average, in millions)	51.7	447.7
Average annual population growth (2021-23 average)	-0.1	0.3
Population density (2020-22 average)	530.3	111.9

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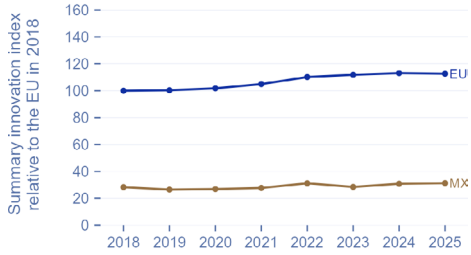
MEXICO

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **27.8**
Change vs 2018: ▲ +3.0 Change vs 2024: ▲ +0.4

Indicator	Performance in 2025	Change 2018-2025
Summary Innovation Index	27.8	3
New doctorate graduates	13.2	5.2
Population with tertiary education	54.7	30.2
International scientific co-publications	25.5	11.3
Scientific publications among the top 10% most cited	1.9	1.8
R&D expenditure in the public sector	12.3	-17.8
Direct and indirect government support of business R&D	3.6	4
R&D expenditure in the business sector	0	0
Employed ICT specialists	2.1	1.4
SMEs introducing product innovations	N/A	N/A
SMEs introducing business process innovations	N/A	N/A
Innovative SMEs collaborating with others	N/A	N/A
Public-private co-publications	4	2.4
PCT patent applications	0	-8.9
Trademark applications	241.7	138.5
Design applications	41.9	8.3
Exports of medium and high-tech products	109.6	-0.2
Knowledge-intensive services exports	19.8	-8

Mexico is an Emerging Innovator, performing at 27.8% of the EU average in 2025. The country's relative strengths are Trademark applications, Exports of medium and high-tech products, and Population with tertiary education. Its relative weaknesses are R&D expenditure in the business sector, PCT patent applications, and Scientific publications among the top 10% most cited.



Structural differences	MX	EU
Performance and structure of the economy		
GDP per capita (2021-23 average)	22972.6	56159.9
Average annual GDP growth (2021-23 average)	3.4	2
Employment share Agriculture (2021-23 average)	12.6	4
Employment share Industry (2021-23 average)	24.8	24.5
Employment share Services (2021-23 average)	62.5	71.6
Employment share Knowledge-intensive services (2021-23 average)	21.1	14.8
Business and entrepreneurship		
Total early-stage Entrepreneurial Activity (TEA) (2021-23 average)	14.9	7.1
FDI net inflows (2021-23 average)	2.4	1
Number of unicorns (January 2025)	8	111
Buyer sophistication (2015-17 average)	3.4	3.7
Top R&D spending enterprises per 10 million population (2022-24 average)		7.8
Top R&D spending enterprises, average R&D spending (2022-24 average)		616.4
Governance and policy frameworks		
Corruption Perceptions Index (2022-24 average)	29.3	62.6
Basic-school entrepreneurial education and training (2022-24 average)	2.1	2.4
Government procurement of advanced technology products (2015-17 average)	3.1	3.4
Rule of law (2020-23 average)	-0.8	1
Demography		
Population size (2021-23 average, in millions)	128.7	447.7
Average annual population growth (2021-23 average)	0.8	0.3
Population density (2020-22 average)	65.7	111.9

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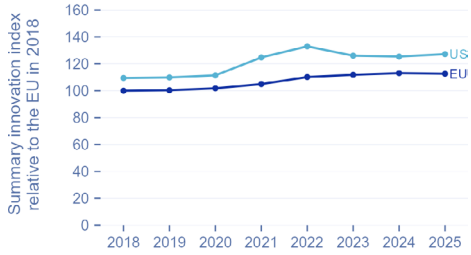
UNITED STATES

Strong Innovator

Summary innovation index (indexed to EU in 2025): **113**
Change vs 2018: ▲ +17.8 Change vs 2024: ▲ +1.8

Indicator	Performance in 2025	Change 2018-2025
Summary Innovation Index	113.0	17.8
New doctorate graduates	92.6	9.2
Population with tertiary education	130.2	37.5
International scientific co-publications	103.6	26.5
Scientific publications among the top 10% most cited	138.9	-40.4
R&D expenditure in the public sector	92.3	3.0
Direct and indirect government support of business R&D	135.7	10.8
R&D expenditure in the business sector	197.5	58.2
Employed ICT specialists	104.2	18.4
SMEs introducing product innovations	59.7	45.8
SMEs introducing business process innovations	78.0	-88.5
Innovative SMEs collaborating with others	666.7	-509.2
Public-private co-publications	118.0	11.2
PCT patent applications	111.6	-6.3
Trademark applications	58.3	56.1
Design applications	54.8	13.4
Exports of medium and high-tech products	75.9	-2.9
Knowledge-intensive services exports	98.8	13.4

The United States is a Strong Innovator, performing at 113% of the EU average in 2025. The country's relative strengths are Innovative SMEs collaborating with others, R&D expenditure in the business sector, and Scientific publications among the top 10% most cited. Its relative weaknesses are Design applications, Trademark applications, and SMEs introducing product innovations.



Structural differences	US	EU
Performance and structure of the economy		
GDP per capita (2021-23 average)	77374.3	56159.9
Average annual GDP growth (2021-23 average)	2.7	2
Employment share Agriculture (2021-23 average)	1.6	4
Employment share Industry (2021-23 average)	19.3	24.5
Employment share Services (2021-23 average)	79.1	71.6
Employment share Knowledge-intensive services (2021-23 average)	10.5	14.8
Business and entrepreneurship		
Total early-stage Entrepreneurial Activity (TEA) (2021-23 average)	17.7	7.1
FDI net inflows (2021-23 average)	1.6	1
Top R&D spending enterprises per 10 million population (2022-24 average)	23.3	7.8
Top R&D spending enterprises, average R&D spending (2022-24 average)	642.9	616.4
Number of unicorns (January 2025)	687	111
Buyer sophistication (2015-17 average)	4.8	3.7
Governance and policy frameworks		
Corruption Perceptions Index (2022-24 average)	67.7	62.6
Basic-school entrepreneurial education and training (2022-24 average)	3.7	2.4
Government procurement of advanced technology products (2015-17 average)	4.6	3.4
Rule of law (2020-23 average)	1.4	1
Demography		
Population size (2021-23 average, in millions)	333.4	447.7
Average annual population growth (2021-23 average)	0.4	0.3
Population density (2020-22 average)	36.3	111.9

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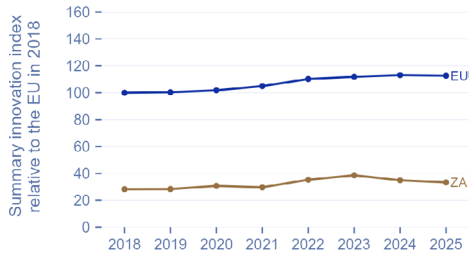
SOUTH AFRICA

Emerging Innovator

Summary innovation index (indexed to EU in 2025): **29.6**
Change vs 2018: ▲ +5.1 Change vs 2024: ▼ -1.6

Indicator	Performance in 2025	Change 2018-2025
Summary Innovation Index	29.6	5.1
New doctorate graduates	2.9	1.3
Population with tertiary education	9.4	11.1
International scientific co-publications	58.2	30.4
Scientific publications among the top 10% most cited	57.4	-2.3
R&D expenditure in the public sector	38.5	-3.3
Direct and indirect government support of business R&D	3.6	-0.1
R&D expenditure in the business sector	7.5	-11.3
Employed ICT specialists	N/A	N/A
SMEs introducing product innovations	N/A	N/A
SMEs introducing business process innovations	N/A	N/A
Innovative SMEs collaborating with others	N/A	N/A
Public-private co-publications	16	4.5
PCT patent applications	18.6	-10.6
Trademark applications	100	19.8
Design applications	38.7	-6.9
Exports of medium and high-tech products	43.4	-3.2
Knowledge-intensive services exports	39.5	32.1

South Africa is an Emerging Innovator, performing at 29.6% of the EU average in 2025. The country's relative strengths are Trademark applications, International scientific co-publications, and Scientific publications among the top 10% most cited. Its relative weaknesses are New doctorate graduates, Direct and indirect government support of business R&D, and R&D expenditure in the business sector.



Structural differences	ZA	EU
Performance and structure of the economy		
GDP per capita (2021-23 average)	14555	56159.9
Average annual GDP growth (2021-23 average)	1.3	2
Employment share Agriculture (2021-23 average)	19.8	4
Employment share Industry (2021-23 average)	17.7	24.5
Employment share Services (2021-23 average)	62.5	71.6
Employment share Knowledge-intensive services (2021-23 average)	12.2	14.8
Business and entrepreneurship		
Total early-stage Entrepreneurial Activity (TEA) (2021-23 average)	9.8	7.1
FDI net inflows (2021-23 average)	4.3	1
Number of unicorns (January 2025)	1	111
Buyer sophistication (2015-17 average)	4	3.7
Top R&D spending enterprises per 10 million population (2022-24 average)		7.8
Top R&D spending enterprises, average R&D spending (2022-24 average)		616.4
Governance and policy frameworks		
Corruption Perceptions Index (2022-24 average)	41.7	62.6
Basic-school entrepreneurial education and training (2022-24 average)	3	2.4
Government procurement of advanced technology products (2015-17 average)	3	3.4
Rule of law (2020-23 average)	0.1	1
Demography		
Population size (2021-23 average, in millions)	62.4	447.7
Average annual population growth (2021-23 average)	1.4	0.3
Population density (2020-22 average)	50.7	111.9

Footnote: *Performance in 2025 is indexed to the EU in 2025. Performance change is indexed to the EU average in 2018. Since the reference years differ between columns, scores cannot be directly compared or subtracted. Relative strengths (purple) and weaknesses (red) refer to the three indicators where the country's scores are furthest above or below the EU average in 2025. These highlight the areas where the country stands out most positively or faces the greatest relative challenges compared to the EU.*

7. METHODOLOGY

7.1 Data sources, data availability and comparison with the EIS 2024.

The EIS uses the most recent statistics from Eurostat and other internationally recognised sources, such as the OECD and the United Nations, available at the time of analysis, with the cut-off date set end of May 2025. International sources have been used to improve comparability between countries.

The data relates to the actual performance in 2024 for 11 indicators, 2023 for 10 indicators, 2022 for 10 indicators, 2020 for 1 indicator (these are the most recent years for which data is available, cf. Annex E). Data availability is complete for 25 Member States. For Ireland, data is not available for Job-to-job mobility in *Human resources* in Science & Technology (indicator 3.2.3), while for the Netherlands, data is not available for *Non-R&D innovation expenditures* (indicator 2.2.2).

Breaks in the data series are reported for 15 indicators counting at least one break for each country, including EU, neighbouring and global competitors and 11 indicators for EU27 only. The top five indicators with the highest number of countries experiencing such breaks include:

- Percentage population aged 25-34 having completed tertiary education
- *ICT specialists* (as a percentage of total employment)
- *Population involved in lifelong learning*
- *Job-to-job mobility of Human resources in Science & Technology*
- *R&D expenditure in the business sector*

To address the lack of comparability across years, performance changes over time for indicators impacted by breaks are based on the most recent data only. Performance changes for the Summary Innovation Index (SII), which measures Member States' average innovation performance, are, therefore, on average, smaller than what they would have been if there had been no breaks in series or new data series.

It must be stressed that comparisons with results from the EIS 2024 report are not possible, not even for the same years in both reports. Results for the same year, are different due to several reasons:

- By adding new data at the end of the time series for each indicator and removing data at the start of the time series, the highest and lowest data scores used for calculating normalised scores across all countries and all years for an indicator can change, directly impacting these normalised scores.

- Timeliness refers to the year for which the most recent data is available. For the EIS 2025 23 indicators have been updated with at least one additional year of data compared to their availability in the EIS 2024, while an additional five indicators could not be compared to the EIS 2024 since they have been added as part of the EIS 2025.

- Breaks in series for indicators and individual countries impact the most recent year used. As explained above there are 15 indicators in which a break in the series impacts at least one country.

Consequently, one should only use the results for all years in this report to compare performance over time. More details on data sources, timeliness and breaks are provided in the EIS Methodology Report 2025.

7.2 Methodology for calculating innovation indexes

The overall performance of each national innovation system is summarised by a composite indicator, the Summary Innovation Index (SII). The methodology used for calculating the SII is outlined below. 'All countries' include all EU27 Member States, other European and global competitors.

European benchmark

Step 1: Setting reference years

For each indicator, a reference year is identified based on data availability for all countries for which data availability is at least 75%. For most indicators, this reference year will be lagging one or two years behind the year to which the EIS refers (see Annex E).

Step 2: Imputing for missing values

If data for an intermediate year is not available, the missing values are replaced with the previous year's values. If data is unavailable at the beginning of the time series, the missing values are replaced with the next available year's values. If data is missing for all years, no data is imputed, and, hence, the indicator does not contribute to the SII.

Step 3: Identifying and replacing outliers

Positive outliers are identified as those country scores which are higher than the mean across all countries plus twice the standard deviation. Negative outliers are identified as those country scores which are smaller than the mean across all countries minus twice the standard deviation. These outliers are replaced by the respective maximum and minimum values observed over all the years and all countries.

Step 4: Transforming data if data is highly skewed

Most of the indicators are fractional indicators with values between 0% and 100%. Some indicators are unbound indicators, where values are not limited to an upper threshold. These indicators can be highly volatile and can have skewed data distributions (where most countries show low performance levels, and a few countries show exceptionally high levels of performance). For these indicators where the degree of skewness across the full eight-year period is above one, data has been transformed using a square root transformation. For the following indicators data has been transformed: *Non-R&D innovation expenditures*, *PCT patent applications* and *Trademark applications*. A square root transformation uses the square root of the indicator value instead of the original value.

Step 5: Determining Maximum and Minimum scores

The Maximum score is the highest score found for the eight-year period within all countries excluding positive outliers. Similarly, the Minimum score is the lowest score found for the eight-year period within all countries excluding negative outliers.

Step 6: Calculating re-scaled scores

Re-scaled scores of the country scores (after correcting for outliers and a possible transformation of the data) for all years are calculated by first subtracting the Minimum score and then dividing by the difference between the Maximum and Minimum score. The maximum re-scaled score is thus equal to 1, and the minimum re-scaled score is equal to 0. For positive and negative outliers, the re-scaled score is equal to 1 or 0, respectively.

Step 7: Calculating composite innovation indexes

For each year, a composite Summary Innovation Index is calculated as the unweighted average of the re-scaled scores for all indicators where all indicators receive the same weight (1/32 if data is available for all 32 indicators).

Step 8: Calculating relative to EU performance scores

Performance scores relative to the EU are then calculated as the SII of the respective country divided by the SII of the EU multiplied by 100. Relative performance scores are calculated for the full eight-year period compared to the performance of the EU in 2018 and for the latest year also to that of the EU in 2025. For the definition of the performance groups, only the performance scores relative to the EU in 2025 have been used.

Performance group membership

For determining performance group membership, the EIS uses the following classification scheme with corresponding values for EIS 2025:

- Innovation Leaders are all countries with a relative performance in 2025 above 125% of the EU average in 2025 (corresponding to a score of 140.7 when indexed to EU 2018).

- Strong Innovators are all countries with a relative performance in 2024 between 100% and 125% of the EU average in 2024 (corresponding to a range of scores from 112.6 to 140.7 when indexed to EU 2018).

- Moderate Innovators are all countries with a relative performance in 2025 between 70% and 100% of the EU average in 2025 (corresponding to a range of scores from 78.8 to 112.6 when indexed to EU 2018).

- Emerging Innovators are all countries with a relative performance in 2025 below 70% of the EU average in 2025 (corresponding to a score below 78.8 when indexed to EU 2018).

International benchmark

The methodology for calculating average innovation performance for the EU and its major global competitors is comparable to that used for calculating average innovation performance for the EU27 Member States but using a smaller set of countries and a smaller set of indicators.

Automation

The data collection and calculation process for the EIS has been automated for the 2025 release. The approach is summarised in the Figure below.

The construction of the summary index for 2025 has been performed using the COINr package[46] adapted and extended to the EIS. COINr is an open-source R package recently developed by the European Commission's Competence Centre for Composite Indicators and Scoreboards[47], and implements international guidelines and best practices in composite indicator construction[48]. It allows highly detailed and flexible construction and analysis of

46 See: https://bluefoxr.github.io/COINr/

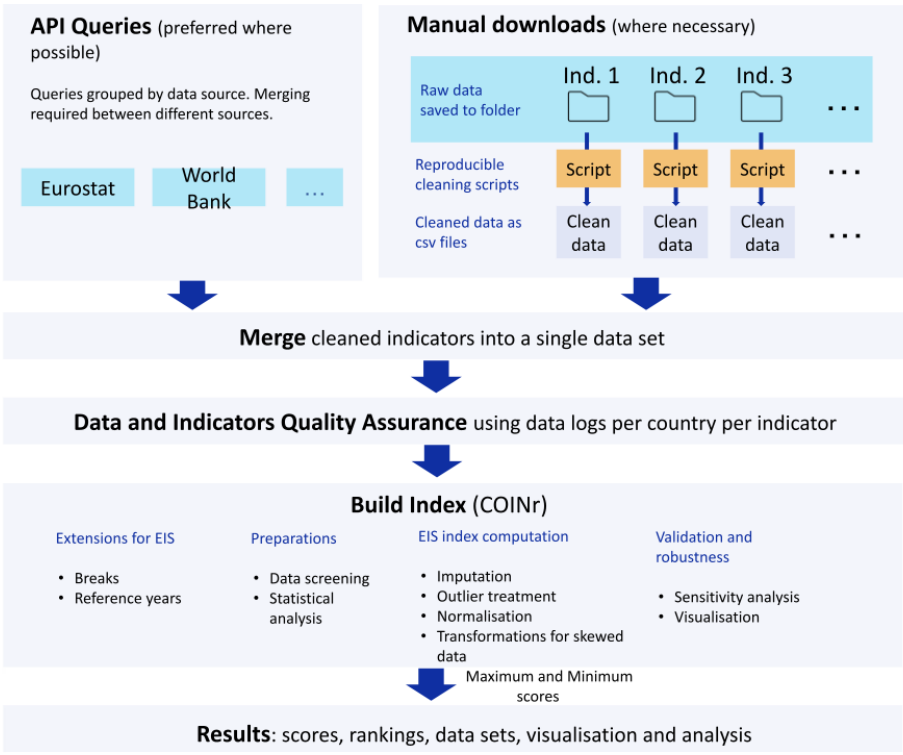
47 See: https://composite-indicators.jrc.ec.europa.eu/

48 Nardo M, Saisana M, Saltelli A, Tarantola S, Hoffmann A, Giovannini E. Handbook on Constructing Composite Indicators: Methodology and User Guide. Paris (France): OECD publishing; 2008. JRC47008. https://publications.jrc.ec.europa.eu/repository/handle/JRC47008

composite indicators, including imputation, normalisation, outlier treatment and sensitivity analysis.

This approach provides a highly replicable and easy to follow data pipeline which feeds into the COINr package and automatically provides the main outputs of the EIS. Since the data collection, processing and outputs are largely based on code (using the R software), all code is packaged together and hosted on GitHub which also facilitates the auditing process.

Figure 44: EIS automation process



7.3 Contextual analysis on the impact of structural differences between countries

In response to a need for contextual analyses to better understand performance differences between the innovation indicators used in the main measurement framework, a set of contextual indicators is included in the country profiles available on the EIS website and online tool. As an introduction, the following sections discuss the relevance of these structural aspects to provide a better understanding of differences between countries in the performance of individual indicators. Full definitions of all performance indicators and contextual indicators are provided in the EIS 2025 Methodology Report. The list of

contextual indicators, the years for which average performance has been calculated, and data sources used are shown in Table 1.

Table 1: Contextual indicators in the European Innovation Scoreboard – European countries

DIMENSION/INDICATOR	PERIOD	SOURCE
Performance and structure of the economy		
GDP per capita (PPS)	Average 2022-2024	Eurostat
Average annual GDP growth (%)	Average 2022-2024	Eurostat
Employment share Manufacturing (NACE C) (%)	Average 2022-2024	Eurostat
of which High and Medium high tech (%)	Average 2022-2024	Eurostat
Employment share Services (NACE G-N) (%)	Average 2022-2024	Eurostat
of which Knowledge-intensive sectors (%)	Average 2022-2024	Eurostat
Turnover share SMEs (%)	Average 2018-2020	Eurostat
Turnover share large companies (%)	Average 2018-2020	Eurostat
Foreign-controlled enterprises - share of value added (%)	Average 2018-2020	Eurostat
Herfindahl-Hirschman Index of non-EU imports of high-tech goods	Average 2022-2024	COMEXT
Business and entrepreneurship		
Enterprise births (10+ employees) (%)	Average 2018-2020	Eurostat

DIMENSION/INDICATOR	PERIOD	SOURCE
Total early-stage Entrepreneurial Activity (TEA) (%)	Average 2022-2024	Global Entrepreneurship Monitor
FDI net inflows (% GDP)	Average 2021-2023	World Bank: World Development Indicators
Top R&D spending enterprises per 10 million population	Average 2022-2024	EU Industrial R&D Investment Scoreboard
Buyer sophistication (1 to 7 best)	Average 2015-2017	World Economic Forum
Digital Intensity Index	2024	Eurostat
Young High Growth Enterprises	2022	Eurostat
Innovation profiles		
In-house product innovators with market novelties	2018-2020	Eurostat, National Statistical Offices
In-house product innovators without market novelties	2018-2020	Eurostat, National Statistical Offices
In-house business process innovators	2018-2020	Eurostat, National Statistical Offices
Innovators that do not develop innovations themselves	2018-2020	Eurostat, National Statistical Offices
Innovation active non-innovators	2018-2020	Eurostat, National Statistical Offices
Non-innovators with potential to innovate	2018-2020	Eurostat, National Statistical Offices
Non-innovators without disposition to innovate	2018-2020	Eurostat, National Statistical Offices
Horizon Europe funding intensity per researcher	Average 2022-2024	Horizon Europe; Eurostat

DIMENSION/INDICATOR	PERIOD	SOURCE
Governance and policy framework		
Corruption Perceptions Index	Average 2022-2024	Transparency International
Basic-school entrepreneurial education and training (1 to 5 best)	Average 2022-2024	Global Entrepreneurship Monitor
Innovation procurement as a share of total public procurement	2023	Tenders Electronic Daily and National Public Procurement data
Rule of law (-2.5 to 2.5 best)	Average 2021-2023	World Bank: Worldwide Governance Indicators
Environment		
Circular material use rate	Average 2021-2023	Eurostat
Greenhouse gas emissions intensity of energy consumption	Average 2018-2020	European Environment Agency (EEA), Eurostat
Eco-Innovation Index	2024	EC, DG Environment
Demography		
Population size (millions)	Average 2022-2024	Eurostat
Average annual population growth (%)	Between 2022-2024	Eurostat
Population density (inhabitants / km2)	Average 2021-2023	Eurostat

Performance and structure of the economy

GDP per capita in purchasing power standards (PPS)[49] is a measure for interpreting real income differences between countries. Higher income can increase the demand for new innovative goods and services. Economic growth is captured by the average annual growth rate of GDP for 2022-2024. In economies that grow faster, increasing demand may provide more favourable conditions for enterprises to sell their goods and services.

Differences in economic structures are important. Differences in the share of manufacturing industry in GDP, and in high-tech activities in manufacturing and services, are important factors that explain why countries can perform better or worse on indicators like business R&D expenditures, PCT patents, and innovative enterprises. Medium-high and high-tech industries have higher technological intensities than other industries. These industries, on average, will have higher R&D expenditures, more patent applications, and higher shares of innovative enterprises. Countries with above-average shares of these industries are expected to perform better on several EIS indicators. For example, for the EU on average, 85% of R&D expenditures in manufacturing are accounted for by medium-high and high technology manufacturing industries[50] [51]. Also, the share of enterprises that introduced a product and/or business process innovation is higher in medium-high and high- technology manufacturing industries compared to all core industries covered in the Community Innovation Survey[52].

49 The purchasing power standard (PPS) is an artificial currency unit. Theoretically, one PPS can buy the same amount of goods and services in each country. However, price differences across borders mean that different amounts of national currency units are needed for the same goods and services depending on the country. PPS are derived by dividing any economic aggregate of a country in national currency by its respective purchasing power parities. PPS is the technical term used by Eurostat for the common currency in which national accounts aggregates are expressed when adjusted for price level differences using PPPs. Thus, PPPs can be interpreted as the exchange rate of the PPS against the Euro.

50 Based on NACE Rev. 2 three-digit level, manufacturing industries can be classified into high-technology, medium-high technology, medium-low-technology, and low-technology. The high-technology and medium-high technology industries include: Chemicals and chemical products (20); Basic pharmaceutical products and pharmaceutical preparations (21); Weapons and ammunition (25.4*); Computer, electronic and optical products (26); Electrical equipment (27); Machinery and equipment not elsewhere classified (28); Motor vehicles, trailers and semi-trailers (29); Other transport equipment (30) excluding Building of ships and boats (30.1); Air and spacecraft and related machinery (30.3); and Medical and dental instruments and supplies (32.5**). If data is only available at the NACE Rev. 2 two-digit level, industries identified with an * are classified as medium-low-technology, and industries identified with an ** are classified as low-technology, and thus excluded from the high-technology and medium-high technology industries (Source: http://ec.europa.eu/eurostat/statistics-explained/index.php/ Glossary: High-tech classification_of_manufacturing

51 Average results for 2015-2017 for 24 Member States for which data is available for at least one year. Data were extracted from Eurostat (Business enterprise R&D expenditure in high-tech sectors - NACE Rev. 2 [htec_sti_exp2]

52 In accordance with Commission Regulation No 995/2012, the following industries and services are included in the Core target population covered in the CIS: Core Industry (excluding construction): Mining and quarrying (B), Manufacturing (C) (10-12: Manufacture of food products, beverages and tobacco; 13-15: Manufacture of textiles, wearing apparel, leather and related products; 16-18: Manufacture of wood, paper, printing and reproduction; 20: Manufacture of chemicals and chemical products; 21: Manufacture of basic pharmaceutical products and pharmaceutical preparations; 19-22 Manufacture of petroleum, chemical, pharmaceutical, rubber and plastic products; 23: Manufacture of other non-metallic mineral products; 24: Manufacture of basic metals; 25: Manufacture of fabricated metal products, except machinery and equipment; 26: Manufacture of computer, electronic and optical products; 25-30: Manufacture of fabricated metal products (except machinery and equipment), computer, electronic and optical products, electrical equipment, motor vehicles and other transport equipment; 31-33: Manufacture of furniture; jewellery, musical instruments, toys; repair and installation of machinery and equipment, Electricity, gas, steam and air conditioning supply (D), Water supply, sewerage, waste management and remediation activities (E) (36: Water collection, treatment and supply; 37-39: Sewerage, waste management, remediation activities). Core Services: Wholesale trade, except of motor vehicles and motorcycles (46), Transport and storage (H) (49-51: Land transport and transport via pipelines, water transport and air transport; 52-53: Warehousing and support activities for transportation and postal and courier activities); Information and communication (J) (58: Publishing activities; 61: Telecommunications; 62: Computer programming, consultancy and related activities; 63: Information service activities), Financial and insurance activities (K) (64: Financial service activities, except insurance and pension funding; 65: Insurance, reinsurance and pension funding, except compulsory social security; 66: Activities auxiliary to financial services and insurance activities), Professional, scientific and technical activities (M) (71-73: Architectural and engineering activities; technical testing and analysis; Scientific research and development; Advertising and market research).

Foreign ownership, including ownership from both other EU27 Member States and non-Member States, is important as, on average, about 30% of business R&D expenditures in EU27 Member States is made by foreign affiliates, which is significantly higher compared to Japan and the United States and comparable to Australia and Canada[53]. The share of foreign-controlled enterprises in value-added serves as a proxy for differences in the impact of foreign ownership on the economy.

In addition, structural vulnerabilities in trade dependencies are increasingly relevant for innovation and resilience. The Herfindahl-Hirschman Index (HHI), calculated specifically for non-EU imports of high-tech goods, measures the concentration of trade value across export partners. Higher values indicate stronger reliance on a limited number of partners, highlighting exposure to potential supply chain disruptions. Conversely, lower values suggest greater diversification and reduced dependency. The HHI thus complements existing indicators, such as *High-tech imports from outside the EU*27, by capturing the dispersion of trade relationships within countries' high-tech trade profiles.

Business and entrepreneurship

Entrepreneurship is important for introducing new innovations on the market. The degree of entrepreneurship is measured by two contextual indicators measuring the share of new enterprise births in the economy and total entrepreneurial activity. The former is measured by the share of new enterprise birth in the economy. The latter is measured by the adult population aged 18-64 years who are in the process of starting a business (a nascent entrepreneur) or who started a business which is not older than 42 months at the time of the respective survey (owner manager of a new business).

A complementary indicator is the share of young high-growth enterprises, which provides insights into the capacity of economies to support the scale-up of innovative firms. These Gazelles are particularly important in high-tech sectors, where rapid firm expansion often reflects strong innovation dynamics and favourable ecosystem conditions.

The Digital Intensity Index (DII) is another relevant contextual indicator, capturing the extent to which businesses adopt digital technologies. Composed of 12 variables across four areas, digital skills, infrastructure, business digital transformation, and digital public services, the DII provides a composite view of digital uptake. Higher digital intensity is typically associated with increased innovation capacity and competitiveness, particularly among SMEs.

53 Average results for 2010-2016 for 14 Member States for which data were available (Austria, Belgium, Czechia, Finland, France, Germany, Hungary, Ireland, Italy, Netherlands, Poland, Slovenia Spain, and Sweden). Source of the data: OECD Main Science and Technology Indicators, Volume 2018 Issue 2

Inflows of new technologies are important as they add to a country's economic and technological capacities. Inward Foreign direct investment (FDI) can have a positive impact on innovation performance, although there are differences depending on the complexity of the receiving industry, political and economic framework conditions as well as the quality of the institutions of the receiving countries. Inward FDI flows are measured over a three-year period, as average net inflows of investments to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor.

Enterprise characteristics are important for explaining differences in R&D spending and innovation activities. Large enterprises, defined as enterprises with 250 or more employees, account for almost 80 percent of EU business R&D expenditures, whereas SMEs, defined as enterprises with 10 to 249 employees, account for only one-fifth. The presence of large R&D spending enterprises is captured by the EU Industrial R&D Investment Scoreboard, which provides economic and financial data and analysis of the top 1000 corporate R&D investors from the EU and top 2500 corporate R&D investors elsewhere in the world[54].

Demand is an important driver of innovation. According to the Oslo Manual[55], demand factors shape innovation activity in two major ways: for the development of new products, as firms modify and differentiate products to increase sales and market share and for the improvement of the production and supply processes to reduce costs and lower prices. A robust indicator measuring the demand for innovation is currently not available. The Executive Opinion Survey of the World Economic Forum includes an indicator that provides a measure of the preferences of individual consumers for innovative products. The degree of Buyer sophistication measures, on a scale from 1 (low) to 7 (high), whether buyers focus more on price or quality of products and services, with higher quality being the result of product innovations.

Innovation profiles

Innovation is a highly diverse activity. Enterprises can innovate through product or business process innovation, with the latter including process, marketing and organisational innovation. Enterprises can adopt new technologies developed by other enterprises or they engage in intensive in-house research and innovation activities. The capabilities needed by enterprises to innovate are very different in kind and size. Building on earlier work by academics and the OECD, Eurostat, UNU-MERIT (Maastricht University), ZEW – Leibniz Centre for European Economic Research, in collaboration with national statistical offices, developed a taxonomy of innovating and non-innovating enterprises based on CIS micro

54 https://iri.jrc.ec.europa.eu/scoreboard/2024-eu-industrial-rd-investment-scoreboard

55 The Oslo Manual is the foremost international source of guidelines for the collection and use of data on innovation activities in industry. OECD/Eurostat (2018), Oslo Manual: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition, OECD Publishing, Paris. DOI: https://www.oecd.org/science/oslo-manual-2018-9789264304604-en.htm

data. The following characteristics were used to identify seven mutually exclusive detailed innovation profiles: The degree of novelty of product innovations, own in-house capacities to innovate, and R&D activities. Of these, four innovation profiles capture different types of enterprises that have introduced an innovation (product or business process) and three innovation profiles capture non-innovators, of which one profile captures non-innovators with innovation activities, one profile captures non-innovators with an interest in innovation, while the other captures non innovators without any innovation activities or interest:

- In-house product innovators with market novelties, including all enterprises that introduced a product innovation that was developed by the enterprise and that was not previously offered by competitors.

- In-house product innovators without market novelties, including all enterprises that introduced a product innovation that was developed by the enterprise but that is only new to the enterprise itself. In-house business process innovators, including all enterprises without a product innovation, but that did introduce a business process innovation that was developed by the enterprise.

- Innovators that do not develop innovations themselves, including all enterprises that introduced an innovation of any kind but did not develop it themselves (enterprises without significant own innovation capabilities).

- Innovation active non-innovators, including all enterprises that did not introduce any innovation but that either had ongoing or abandoned innovation activities.

- Non-innovators with potential to innovate, including all enterprises that did not introduce any innovation, and which had no ongoing or abandoned innovation activities but that did consider innovating.

- Non-innovators without disposition to innovate, including all other enterprises, those that neither introduced an innovation nor had any ongoing or abandoned innovation activities nor considered to innovate.

Data on Innovation profiles should not be interpreted as more is better. Instead, the data should be used to better understand differences in the composition of different types of enterprises in a country, thereby helping policy makers to design policies that better target different enterprises. To complement this view, Horizon Europe funding per researcher (FTE) is proposed as a new indicator. It measures the net EU contribution received under Horizon Europe per full-time equivalent researcher. This provides insight into how effectively countries access and benefit from EU-level research programmes and reflects the intensity of competitive R&D funding per researcher.

Governance and policy framework

Institutional and legal differences between countries may make it more difficult to engage in business activities. The Corruption Perceptions Index is a composite index based on a combination of surveys and assessments of corruption from 13 different sources and scores, and ranks countries based on how corrupt a country's public sector is perceived to be, with a score of 0 representing a very high level of corruption and a score of 100 representing a low level of corruption. The CPI is published by Transparency International, and the data is included in the EU Sustainable Development Goals indicator set to monitor progress on SDG Goal 16 on Peace, justice and strong institutions.

Entrepreneurial skills are important for successfully transforming ideas and inventions into innovations. These skills can be acquired on the job but also by formal schooling. Basic-school entrepreneurial education and training measures the extent to which training in creating or managing SMEs is incorporated within the education and training system at primary and secondary levels.

Trust is important for creating a business environment for undertaking risky innovative activities. Measures of the rule of law capture differences in the extent to which people have confidence in and abide by the rules of society. The Rule of law Index measures differences in the quality of contract enforcement, property rights, the police, the judicial system, as well as the prevalence of crime and violence.

Environment

As the natural environment increasingly suffers from the loss of biodiversity, pollution and climate change, the relationship between innovation performance and environment sustainability grows in importance. EU level policy developments, such as the European Green Deal and the Recovery plan for Europe, underline the need to take account of the pivotal role of research and innovation in contributing to societal challenges. Three indicators are included in the Contextual indicators relevant for measuring climate change and the role of innovation.

The circular material use rate measures, in percentages, the share of material recovered and fed back into the economy - thus saving extraction of primary raw materials - in overall material use. It covers households, the private and the public sector. A higher circular material use rate indicates more secondary materials substituting for primary raw materials, thereby avoiding the environmental impacts of extracting primary material.

Greenhouse gas emissions intensity of energy consumption is an indicator that is part of the EU Sustainable Development Goals (SDG) indicator set. It is used to monitor progress

towards Goal 13 on climate action and SDG 7 on affordable and clean energy. The indicator is calculated as the ratio between energy related GHG emissions and gross inland consumption of energy. It expresses how many tonnes CO_2 equivalents of energy related GHGs are being emitted in a certain economy per unit of energy that is being consumed. Lower scores on this indicator imply an improvement in environmental performance.

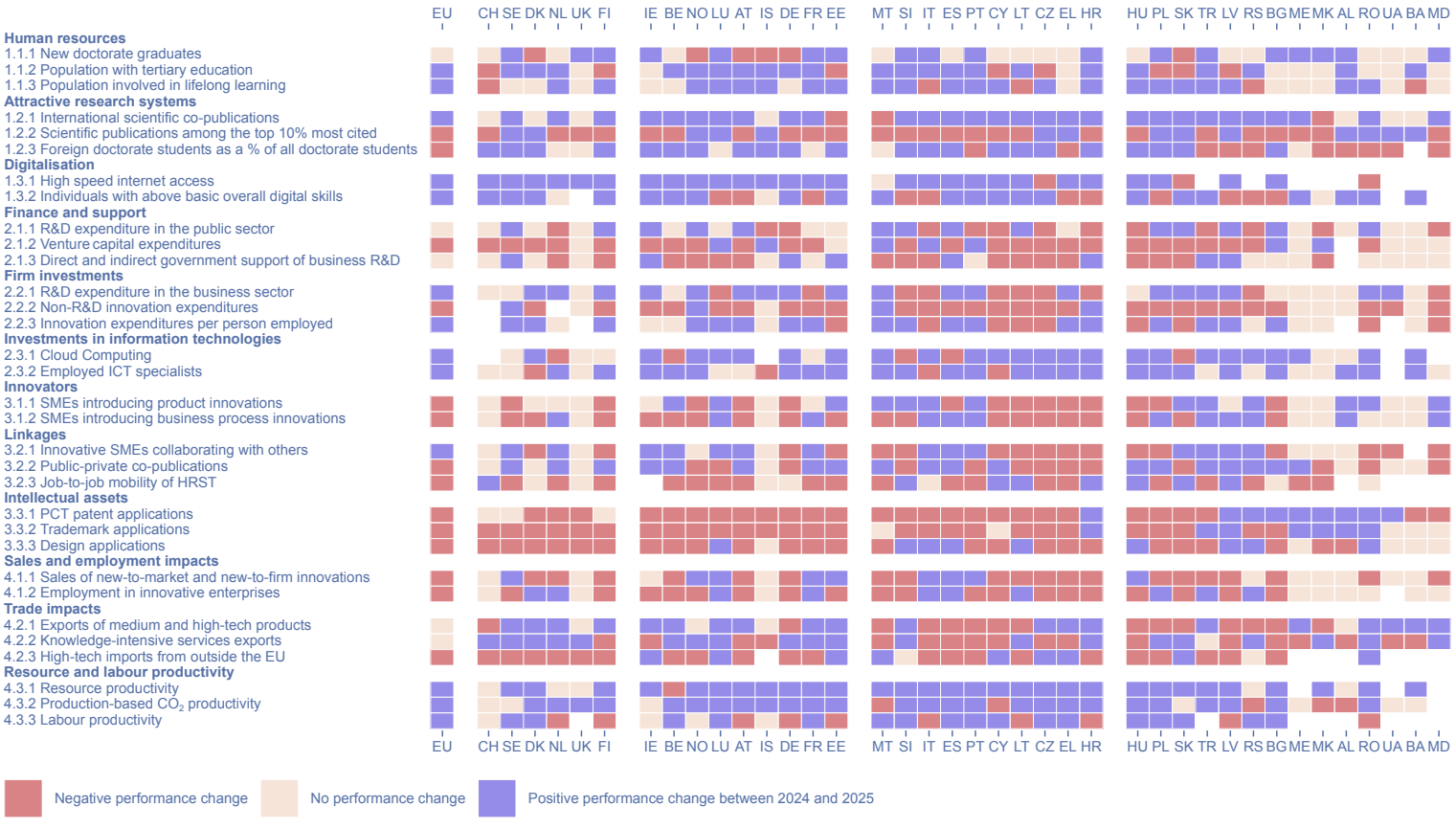
Demography

Structural data also includes population size and the average annual growth rate of population for 2022-2024. Increasing demand following an increasing population may provide more favourable conditions for enterprises to sell their goods and services. Densely populated areas are more likely to be more innovative for several reasons. Firstly, knowledge diffuses more easily when people and enterprises are located closer to each other. Secondly, in more densely populated areas there tends to be a concentration of government and educational services. Densely populated areas provide better training opportunities and employ above-average shares of highly educated people. Furthermore, the amount of natural assets per capita tends to decline with population density. This positively impacts on the share of Medium and high-tech product exports and the share of employment in knowledge intensive activities.

Annex 1 Performance change of EU27 Member States and neighbouring countries compared to 2018 and 2025

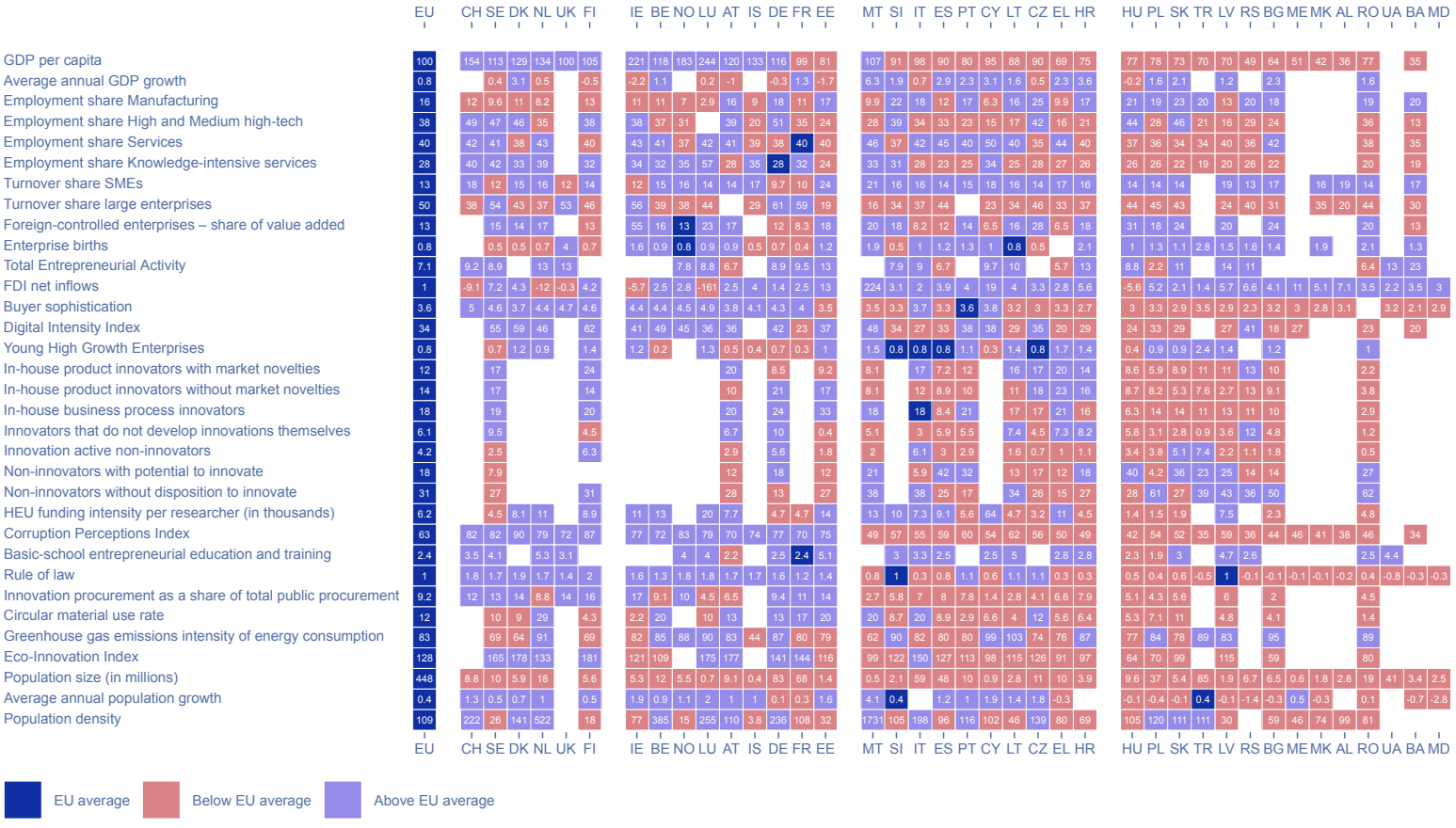
Figure 45: Performance change between 2018 and 2025 per indicator for EU27 Member States and neighbouring countries

Figure 46: Performance change between 2024 and 2025 per indicator for EU27 Member States and neighbouring countries



Annex 2 Overview of structural differences of EU27 Member States and neighbouring countries economies

Figure 47: Differences in structural indicators between EU27 Member States and neighbouring countries



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This study provides the results of the 2025 edition of the European Innovation Scoreboard. The EIS provides a comparative analysis of the innovation performance of the European Union (EU), the 27 Member States, 12 neighbouring European countries and 11 global competitors.

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