



European Innovation Scoreboard **2024** Country Profile **Romania**

European Innovation Scoreboard 2024 – Country profile Romania

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**ROMANIA****Emerging Innovator**Summary innovation index (relative to EU in 2017): **37.4**Rank: **36**Change vs 2023: ▼ **-1.6** Change vs 2017: ▲ **1.5**

Romania is an Emerging Innovator with performance at 34% of the EU average in 2024. Performance is below the average of the Emerging Innovators (48%). Performance is increasing less than the EU (+10%).

Indicator	Performance relative to the EU in 2024	Performance change 2017-2024	Performance change 2023-2024
SUMMARY INNOVATION INDEX	34.0	1.5	-1.6
Human resources	26.9	-4.9	3.4
New doctorate graduates	34.5	-23.2	0.0
Population with tertiary education	0.0	0.0	0.0
Population involved in lifelong learning	48.3	18.3	13.2
Attractive research systems	37.7	24.6	1.3
International scientific co-publications	25.7	15.8	-1.0
Scientific publications among the top 10% most cited	59.6	33.8	3.1
Foreign doctorate students as a % of all doctorate students	14.3	12.8	-0.9
Digitalisation	92.8	36.9	5.4
Broadband penetration	144.4	73.2	9.7
Individuals with above basic overall digital skills	21.3	1.1	1.1
Finance and support	20.4	-6.5	-1.7
R&D expenditure in the public sector	8.2	-18.0	-1.6
Venture capital expenditures	38.5	10.0	-3.2
Direct and indirect government support of business R&D	12.2	-8.9	0.0
Firm investments	14.1	-7.9	-3.8
R&D expenditure in the business sector	16.6	5.2	-0.8
Non-R&D innovation expenditures	14.0	-33.5	-13.6
Innovation expenditures per person employed	11.5	4.5	3.2
Use of information technologies	28.7	10.6	5.7
Enterprises providing ICT training	21.8	21.7	18.5
Employed ICT specialists	35.3	0.0	-6.5
Innovators	2.7	3.1	0.4
SMEs introducing product innovations	5.9	6.3	0.8
SMEs introducing business process innovations	0.0	0.0	0.0
Linkages	6.9	-3.6	-2.6
Innovative SMEs collaborating with others	0.0	-7.0	-3.9
Public-private co-publications	38.6	19.6	-4.1
Job-to-job mobility of HRST	0.0	-11.8	0.0
Intellectual assets	35.2	4.4	2.5
PCT patent applications	22.4	-5.4	1.7
Trademark applications	63.1	19.3	4.5
Design applications	24.6	5.4	2.0
Employment impacts	9.3	-0.6	-1.8
Employment in knowledge-intensive activities	20.2	-1.2	-3.6
Employment in innovative enterprises	0.0	0.0	0.0
Sales impacts	62.3	2.1	-5.8
Exports of medium and high technology products	84.7	0.8	5.7
Knowledge-intensive services exports	56.1	13.0	-2.2
Sales of new-to-market and new-to-firm innovations	36.7	-10.3	-28.8
Environmental sustainability	47.8	-18.5	-13.1
Resource productivity	13.5	1.3	4.2
Air emissions by fine particulates	68.7	7.2	-0.9
Environment-related technologies	50.5	-71.4	-44.9

Relative strengths

- Broadband penetration
- Exports of medium and high technology products
- Air emissions by fine particulates

Relative weaknesses

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

Strong increases since 2017

- Broadband penetration
- Scientific publications among the top 10% most cited
- Enterprises providing ICT training

Strong decreases since 2017

- Environment-related technologies
- Non-R&D innovation expenditures
- New doctorate graduates

Strong increases since 2023

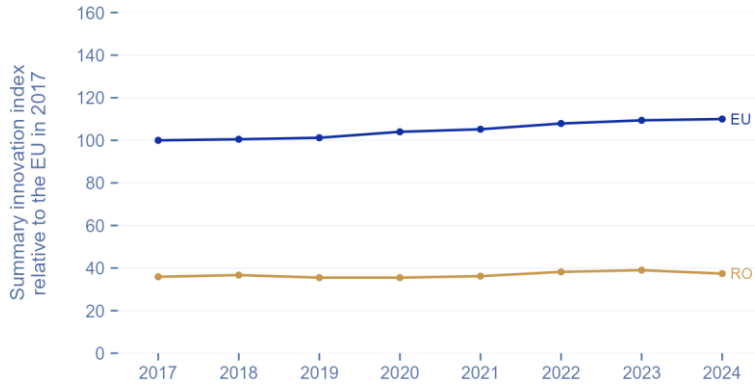
- Enterprises providing ICT training
- Population involved in lifelong learning
- Broadband penetration

Strong decreases since 2023

- Environment-related technologies
- Sales of new-to-market and new-to-firm innovations
- Non-R&D innovation expenditures

Footnote: The first data column shows scores relative to the EU in 2024, with colour codes indicating performance levels. The subsequent columns show performance changes over time, with scores relative to the EU in 2017, coloured in purple for positive change and red for negative change. As reference years differ between the first column (2024) and the last two columns (2017), scores cannot be directly compared or subtracted across these columns.

Emerging Innovators Moderate Innovators Strong Innovators Innovation Leaders



Summary innovation index

The line chart shows the evolution of the innovation performance of Romania over time, relative to the performance of the EU in 2017.

Footnote: All performance scores (SII and dimensions below) are relative to that of the EU in 2017.

Framework conditions

Romania has shown a significant improvement in quality of its research system with a notable 33.8%-point increase compared to 2017 on scientific publications among the top 10% most cited. Additionally, there has been a noteworthy 12.8%-point rise in the proportion of foreign doctorate students, indicating an increasingly diverse and potentially more competitive research environment. Despite this progress, the attractiveness of Romania’s research systems stands at 37.7% of the EU average in 2024.

However, challenges in human resources constrain Romania’s innovative development as the country performs at less than a third of the EU average on this dimension. Romania experienced a 23.2%-point decline in new doctorate graduates since 2017, having negative effect on country’s innovation potential.

When it comes to digitalisation, Romania has made substantial progress, evidenced by a 36.9%-point increase on this dimension since 2017, and performing at 144.4% of EU average in 2024 on broadband penetration (ranking first among EU Member States). Digital skills remain a challenge in Romania, with a very modest share of population with above basic digital skills – the country performing at 21.3% of the 2024 EU average in this regard.

Human resources



Attractive research systems



Digitalisation



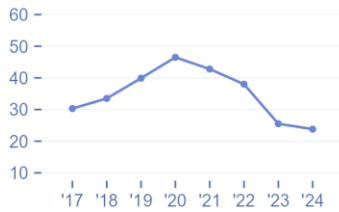
Investments

Finance and support available for R&D has seen a 6.5%-point decrease over the past eight years marked by a continued decline in R&D expenditure in public sector. Limited direct and indirect government support for business R&D decreased by 8.9%-points since 2017, with an increase of 10.0%-points in venture capital financing for R&D covering to an extent the R&D financing gap.

Firm investments declined with Romania performing at 14.1% of the 2024 EU average on this dimension. This decrease is largely influenced by a 33.5%-point drop in non-R&D innovation expenditures compared to 2017, against the modest growth of 5.2%-points in R&D expenditures by firms. Furthermore, there is a 4.5%-point increase in innovation expenditure per person employed, indicating a potentially more efficient use of resources in innovation efforts within firms.

Romanian firms lag behind their EU peers on the use of information technologies reflecting significant room for enhancing digital skills of employees and firms’ slow pace of digitalisation. Romania performs at less than a third of the EU average on this dimension.

Finance and support



Firm investments



Use of information technologies



Innovation activities

Innovation activities in Romania exhibit a nuanced landscape with strengths and weaknesses across different indicators. One notable weakness lies in the linkages within the innovation ecosystem, evidenced by a 3.6%-point decrease on this dimension compared to 2017, the country performing at 6.9% of the EU average in 2024 in this regard. This decline is primarily driven by a notable 11.8%-point drop in job-to-job mobility of HRST since 2017, hindering the flow of knowledge and expertise across sectors, and a 7.0%-point decrease in innovative SMEs collaborating with others, reflecting weak industry-science linkages. Despite these challenges, public-private co-publications have seen a 19.6%-point increase since 2017, suggesting enhanced collaboration between academia, industry, and government in research and knowledge dissemination but this progress only accounts for half of the EU average performance on this indicator.

Romania registered a 6.3%-point increase since 2017 in SMEs introducing product innovations indicating a growing capacity among smaller enterprises to develop and bring new products to market. However, the country’s performance on this indicator is way below the EU average (5.9% of the 2024 EU average).

While Romania experienced a 4.4%-point increase in performance on intellectual assets dimension, it performs only at 35.2% of the 2024 EU average. This growth is primarily driven by a substantial 19.3%-point increase since 2017 in trademark applications and a 5.4%-point rise in design applications.

Innovators



Linkages



Intellectual assets



Impacts

Romania has seen an increase of 2.1%-points in the sales impacts dimension, as the exports of knowledge-intensive services have grown steadily since 2017. Exports of medium and high-tech products are relatively high, standing at 84.7% of the EU performance in 2024 on this indicator. Employment in knowledge-intensive activities, however, remains low and on a downward trend, with Romania performing at 20.2% of the EU average in 2024. Finally, the environmental sustainability dimension has seen a decline of 18.5%-points compared to 2017, driven by a significant 71.4%-point decline in environment-related technologies.

At the same time, resource productivity has seen a slight increase of 1.3%-points, suggesting more efficient use of resources per unit of economic output. Nevertheless, Romania performs at only 13.5% of the 2024 EU average on the resource productivity indicator.

Employment impacts**Sales impacts****Environmental sustainability****Structural differences****Performance and structure of the economy**

Romania's GDP per capita is 76% of the EU average. The country aims to achieve economic stability and meet Eurozone entry criteria by 2024, requiring sustained efforts in fiscal policy and inflation control (Convergence Report 2024). Moreover, Romania demonstrates strengths with above-average metrics in several economic indicators. Foreign-controlled enterprises contribute significantly to value added, and the employment share in manufacturing, as well as the turnover share of SMEs, are on par with EU averages. However, the turnover share of large enterprises stands at 43.5%, slightly lower than the EU average of 49.6%. Similarly, the employment share in services is 37.1%, slightly below the EU average of 39.8%. Achieving economic stability and fulfilling Eurozone criteria will demand continuous focus on fiscal discipline and inflation management. Romania's strengths in foreign investment and robust SME sector underscore its potential for further economic development and integration into the broader European economic framework.

Business and entrepreneurship

Enterprise births in Romania are well above the EU average at 2.1% compared to 0.8%, indicating a vibrant entrepreneurial environment and a higher rate of new business establishments. Additionally, total entrepreneurial activity is also above the EU average, standing at 7.9% versus 6.8%, reflecting a higher level of entrepreneurial engagement in the economy.

Furthermore, FDI net flows into Romania exceed the EU average, with a notable 3.1% compared to 1.9%. This influx of FDI indicates strong investor confidence and interest in Romania's market and economic potential.

These positive indicators underscore Romania's dynamic entrepreneurial landscape and attractiveness to foreign investors, highlighting opportunities for continued economic growth and development in the country.

Innovation profiles

In terms of innovation, Romania presents a mixed performance compared to the EU average, reflecting both strengths and weaknesses across various metrics. However, overall, Romania tends to perform below the EU average in several key areas.

Firstly, Romania has a higher percentage of non-innovators with potential to innovate, standing at 27% compared to the EU average of 17.8%. This suggests a larger pool of companies or individuals who have the capability to innovate, but are not currently doing so. Additionally, non-innovators without disposition to innovate are notably higher in Romania at 62.4% versus 30.6% in the EU, indicating a significant portion of entities that are not inclined to engage in innovation activities.

On the other hand, Romania lags behind the EU average in several indicators related to innovation performance. For instance, Innovation-active non-innovators constitute only 0.5% in Romania compared to 4.2% in the EU. This implies a lower rate of engagement in activities that support innovation among non-innovative entities. Similarly, Innovators that do not develop innovations themselves are at 1.2% in Romania, significantly lower than the EU average of 6.1%, indicating potential gaps in translating innovative ideas into tangible outcomes. Moreover, in-house business process innovators account for 2.9% in Romania, contrasting with 17.6% in the EU, highlighting a lower adoption of innovative practices within business operations.

Governance and policy framework

Romania's corruption perception Index stands at 45.7% vs the EU average of 64%, indicating more pronounced corruption perceptions compared to the broader EU. The Rule of Law index reflects a score of 0.4 for Romania, contrasting with the EU average of 1, suggesting weaker enforcement of legal frameworks and institutions, which contributes to the higher corruption perceptions in the country.

In terms of basic-school entrepreneurial education and training, Romania aligns with the EU average at 2.6%. This signifies a similar emphasis on nurturing entrepreneurial skills and knowledge among students in primary education across Romania and the EU.

Regarding innovation procurement as a share of total public procurement, Romania reports 4.2%, while the EU average is higher at 9.2%. This metric illustrates the percentage of public procurement activities incorporating innovative solutions and technologies. A lower figure suggests potential opportunities for Romania to enhance the adoption of innovation in public sector procurement processes, thereby driving technological advancement and efficiency gains in public services.

These indicators highlight both challenges and opportunities for Romania in improving governance, advancing entrepreneurial education, strengthening the rule of law, and fostering innovation in public procurement. Addressing these areas could lead to enhanced economic competitiveness, transparency, and overall development within the country.

Climate change

In terms of climate change indicators, Romania faces significant disparities compared to the EU averages across multiple key metrics. The circular material use rate in Romania is notably low at 1.4, whereas the EU average stands much higher at 11.5. This disparity underscores the need for Romania to improve its practices in recycling and sustainable material management to align with European standards. Additionally, Romania's greenhouse gas emissions intensity of energy consumption is higher at 88.6% compared to the EU average of 82.8%. This indicates that Romania's energy sector emits more greenhouse gases per unit of energy consumed, highlighting a challenge in achieving energy efficiency targets and transitioning to cleaner energy sources.

Furthermore, Romania's Eco-Innovation Index is significantly lower at 84.6, compared to the EU average of 121.5. This index measures the country's capability for eco-innovation, such as developing and adopting technologies and practices that promote environmental sustainability. A lower index score suggests that Romania has room for improvement in fostering eco-innovation initiatives and investments compared to its EU counterparts.

Demography

The population of Romania is approximately 19 million people. The country experiences an average annual population negative growth (-0.4%), contrasting with the EU average positive growth rate (0.3%). This indicates a declining rate of population growth relative to other European countries.

In terms of population density, Romania's density is 82.1, which is lower than the EU average of 109.0. This reflects a relatively lower concentration of population across Romania compared to the broader European region.

Structural indicators

The table below presents some structural differences between Romania and the EU.

	RO	EU
Performance and structure of the economy		
GDP per capita	76	100
Average annual GDP growth (2021-2023 average)	3.1	1.9
Employment share Manufacturing	19.7	15.8
Employment share High and Medium high-tech	34.9	37.9
Employment share Services	37.1	39.8
Employment share Knowledge-intensive services	19.7	28.6
Turnover share SMEs	14.1	12.6
Turnover share large enterprises	43.5	49.6
Foreign-controlled enterprises – share of value added	20.5	13.3
Business and entrepreneurship		
Enterprise births	2.1	0.8
Total Entrepreneurial Activity	7.9	6.8
FDI net inflows	3.1	1.9
Innovation profiles		
In-house product innovators with market novelties	2.2	11.7
In-house product innovators without market novelties	3.8	13.7
In-house business process innovators	2.9	17.6
Innovators that do not develop innovations themselves	1.2	6.1
Innovation active non-innovators	0.5	4.2
Non-innovators with potential to innovate	27	17.8
Non-innovators without disposition to innovate	62.4	30.6
Governance and policy frameworks		
Corruption Perceptions Index	45.7	64
Basic-school entrepreneurial education and training	2.6	2.6
Rule of law	0.4	1
Innovation procurement as a share of total public procurement	4.5	9.2
Climate change		
Circular material use rate	1.4	11.5
Greenhouse gas emissions intensity of energy consumption	88.6	82.8
Eco-Innovation Index	84.6	121.5
Demography		
Population size (in millions)	19.1	447
Average annual population growth (2021-2023 average)	-0.4	0.3
Population density	82.1	109

References

The country's relative strengths and weaknesses for each indicator, compared to other EU Member States and neighbouring countries, can be found in [Annex B](#).

European Commission (2024), Convergence Report, doi:10.2765/77665

This report provides the Country profile from the 2024 European Innovation Scoreboard for Romania

Studies and reports