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# European Innovation Scoreboard **2023** Country profile **Romania**



Innovation

## European Innovation Scoreboard 2023 – Country profile Romania

European Commission

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# **European Innovation Scoreboard 2023 Country profile Romania**

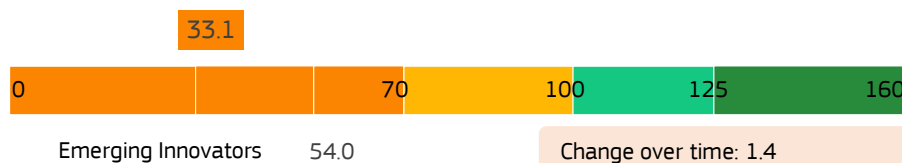
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The European Innovation Scoreboard report and annexes, and the indicators database are available at:

[https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard\\_en](https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard_en)



## Romania

|  | Performance relative to EU in 2023 | Performance change 2016-2023 | Performance change 2022-2023 |
|--|------------------------------------|------------------------------|------------------------------|
| <b>SUMMARY INNOVATION INDEX</b>                | <b>33.1</b>                        | <b>1.4</b>                   | <b>-2.4</b>                  |
| <b>Human resources</b>                         | <b>19.9</b>                        | <b>-23.2</b>                 | <b>1.4</b>                   |
| Doctorate graduates                            | 25.8                               | -57.2                        | 0.0                          |
| Population with tertiary education             | 0.0                                | 0.0                          | 0.0                          |
| Lifelong learning                              | 36.3                               | 5.5                          | 5.5                          |
| <b>Attractive research systems</b>             | <b>41.0</b>                        | <b>22.8</b>                  | <b>4.7</b>                   |
| International scientific co-publications       | 26.6                               | 19.0                         | 4.3                          |
| Most cited publications                        | 60.3                               | 31.1                         | 7.8                          |
| Foreign doctorate students                     | 20.0                               | 7.3                          | -2.0                         |
| <b>Digitalisation</b>                          | <b>91.8</b>                        | <b>29.2</b>                  | <b>16.0</b>                  |
| Broadband penetration                          | 143.3                              | 57.5                         | 31.6                         |
| People with above basic overall digital skills | 21.0                               | 0.0                          | 0.0                          |
| <b>Finance and support</b>                     | <b>18.0</b>                        | <b>-0.5</b>                  | <b>-12.4</b>                 |
| R&D expenditures in the public sector          | 9.4                                | -6.5                         | -1.6                         |
| Venture capital expenditures                   | 30.0                               | 6.6                          | -40.3                        |
| Government support for business R&D            | 12.4                               | 0.1                          | 2.2                          |
| <b>Firm investments</b>                        | <b>13.7</b>                        | <b>-6.0</b>                  | <b>-2.9</b>                  |
| R&D expenditure in the business sector         | 16.7                               | 10.0                         | 1.5                          |
| Non-R&D Innovation expenditures                | 13.8                               | -34.6                        | -14.1                        |
| Innovation expenditures per employee           | 10.8                               | 4.3                          | 3.0                          |
| <b>Use of information technologies</b>         | <b>30.8</b>                        | <b>14.1</b>                  | <b>12.6</b>                  |
| Enterprises providing ICT training             | 21.8                               | 21.7                         | 18.5                         |
| Employed ICT specialists                       | 40.0                               | 6.9                          | 6.9                          |
| <b>Innovators</b>                              | <b>4.6</b>                         | <b>6.5</b>                   | <b>-7.8</b>                  |
| Product innovators (SMEs)                      | 9.9                                | 12.5                         | -15.1                        |
| Business process innovators (SMEs)             | 0.0                                | 0.0                          | 0.0                          |
| <b>Linkages</b>                                | <b>7.7</b>                         | <b>-1.4</b>                  | <b>-5.4</b>                  |
| Innovative SMEs collaborating with others      | 0.0                                | -4.0                         | -15.3                        |
| Public-private co-publications                 | 40.4                               | 26.2                         | 2.4                          |
| Job-to-job mobility of HRST                    | 0.0                                | -11.8                        | 0.0                          |
| <b>Intellectual assets</b>                     | <b>31.4</b>                        | <b>5.0</b>                   | <b>1.2</b>                   |
| PCT patent applications                        | 13.0                               | -5.4                         | -2.7                         |
| Trademark applications                         | 62.5                               | 20.4                         | 5.8                          |
| Design applications                            | 24.2                               | 6.1                          | 2.6                          |
| <b>Employment impacts</b>                      | <b>10.9</b>                        | <b>0.0</b>                   | <b>0.0</b>                   |
| Employment in knowledge-intensive activities   | 24.1                               | 0.0                          | 0.0                          |
| Employment in innovative enterprises           | 0.0                                | 0.0                          | 0.0                          |
| <b>Sales impacts</b>                           | <b>70.5</b>                        | <b>5.6</b>                   | <b>-8.3</b>                  |
| Medium and high-tech goods exports             | 88.9                               | 8.3                          | 1.7                          |
| Knowledge-intensive services exports           | 78.5                               | 15.6                         | -2.5                         |
| Sales of innovative products                   | 36.4                               | -11.1                        | -31.1                        |
| <b>Environmental sustainability</b>            | <b>42.7</b>                        | <b>-16.3</b>                 | <b>-13.7</b>                 |
| Resource productivity                          | 12.3                               | 3.1                          | 5.4                          |
| Air emissions by fine particulate matter       | 54.0                               | 11.6                         | -2.9                         |
| Environment-related technologies               | 56.5                               | -62.0                        | -39.0                        |

The second column shows performance relative to that of the EU in 2023. Colours next to the column show matching colour codes: dark green: above 125% of the performance of the EU in 2023; light green: between 100% and 125%; light orange: between 70% and 100%; dark orange: below 70%. The next columns show performance change over time between 2016 and 2023 and between 2022 and 2023, with scores relative to those of the EU in 2016. Positive (negative) performance changes are shown in green (red).

**ROMANIA** is an **Emerging Innovator** with performance at 33.1% of the EU average. Performance is below the average of the Emerging Innovators. Performance is increasing at a rate lower than that of the EU (8.5%-points). The country's performance gap to the EU is becoming larger.

### Relative strengths

Broadband penetration  
Medium and high-tech goods exports  
Knowledge-intensive services exports  
Trademark applications  
Most cited publications

### Relative weaknesses

Population with tertiary education  
Business process innovators  
Innovative SMEs collaborating with others  
Job-to-job mobility of HRST  
Employment in innovative enterprises

### Strong increases since 2016

Broadband penetration  
Most cited publications  
Public-private co-publications

### Strong decreases since 2016

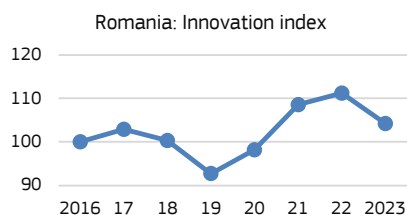
Environment-related technologies  
Doctorate graduates  
Non-R&D Innovation expenditures

### Strong increases since 2022

Broadband penetration  
Enterprises providing ICT training  
Most cited publications

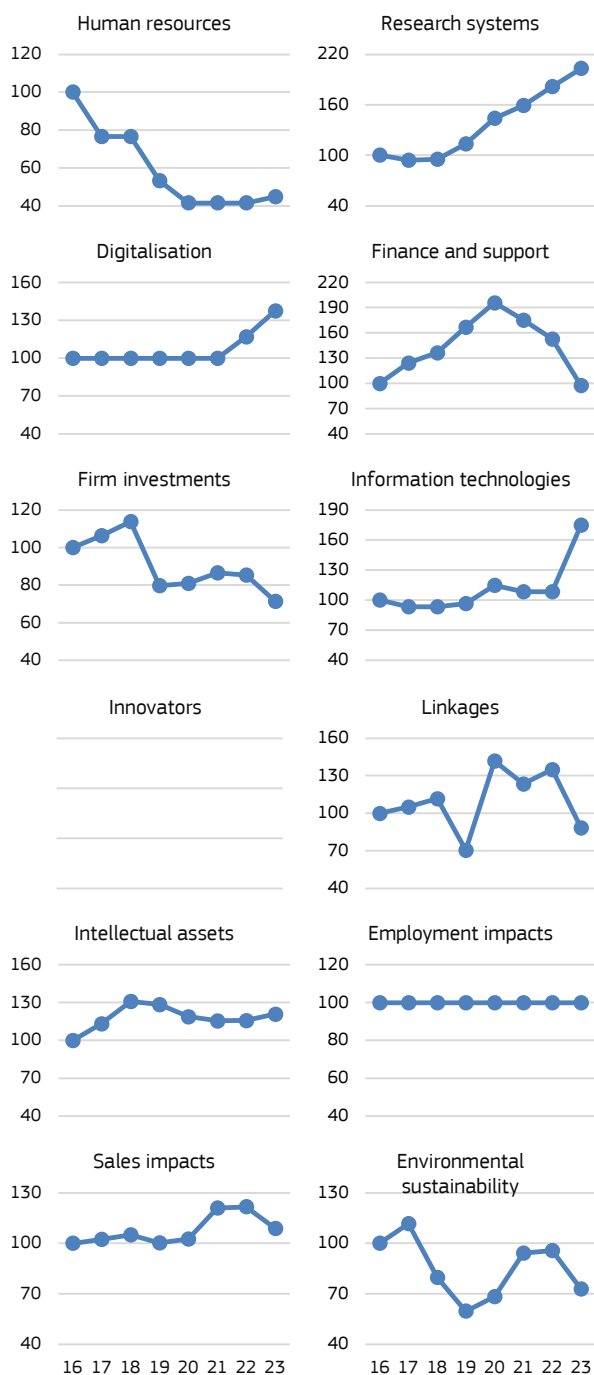
### Strong decreases since 2022

Venture capital expenditures  
Environment-related technologies  
Sales of innovative products



The graph on the left shows the evolution of **innovation performance over time** against the performance of the country in 2016. Innovation performance, after an initial increase, dropped in 2019, and then increased strongly between 2020 and 2022, after which performance declined, leading to a 4% performance increase in 2023.

The graphs below show the evolution of innovation performance in the different **innovation dimensions** against the performance of the country in 2016. Performance increased most strongly for Research systems and Information technologies. Performance declined for Human resources, Finance and support, Firm investments, Linkages and Environmental sustainability.





Performance is measured relative to that of the country in 2016 (=100). There are no results for Innovators.

**Structural differences** with the EU are shown below:

- Romania has lower per capita income, but a faster growing economy. Manufacturing takes up a larger share of the economy, with SMEs accounting for a larger share of turnover.
- Enterprise births, Entrepreneurial Activity, and FDI net inflows add positively to the innovation climate, Top R&D spenders, and Buyer sophistication add negatively.
- Romania has higher shares of Non-innovators with potential to innovate and Non-innovators without disposition to innovate.
- Entrepreneurial training and government procurement are below the EU average as drivers of research and innovation.
- Romania shows a weak performance on Climate change related indicators with below average share of material resources coming from recycled waste materials, a below average reduction in greenhouse gas emissions, and a below average score on environmental innovation.

|   | RO     | EU     |
|---|--------|--------|
| <b>Performance and structure of the economy</b>           |        |        |
| GDP per capita (PPS)                                      | 24,400 | 32,600 |
| Average annual GDP growth (%)                             | 5.9    | 4.4    |
| Employment share Manufacturing (NACE C) (%)               | 18.9   | 16.4   |
| of which High and Medium high-tech (%)                    | 34.5   | 38.0   |
| Employment share Services (NACE G-N) (%)                  | 34.1   | 41.1   |
| of which Knowledge-intensive services (%)                 | 26.5   | 35.8   |
| Turnover share SMEs (%)                                   | 40.1   | 34.1   |
| Turnover share large enterprises (%)                      | 43.5   | 49.6   |
| Foreign-controlled enterprises – share of value added (%) | 15.9   | 11.8   |
| <b>Business and entrepreneurship</b>                      |        |        |
| Enterprise births (10+ employees) (%)                     | 2.2    | 1.0    |
| Total Entrepreneurial Activity (TEA) (%)                  | 9.7    | 6.8    |
| FDI net inflows (% GDP)                                   | 2.8    | 2.1    |
| Top R&D spending enterprises per 10 mln. population       | 0.0    | 20.3   |
| Buyer sophistication (1 to 7 best)                        | 2.8    | 3.7    |
| <b>Innovation profiles</b>                                |        |        |
| In-house product innovators with market novelties         | 2.2    | 12.2   |
| In-house product innovators without market novelties      | 3.8    | 12.8   |
| In-house business process innovators                      | 2.9    | 16.5   |
| Innovators that do not develop innovations themselves     | 1.2    | 6.5    |
| Innovation active non-innovators                          | 0.5    | 4.1    |
| Non-innovators with potential to innovate                 | 27.0   | 17.2   |
| Non-innovators without disposition to innovate            | 62.4   | 30.7   |
| <b>Governance and policy framework</b>                    |        |        |
| Corruption Perceptions Index (0 to 100 best)              | 45.0   | 64.0   |
| Basic school entrepreneurial education and training       | 2.5    | 3.3    |
| Govt. procurement of advanced tech. products              | 2.5    | 3.5    |
| Rule of law (-2.5 to 2.5 best)                            | 0.4    | 1.0    |
| <b>Climate change indicators</b>                          |        |        |
| Circular material use rate                                | 1.4    | 11.8   |
| Greenhouse gas emissions intensity of energy consumption  | 88.6   | 82.8   |
| Eco-Innovation Index                                      | 69.6   | 100.0  |
| <b>Demography</b>   |        |        |
| Population size   | 19.2   | 447.1  |
| Average annual population growth (%)                      | -0.7   | -0.1   |
| Population density  | 83.7   | 108.8  |



This report provides the Country profile from the 2023 European Innovation Scoreboard for Romania.

*Studies and reports*