

Romania	Performance relative to EU in 2022	Performance change 2015-2022	Performance change 2021-2022
<b>SUMMARY INNOVATION INDEX</b>	<b>32.6</b>	<b>0.2</b>	<b>-2.9</b>
<b>Human resources</b>	<b>19.2</b>	<b>-24.2</b>	<b>0.0</b>
Doctorate graduates	25.8	-57.2	0.0
Population with tertiary education	0.0	0.0	0.0
Lifelong learning	34.4	0.0	0.0
<b>Attractive research systems</b>	<b>35.5</b>	<b>19.0</b>	<b>4.2</b>
International scientific co-publications	23.8	14.6	4.5
Most cited publications	51.4	26.1	6.9
Foreign doctorate students	20.0	7.3	-2.0
<b>Digitalisation</b>	<b>86.7</b>	<b>12.7</b>	<b>12.7</b>
Broadband penetration	135.9	24.2	24.2
People with above basic overall digital skills	22.7	0.0	0.0
<b>Finance and support</b>	<b>29.5</b>	<b>3.7</b>	<b>-5.1</b>
R&D expenditures in the public sector	10.6	-12.9	-1.6
Venture capital expenditures	63.2	47.7	-13.9
Government support for business R&D	7.7	-19.2	-0.7
<b>Firm investments</b>	<b>12.2</b>	<b>-6.5</b>	<b>-2.0</b>
R&D expenditure in the business sector	15.5	12.4	0.0
Non-R&D Innovation expenditures	13.8	-34.6	-14.1
Innovation expenditures per employee	8.2	3.6	8.2
<b>Use of information technologies</b>	<b>13.0</b>	<b>3.3</b>	<b>0.0</b>
Enterprises providing ICT training	12.5	6.3	0.0
Employed ICT specialists	13.6	0.0	0.0
<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>7.4</b>	<b>-1.4</b>	<b>-4.5</b>
Innovative SMEs collaborating with others	0.0	-4.0	-15.3
Public-private co-publications	38.4	27.5	6.9
Job-to-job mobility of HRST	0.0	-11.8	0.0
<b>Intellectual assets</b>	<b>32.7</b>	<b>5.6</b>	<b>0.2</b>
PCT patent applications	22.8	-1.8	-1.2
Trademark applications	57.5	19.2	5.5
Design applications	20.1	4.0	-2.3
<b>Employment impacts</b>	<b>8.0</b>	<b>0.0</b>	<b>0.0</b>
Employment in knowledge-intensive activities	18.2	0.0	0.0
Employment in innovative enterprises	0.0	0.0	0.0
<b>Sales impacts</b>	<b>69.3</b>	<b>7.7</b>	<b>-8.4</b>
Medium and high-tech goods exports	99.2	12.2	-9.2
Knowledge-intensive services exports	65.9	18.9	12.2
Sales of innovative products	36.4	-11.1	-31.1
<b>Environmental sustainability</b>	<b>45.6</b>	<b>-14.4</b>	<b>-14.8</b>
Resource productivity	7.7	-3.7	-3.1
Air emissions by fine particulate matter	63.3	19.4	-1.2
Environment-related technologies	56.5	-62.0	-39.0

The second column shows performance relative to that of the EU in 2022. Colours next to the column show matching colour codes: dark green: above 125% of the performance of the EU in 2022; light green: between 100% and 125%; yellow: between 70% and 100%; orange: below 70%. Normalised performance uses the data after a possible imputation of missing data and transformation of the data. The next columns show performance change over time between 2015 and 2022 and between 2021 and 2022, with scores relative to those of the EU in 2015. Positive performance changes are shown in green, negative performance changes in red.

**ROMANIA** is an **Emerging Innovator** with performance at 32.6% of the EU average. Performance is below the average of the Emerging Innovators (50.0%). Performance is just increasing (0.2%-points) at a rate lower than that of the EU (9.9%-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
- Air emissions by fine particulate matter
- Venture capital expenditures

#### 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 2015

- Venture capital expenditures
- Public-private co-publications
- Most cited publications

#### Strong decreases since 2015

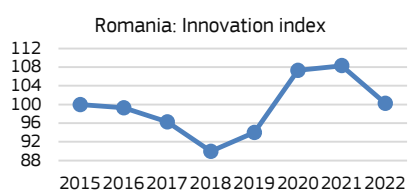
- Environment-related technologies
- Doctorate graduates
- Non-R&D Innovation expenditures

#### Strong increases since 2021

- Broadband penetration
- Knowledge-intensive services exports
- Innovation expenditures per employee

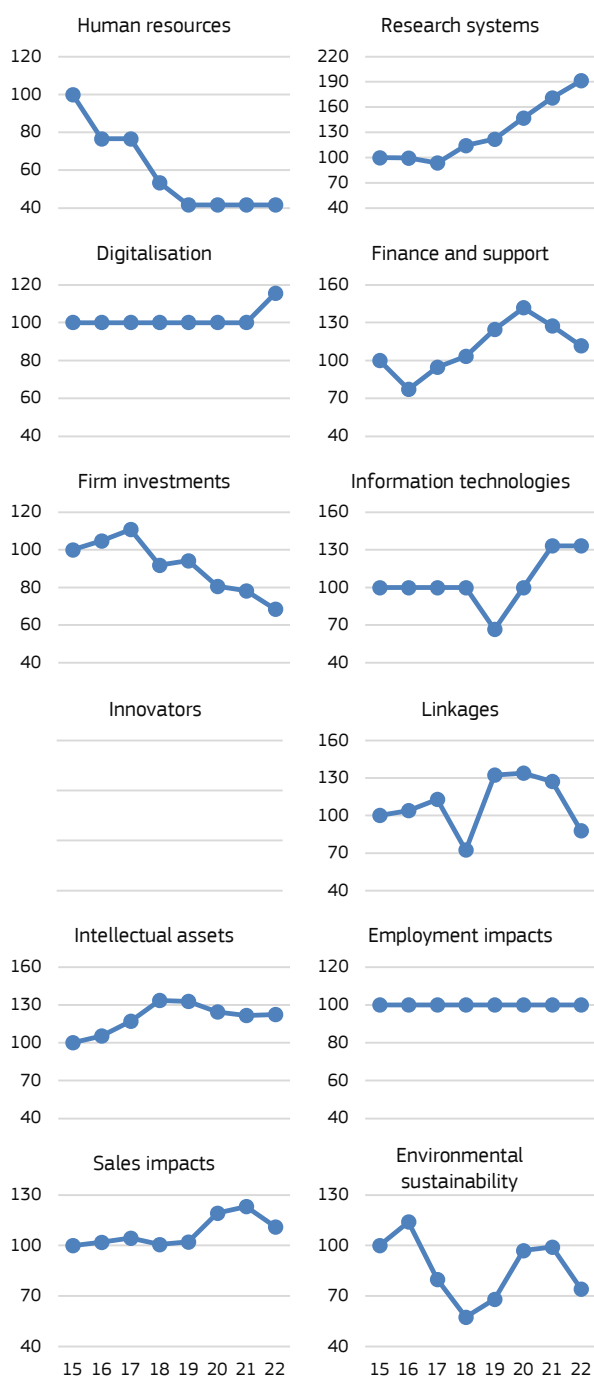
#### Strong decreases since 2021

- Environment-related technologies
- Sales of innovative products
- Innovative SMEs collaborating with others



The graph on the left shows the evolution of **innovation performance over time** against the performance of the country in 2015. Innovation performance declined between 2015 and 2018 and increased strongly between 2018 and 2021. Performance declined again in 2022 and there is almost no improvement between 2015 and 2022.

The graphs below show the evolution of innovation performance in the different **innovation dimensions** against the performance of the country in 2015. Performance increased strongest in Research systems, Information technologies and Intellectual assets. Performance did not change for Employment impacts and declined for Human resources, Firm investments, Linkages and Environmental sustainability.



Performance is measured relative to that of the country in 2015 (=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, the absence of top R&D spenders add negatively.
- Romania has a lower share of In-house product innovators with market novelties and a higher share of non-innovators with potential to innovate.
- Ease of starting a business, entrepreneurial training and government procurement are below the EU average.
- Romania shows a below average performance on the Climate change related indicators circular material use rate and environmental innovation.

	RO	EU
<b>Performance and structure of the economy</b>		
GDP per capita (PPS)	22,200	31,200
Average annual GDP growth (%)	1.4	-0.4
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 (%)	41.0	34.8
Turnover share large enterprises (%)	43.4	48.2
Foreign-controlled enterprises – share of value added (%)	15.1	11.7
<b>Business and entrepreneurship</b>		
Enterprise births (10+ employees) (%)	2.2	1.0
Total Entrepreneurial Activity (TEA) (%)	9.7	7.3
FDI net inflows (% GDP)	2.5	1.0
Top R&D spending enterprises per 10 mln. population	0.0	18.3
Buyer sophistication (1 to 7 best)	2.8	3.7
<b>Innovation profiles</b>		
In-house product innovators with market novelties	2.4	10.7
In-house product innovators without market novelties	5.0	12.3
In-house business process innovators	3.5	11.0
Innovators that do not develop innovations themselves	3.4	11.6
Innovation active non-innovators	0.2	3.3
Non-innovators with potential to innovate	29.4	19.9
Non-innovators without disposition to innovate	56.0	31.3
<b>Governance and policy framework</b>		
Ease of starting a business (0 to 100 best)	73.0	76.5
Basic school entrepreneurial education and training	2.5	3.5
Govt. procurement of advanced tech. products	2.5	3.5
Rule of law (-2.5 to 2.5 best)	0.4	1.1
<b>Climate change indicators</b>		
Circular material use rate	2.2	12.2
Greenhouse gas emissions intensity of energy consumption	88.7	82.8
Eco-Innovation Index	69.6	100.0
<b>Demography</b>		
Population size	19.3	447.0
Average annual population growth (%)	-0.5	0.1
Population density	83.7	108.8