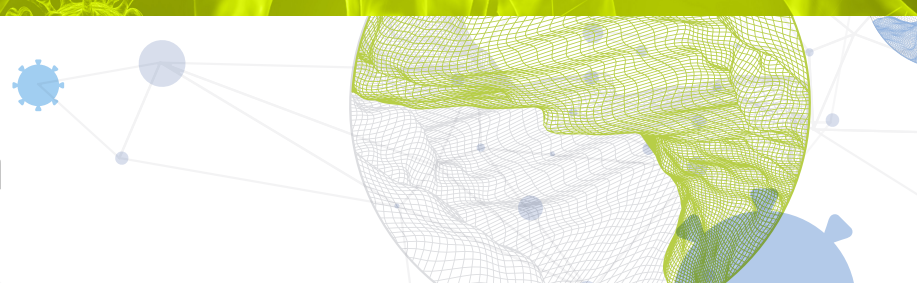




Global Innovation Index 2021



ROMANIA

48th

Romania ranks 48th among the 132 economies featured in the GII 2021.

The Global Innovation Index (GII) ranks world economies according to their innovation capabilities. Consisting of roughly 80 indicators, grouped into innovation inputs and outputs, the GII aims to capture the multi-dimensional facets of innovation.

The following table shows the rankings of Romania over the past three years, noting that data availability and changes to the GII model framework influence year-on-year comparisons of the GII rankings. The statistical confidence interval for the ranking of Romania in the GII 2021 is between ranks 48 and 52.

Rankings for Romania (2019–2021)

	GII	Innovation inputs	Innovation outputs
2021	48	54	50
2020	46	51	46
2019	50	54	53

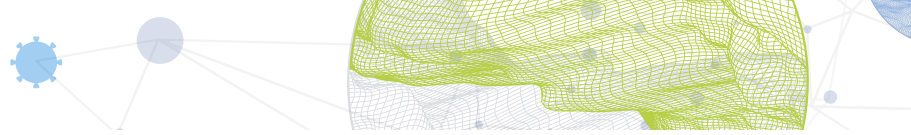
- Romania performs better in innovation outputs than innovation inputs in 2021.
- This year Romania ranks 54th in innovation inputs, lower than last year but the same as 2019.
- As for innovation outputs, Romania ranks 50th. This position is lower than last year but higher than 2019.

40th

Romania ranks 40th among the 51 high-income group economies.

31st

Romania ranks 31st among the 39 economies in Europe.

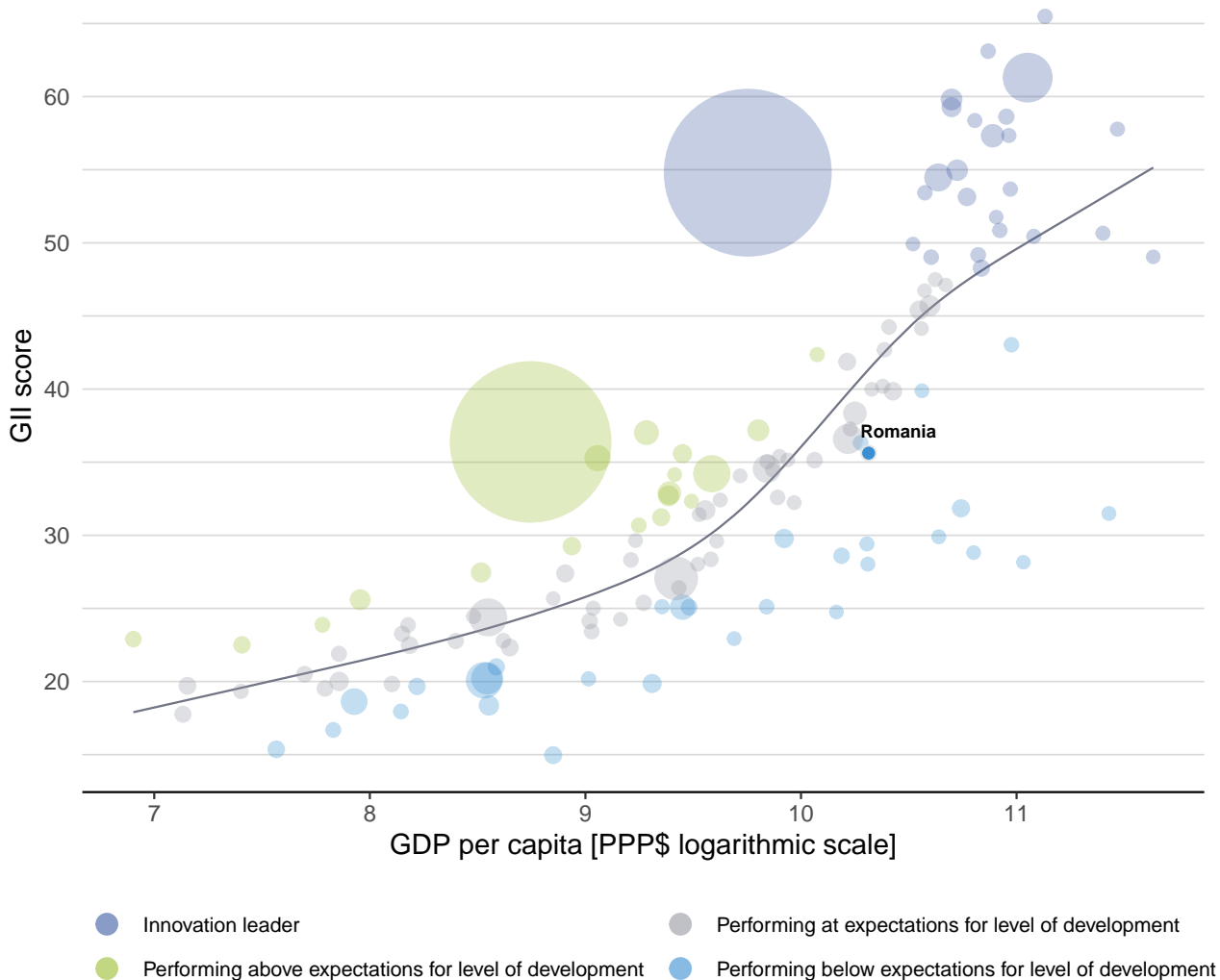


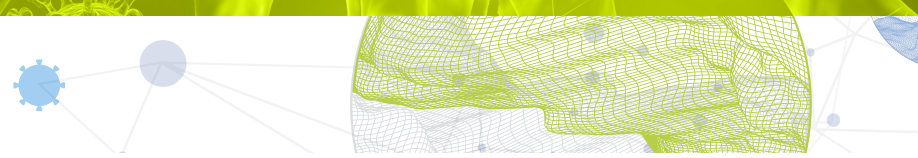
EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.

Relative to GDP, Romania's performance is below expectations for its level of development.

The positive relationship between innovation and development



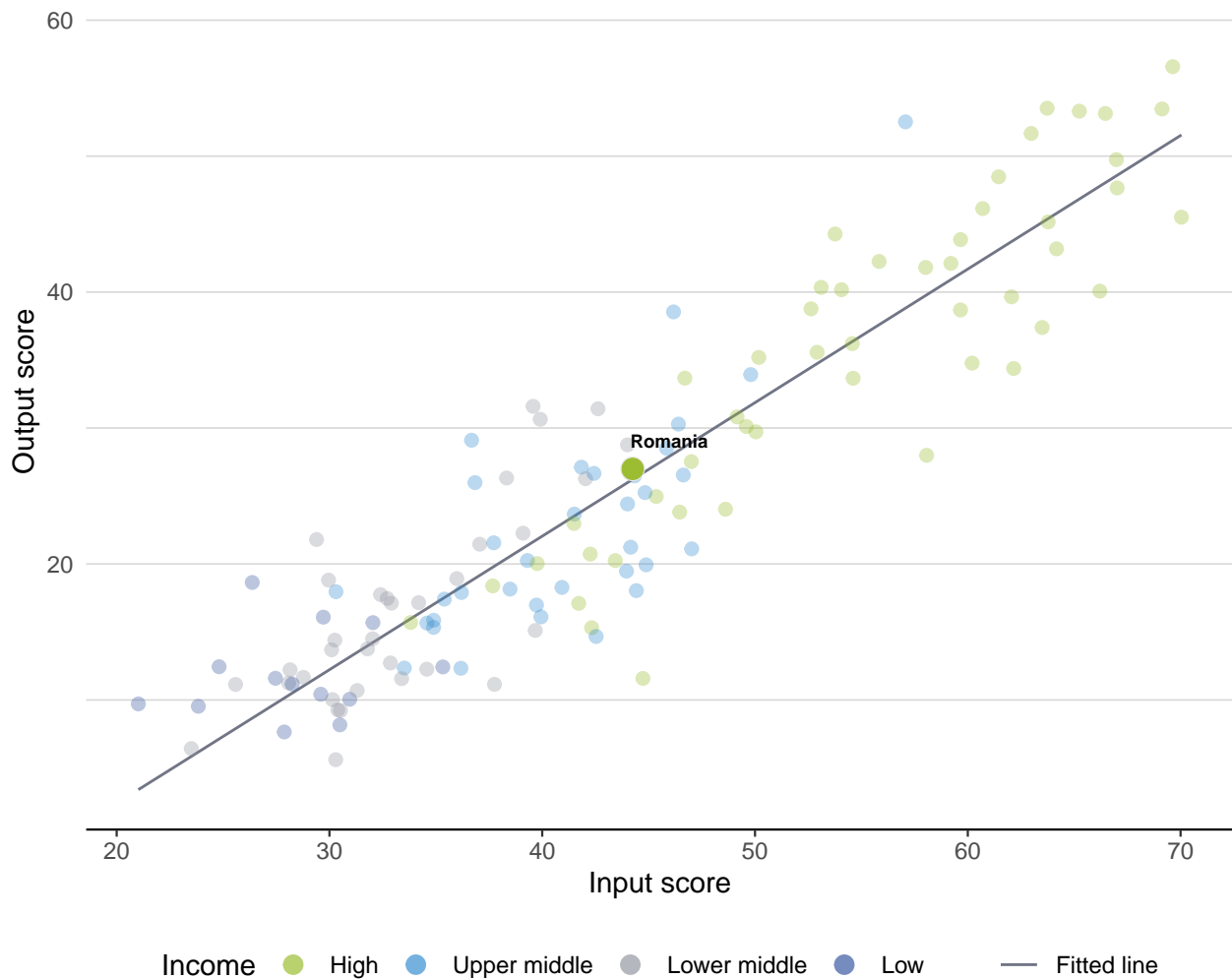


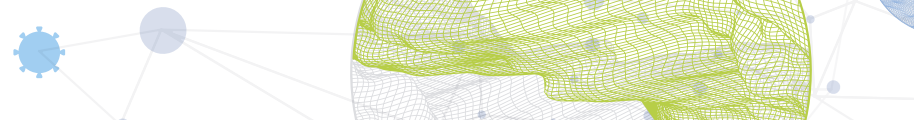
EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

Romania produces more innovation outputs relative to its level of innovation investments.

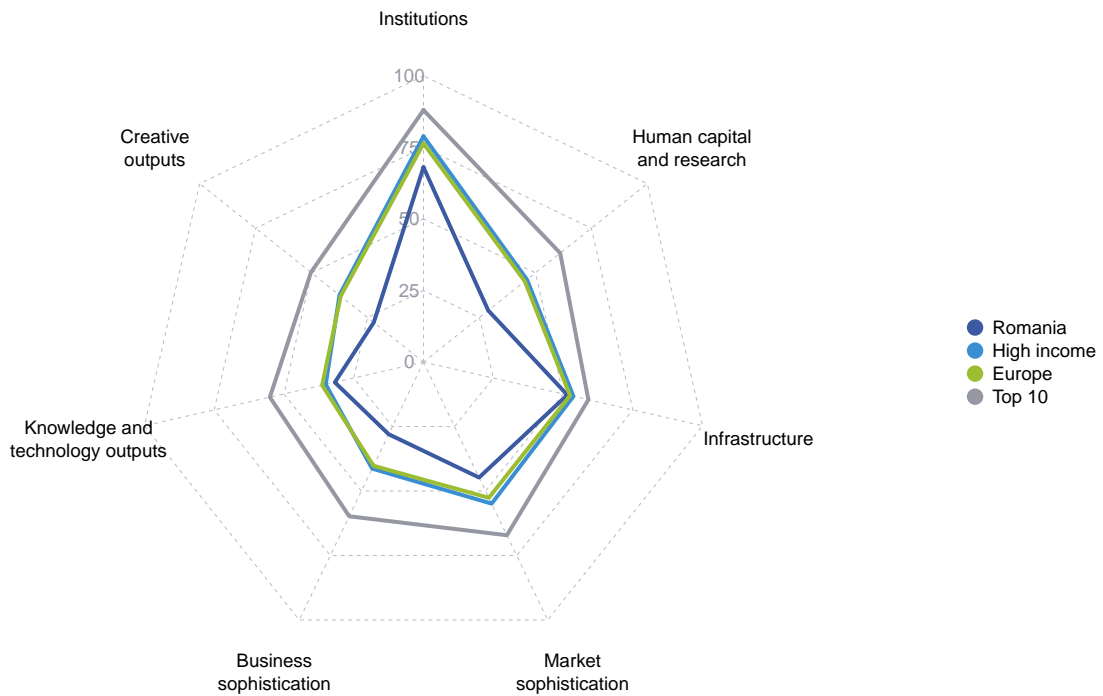
Innovation input to output performance





BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

The seven GII pillar scores for Romania

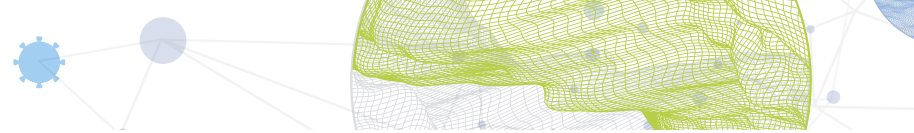


High-income group economies

Romania performs below the high-income group average in all GII pillars.

Europe

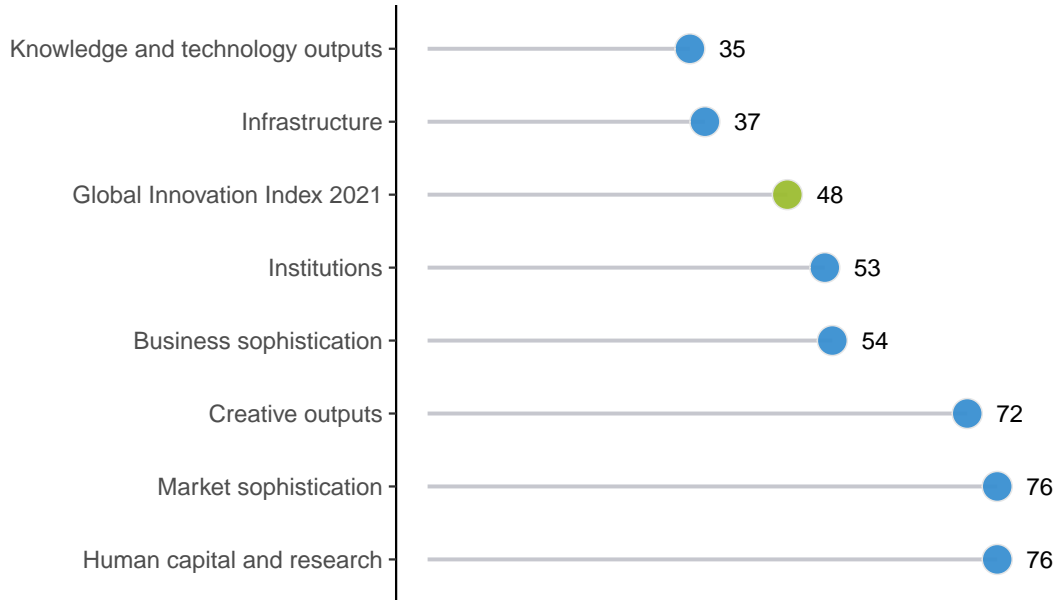
Romania performs below the regional average in all GII pillars.



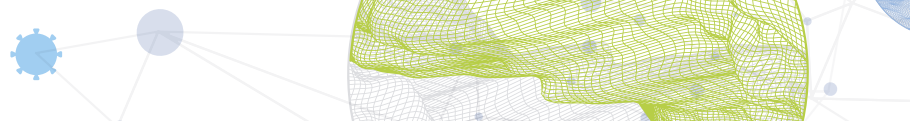
OVERVIEW OF RANKINGS IN THE SEVEN GII 2021 AREAS

Romania performs best in Knowledge and technology outputs and its weakest performance is in Human capital and research and Market sophistication.

The seven GII pillar ranks for Romania



Note: The highest possible ranking in each pillar is one.










INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Romania in the GII 2021.

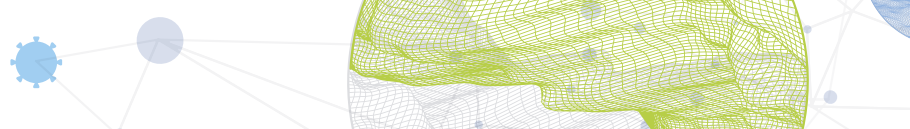
Strengths and weaknesses for Romania

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal	1	2.1.1	Expenditure on education, % GDP	95
3.3	Ecological sustainability	9	2.3.3	Global corporate R&D investors, top 3, mn US\$	41
3.3.1	GDP/unit of energy use	23	4.1.2	Domestic credit to private sector, % GDP	106
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	10	4.1.3	Microfinance gross loans, % GDP	73
4.3	Trade, diversification, and market scale	23	4.2	Investment	123
5.1.4	GERD financed by business, %	15	4.2.2	Market capitalization, % GDP	68
5.3.3	ICT services imports, % total trade	14	4.2.3	Venture capital investors, deals/bn PPP\$ GDP	74
6.2	Knowledge impact	12	4.2.4	Venture capital recipients, deals/bn PPP\$ GDP	76
6.2.2	New businesses/th pop. 15–64	21	5.1.2	Firms offering formal training, %	77
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	16	5.2	Innovation linkages	103
6.2.5	High-tech manufacturing, %	21	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	93
6.3	Knowledge diffusion	23	6.1.3	Utility models by origin/bn PPP\$ GDP	59
6.3.4	ICT services exports, % total trade	10			
7.2.1	Cultural and creative services exports, % total trade	12			

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	GII 2020 rank
50	54	High	EUR	19.2	584.9	30,141	46

	Score/ Value Rank		Score/ Value Rank
 Institutions	68.1 53	 Business sophistication	28.0 54
1.1 Political environment	52.8 86	5.1 Knowledge workers	33.4 60
1.1.1 Political and operational stability*	69.6 60	5.1.1 Knowledge-intensive employment, %	24.0 65
1.1.2 Government effectiveness*	44.4 89	5.1.2 Firms offering formal training, %	20.5 77
1.2 Regulatory environment	78.0 33	5.1.3 GERD performed by business, % GDP	0.3 48
1.2.1 Regulatory quality*	55.6 52	5.1.4 GERD financed by business, %	57.1 15
1.2.2 Rule of law*	56.3 49	5.1.5 Females employed w/advanced degrees, %	11.4 64
1.2.3 Cost of redundancy dismissal	8.0 1	5.2 Innovation linkages	16.1 103
1.3 Business environment	73.4 57	5.2.1 University-industry R&D collaboration†	38.2 88
1.3.1 Ease of starting a business*	87.7 73	5.2.2 State of cluster development and depth†	42.4 90
1.3.2 Ease of resolving insolvency*	59.1 51	5.2.3 GERD financed by abroad, % GDP	0.0 55
		5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0 93
		5.2.5 Patent families/bn PPP\$ GDP	0.0 66
 Human capital and research	28.9 76	5.3 Knowledge absorption	34.5 44
2.1 Education	41.5 90	5.3.1 Intellectual property payments, % total trade	0.9 40
2.1.1 Expenditure on education, % GDP	3.1 95	5.3.2 High-tech imports, % total trade	10.0 34
2.1.2 Government funding/pupil, secondary, % GDP/cap	16.4 68	5.3.3 ICT services imports, % total trade	2.6 14
2.1.3 School life expectancy, years	14.3 67	5.3.4 FDI net inflows, % GDP	2.9 52
2.1.4 PISA scales in reading, maths and science	427.8 49	5.3.5 Research talent, % in businesses	26.5 48
2.1.5 Pupil-teacher ratio, secondary	11.8 48	 Knowledge and technology outputs	31.8 35
2.2 Tertiary education	38.5 46	6.1 Knowledge creation	12.0 71
2.2.1 Tertiary enrolment, % gross	51.0 62	6.1.1 Patents by origin/bn PPP\$ GDP	1.5 48
2.2.2 Graduates in science and engineering, %	28.1 23	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1 71
2.2.3 Tertiary inbound mobility, %	5.4 44	6.1.3 Utility models by origin/bn PPP\$ GDP	0.1 59
2.3 Research and development (R&D)	6.8 70	6.1.4 Scientific and technical articles/bn PPP\$ GDP	14.2 62
2.3.1 Researchers, FTE/mn pop.	896.0 52	6.1.5 Citable documents H-index	18.8 44
2.3.2 Gross expenditure on R&D, % GDP	0.5 68	6.2 Knowledge impact	45.3 12
2.3.3 Global corporate R&D investors, top 3, mn US\$	0.0 41	6.2.1 Labor productivity growth, %	2.1 26
2.3.4 QS university ranking, top 3*	7.1 69	6.2.2 New businesses/th pop. 15–64	7.3 21
		6.2.3 Software spending, % GDP	0.2 58
 Infrastructure	51.5 37	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	16.3 16
3.1 Information and communication technologies (ICTs)	73.9 52	6.2.5 High-tech manufacturing, %	44.1 21
3.1.1 ICT access*	73.4 51	6.3 Knowledge diffusion	38.0 23
3.1.2 ICT use*	68.9 50	6.3.1 Intellectual property receipts, % total trade	0.1 60
3.1.3 Government's online service*	72.4 61	6.3.2 Production and export complexity	69.0 25
3.1.4 E-participation*	81.0 46	6.3.3 High-tech exports, % total trade	6.6 27
3.2 General infrastructure	29.0 65	6.3.4 ICT services exports, % total trade	5.9 10
3.2.1 Electricity output, GWh/mn pop.	3,309.2 61	 Creative outputs	22.2 72
3.2.2 Logistics performance*	49.8 47	7.1 Intangible assets	26.1 83
3.2.3 Gross capital formation, % GDP	22.6 62	7.1.1 Trademarks by origin/bn PPP\$ GDP	38.2 61
3.3 Ecological sustainability	51.7 9	7.1.2 Global brand value, top 5,000, % GDP	20.7 48
3.3.1 GDP/unit of energy use	14.9 23	7.1.3 Industrial designs by origin/bn PPP\$ GDP	1.6 55
3.3.2 Environmental performance*	64.7 32	7.1.4 ICTs and organizational model creation†	50.0 82
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	7.9 10	7.2 Creative goods and services	16.1 63
		7.2.1 Cultural and creative services exports, % total trade	1.8 12
 Market sophistication	44.7 76	7.2.2 National feature films/mn pop. 15–69	2.0 69
4.1 Credit	35.3 87	7.2.3 Entertainment and media market/th pop. 15–69	7.1 44
4.1.1 Ease of getting credit*	80.0 23	7.2.4 Printing and other media, % manufacturing	0.9 58
4.1.2 Domestic credit to private sector, % GDP	24.7 106	7.2.5 Creative goods exports, % total trade	0.8 54
4.1.3 Microfinance gross loans, % GDP	0.0 73	7.3 Online creativity	20.6 56
4.2 Investment	17.4 123	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	4.5 56
4.2.1 Ease of protecting minority investors*	62.0 60	7.3.2 Country-code TLDs/th pop. 15–69	13.5 36
4.2.2 Market capitalization, % GDP	10.4 68	7.3.3 Wikipedia edits/mn pop. 15–69	54.3 59
4.2.3 Venture capital investors, deals/bn PPP\$ GDP	0.0 74	7.3.4 Mobile app creation/bn PPP\$ GDP	9.6 47
4.2.4 Venture capital recipients, deals/bn PPP\$ GDP	0.0 76		
4.3 Trade, diversification, and market scale	81.5 23		
4.3.1 Applied tariff rate, weighted avg., %	1.8 25		
4.3.2 Domestic industry diversification	95.7 24		
4.3.3 Domestic market scale, bn PPP\$	584.8 35		

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see Appendix IV for details, including the year of the data, at <http://globalinnovationindex.org>. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.



DATA AVAILABILITY

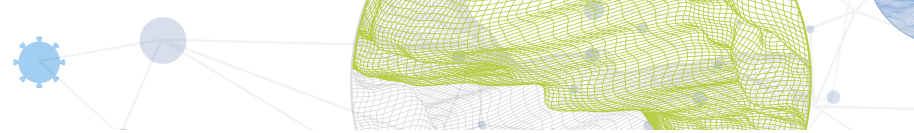
The following tables list data that are either missing or outdated for Romania.

Missing data for Romania

Code	Indicator name	Economy year	Model year	Source
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Outdated data for Romania

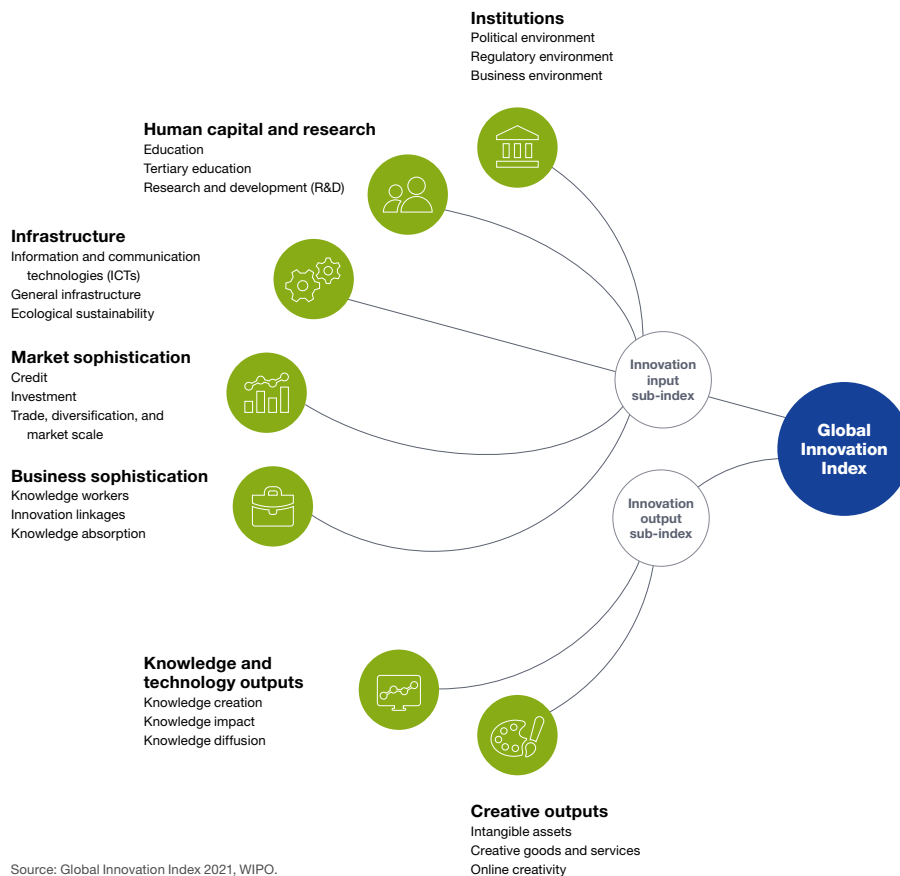
Code	Indicator name	Economy year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2018	2019	UNESCO Institute for Statistics



ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.

Recognizing that innovation is a key driver of economic development, the GII aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a “tool for action” for economies that incorporate the GII into their innovation agendas.



The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs.

The GII has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each consisting of three sub-pillars.