



ROMANIA

46th

Romania ranks 46th among the 131 economies featured in the GII 2020.

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 2020 is between ranks 45 and 52.

Rankings of Romania (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	46	51	46
2019	50	54	53
2018	49	49	48

- Romania performs better in innovation outputs than innovation inputs in 2020.
- This year Romania ranks 51st in innovation inputs, higher than last year and lower compared to 2018.
- As for innovation outputs, Romania ranks 46th. This position is higher than last year and higher compared to 2018.

5th

Romania ranks 5th among the 37 upper middle-income group economies.

31st

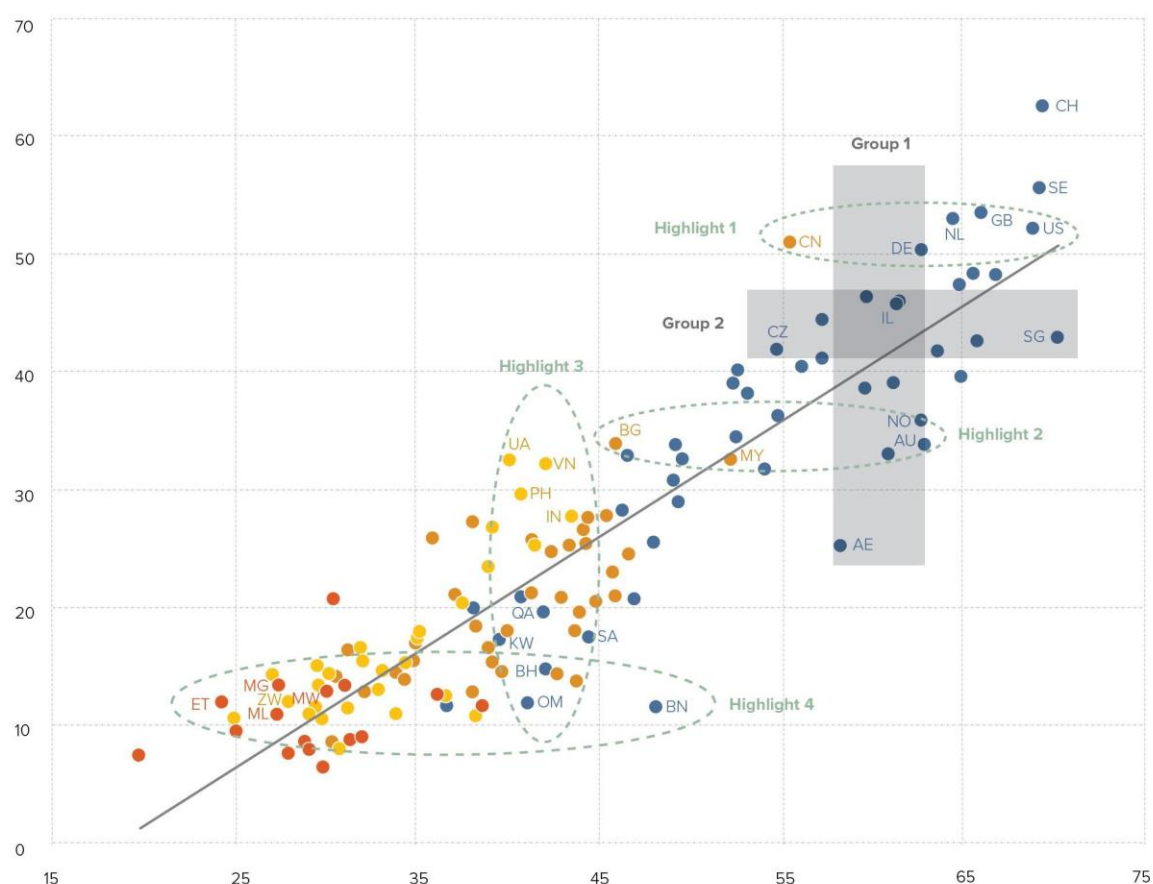
Romania ranks 31st among the 39 economies in Europe.

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, 2020



▲ Output score
► Input score

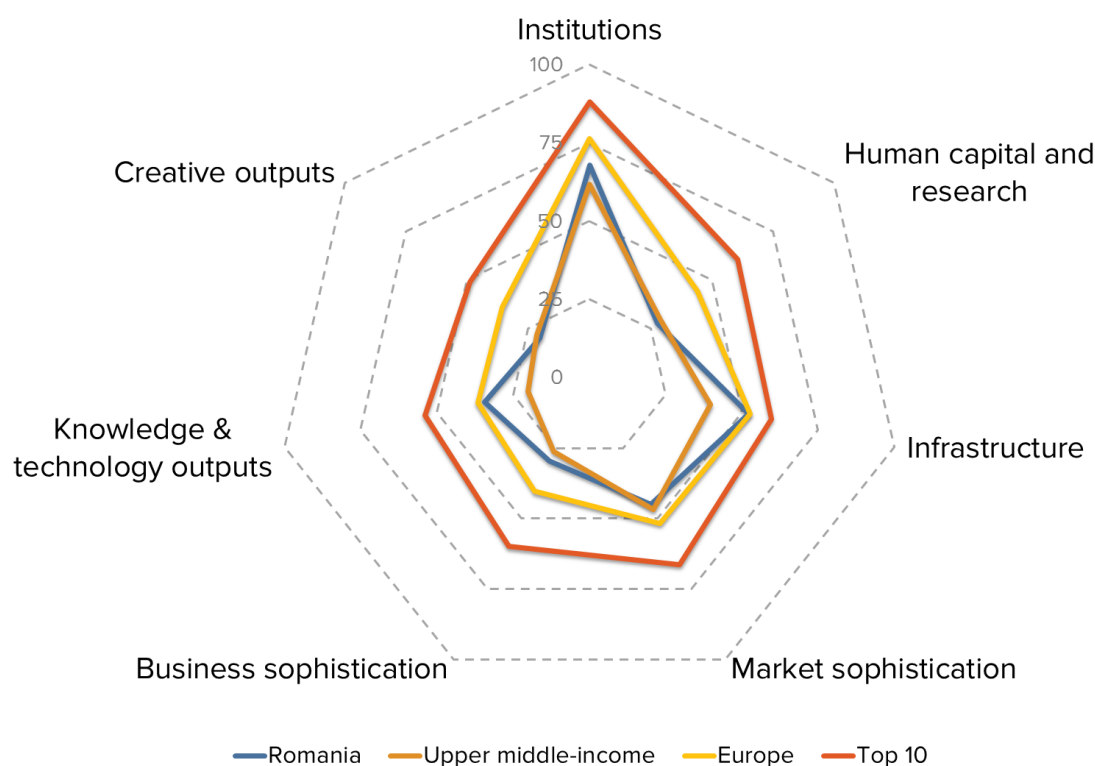
● High income group
● Lower middle-income group
● Upper middle-income group
● Low income group

— Fitted values

AU	Australia	IN	India	NL	Netherlands	CH	Switzerland
BH	Bahrain	IL	Israel	NO	Norway	UA	Ukraine
BN	Brunei Darussalam	KW	Kuwait	OM	Oman	AE	United Arab Emirates
BG	Bulgaria	MG	Madagascar	PH	Philippines	GB	United Kingdom
CN	China	MW	Malawi	QA	Qatar	US	United States of America
CZ	Czech Republic	ML	Mali	SA	Saudi Arabia	VN	Viet Nam
ET	Ethiopia	MY	Malaysia	SG	Singapore	ZW	Zimbabwe
DE	Germany			SE	Sweden		

BENCHMARKING ROMANIA AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND EUROPE

Romania's scores in the seven GII pillars



Upper middle-income group economies

Romania has high scores in four out of the seven GII pillars: Institutions, Infrastructure, Business sophistication and Knowledge & technology outputs, which are above average for the upper middle-income group.

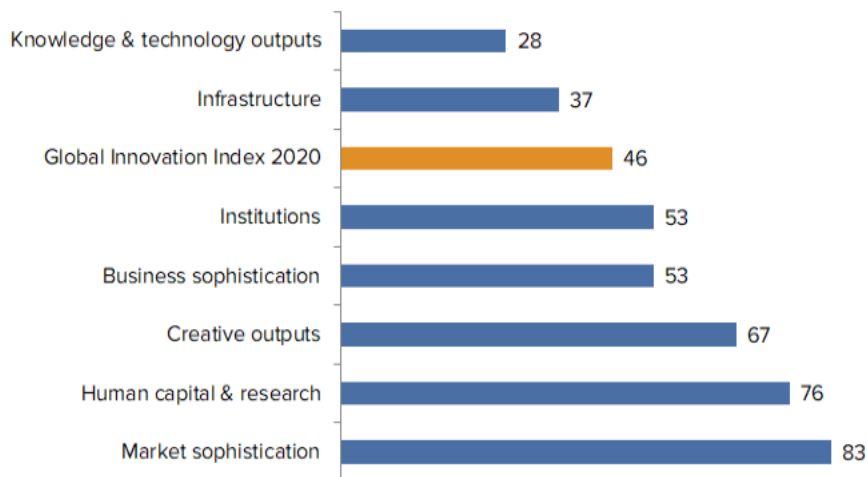
Conversely, Romania scores below average for its income group in three pillars: Human capital & research, Market sophistication and Creative outputs.

Europe

Romania performs below the regional average in all GII pillars.

OVERVIEW OF ROMANIA RANKINGS IN THE SEVEN GII AREAS

Romania performs best in Knowledge & technology outputs and its weakest performance is in Market sophistication.



*The highest possible ranking in each pillar is 1.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Romania in the GII 2020.

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal, salary weeks	1	2.1.1	Expenditure on education, % GDP	98
3.3	Ecological sustainability	3	2.1.2	Government funding/pupil, secondary, % GDP/cap	77
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	8	2.3.3	Global R&D companies, top 3, mn US\$	42
5.1.4	GERD financed by business, %	18	4.1.2	Domestic credit to private sector, % GDP	102
5.3.3	ICT services imports, % total trade	20	4.1.3	Microfinance gross loans, % GDP	72
6.2	Knowledge impact	11	4.2.3	Venture capital deals/bn PPP\$ GDP	71
6.2.1	Growth rate of PPP\$ GDP/worker, %	16	4.3.2	Intensity of local competition [†]	94
6.2.2	New businesses/th pop. 15–64	21	5.2	Innovation linkages	106
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	16	5.2.2	State of cluster development [†]	103
6.2.5	High- and medium-high-tech manufacturing, %	19	5.2.4	JV–strategic alliance deals/bn PPP\$ GDP	94
6.3	Knowledge diffusion	23	6.1.3	Utility models by origin/bn PPP\$ GDP	59
6.3.3	ICT services exports, % total trade	10			
7.2.1	Cultural & creative services exports, % total trade	11			

STRENGTHS

GII strengths for Romania are found in five of the seven GII pillars.

- Institutions (53): exhibits strengths in the indicator Cost of redundancy dismissal (1).
- Infrastructure (37): demonstrates strengths in the sub-pillar Ecological sustainability (3) and in the indicator ISO 14001 environmental certificates (8).
- Business sophistication (53): shows strengths in the indicators GERD financed by business (18) and ICT services imports (20).
- Knowledge & technology outputs (28): reveals strengths in the sub-pillars Knowledge impact (11) and Knowledge diffusion (23) and in the indicators Growth rate of PPP\$ GDP/worker (16), New businesses (21), ISO 9001 quality certificates (16), High- and medium-high-tech manufacturing (19) and ICT services exports (10).
- Creative outputs (67): displays strengths in the indicator Cultural & creative services exports (11).

WEAKNESSES

GII weaknesses for Romania are found in four of the seven GII pillars.

- Human capital & research (76): reveals weaknesses in the indicators Expenditure on education (98), Government funding/pupil (77) and Global R&D companies (42).
- Market sophistication (83): shows weaknesses in the indicators Domestic credit to private sector (102), Microfinance gross loans (72), Venture capital deals (71) and Intensity of local competition (94).
- Business sophistication (53): demonstrates weaknesses in the sub-pillar Innovation linkages (106) and in the indicators State of cluster development (103) and JV–strategic alliance deals (94).
- Knowledge & technology outputs (28): exhibits weaknesses in the indicator Utility models by origin (59).

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2019 rank
46	51	Upper middle	EUR	19.4	546.6	24,442.9	50
Score/Value Rank				Score/Value Rank			
INSTITUTIONS 68.0 53				BUSINESS SOPHISTICATION 29.6 53			
1.1	Political environment	53.5	78	5.1	Knowledge workers	38.6	49
1.1.1	Political and operational stability*.....	71.4	59	5.1.1	Knowledge-intensive employment, %.....	23.3	66
1.1.2	Government effectiveness*.....	44.5	86	5.1.2	Firms offering formal training, %.....	40.7	26
1.2	Regulatory environment	77.2	33 ♦	5.1.3	GERD performed by business, % GDP.....	0.3	47
1.2.1	Regulatory quality*.....	53.5	52	5.1.4	GERD financed by business, %.....	54.4	18 ● ♦
1.2.2	Rule of law*.....	55.1	49 ♦	5.1.5	Females employed w/advanced degrees, %.....	11.0	61
1.2.3	Cost of redundancy dismissal, salary weeks.....	8.0	1 ● ♦	5.2	Innovation linkages	15.6	106 ○
1.3	Business environment	73.4	57	5.2.1	University/industry research collaboration*.....	40.9	69
1.3.1	Ease of starting a business*.....	87.7	73	5.2.2	State of cluster development.....	38.2	103 ○
1.3.2	Ease of resolving insolvency*.....	59.1	51	5.2.3	GERD financed by abroad, % GDP.....	0.0	55
HUMAN CAPITAL & RESEARCH 27.7 76				5.2.4	JV-strategic alliance deals/bn PPP\$ GDP.....	0.0	94 ○
2.1	Education	36.4	91	5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....	0.1	57
2.1.1	Expenditure on education, % GDP.....	3.0	98 ○	5.3	Knowledge absorption	34.4	43
2.1.2	Government funding/pupil, secondary, % GDP/cap.....	15.2	77 ○	5.3.1	Intellectual property payments, % total trade.....	1.0	37
2.1.3	School life expectancy, years.....	14.3	67	5.3.2	High-tech imports, % total trade.....	10.2	27
2.1.4	PISA scales in reading, maths, & science.....	427.8	49	5.3.3	ICT services imports, % total trade.....	2.3	20 ● ♦
2.1.5	Pupil-teacher ratio, secondary.....	12.1	55	5.3.4	FDI net inflows, % GDP.....	3.1	51
2.2	Tertiary education	39.8	43	5.3.5	Research talent, % in business enterprise.....	27.0	48
2.2.1	Tertiary enrolment, % gross.....	49.4	60	KNOWLEDGE & TECHNOLOGY OUTPUTS 34.6 28 ♦			
2.2.2	Graduates in science & engineering, %.....	28.8	21	6.1	Knowledge creation	15.3	62
2.2.3	Tertiary inbound mobility, %.....	5.2	45	6.1.1	Patents by origin/bn PPP\$ GDP.....	2.2	38
2.3	Research & development (R&D)	7.0	68	6.1.2	PCT patents by origin/bn PPP\$ GDP.....	0.1	65
2.3.1	Researchers, FTE/mn pop.....	882.4	54	6.1.3	Utility models by origin/bn PPP\$ GDP.....	0.1	59 ○
2.3.2	Gross expenditure on R&D, % GDP.....	0.5	67	6.1.4	Scientific & technical articles/bn PPP\$ GDP.....	12.4	44
2.3.3	Global R&D companies, avg. exp. top 3, mn \$US.....	0.0	42 ○ ♦	6.1.5	Citable documents H-index.....	18.2	44
2.3.4	QS university ranking, average score top 3*.....	7.7	66	6.2	Knowledge impact	45.2	11 ● ♦
INFRASTRUCTURE 51.9 37 ♦				6.2.1	Growth rate of PPP\$ GDP/worker, %.....	4.3	16 ● ♦
3.1	Information & communication technologies (ICTs)	69.1	60	6.2.2	New businesses/th pop. 15-64.....	7.3	21 ●
3.1.1	ICT access*.....	72.1	54	6.2.3	Computer software spending, % GDP.....	0.0	45
3.1.2	ICT use*.....	67.4	48 ♦	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....	18.8	16 ● ♦
3.1.3	Government's online service*.....	66.0	80	6.2.5	High- and medium-high-tech manufacturing, %.....	42.5	19 ● ♦
3.1.4	E-participation*.....	70.8	68	6.3	Knowledge diffusion	43.3	23 ● ♦
3.2	General infrastructure	26.6	68	6.3.1	Intellectual property receipts, % total trade.....	0.1	58
3.2.1	Electricity output, kWh/mn pop.....	3,263.8	62	6.3.2	High-tech net exports, % total trade.....	6.4	26 ♦
3.2.2	Logistics performance*.....	49.2	47 ♦	6.3.3	ICT services exports, % total trade.....	5.3	10 ● ♦
3.2.3	Gross capital formation, % GDP.....	23.6	62	6.3.4	FDI net outflows, % GDP.....	0.5	77
3.3	Ecological sustainability	60.1	3 ● ♦	CREATIVE OUTPUTS 20.3 67			
3.3.1	GDP/unit of energy use.....	13.3	23	7.1	Intangible assets	22.7	85
3.3.2	Environmental performance*.....	64.7	32 ♦	7.1.1	Trademarks by origin/bn PPP\$ GDP.....	41.8	63
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP.....	9.2	8 ● ♦	7.1.2	Global brand value, top 5,000, % GDP.....	20.1	47
MARKET SOPHISTICATION 44.9 83				7.1.3	Industrial designs by origin/bn PPP\$ GDP.....	1.7	53
4.1	Credit	35.8	84	7.1.4	ICTs & organizational model creation*.....	50.0	82
4.1.1	Ease of getting credit*.....	80.0	23	7.2	Creative goods and services	14.9	66
4.1.2	Domestic credit to private sector, % GDP.....	25.9	102 ○	7.2.1	Cultural & creative services exports, % total trade.....	1.6	11 ● ♦
4.1.3	Microfinance gross loans, % GDP.....	0.0	72 ○	7.2.2	National feature films/mn pop. 15-69.....	2.0	69
4.2	Investment	31.4	92	7.2.3	Entertainment & Media market/th pop. 15-69.....	6.1	46
4.2.1	Ease of protecting minority investors*.....	62.0	60	7.2.4	Printing and other media, % manufacturing.....	0.9	65
4.2.2	Market capitalization, % GDP.....	n/a	n/a	7.2.5	Creative goods exports, % total trade.....	0.7	56
4.2.3	Venture capital deals/bn PPP\$ GDP.....	0.0	71 ○	7.3	Online creativity	21.0	52
4.3	Trade, competition, and market scale	67.6	42	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.....	4.5	55
4.3.1	Applied tariff rate, weighted avg., %.....	1.7	22	7.3.2	Country-code TLDs/th pop. 15-69.....	13.2	35
4.3.2	Intensity of local competition*.....	62.9	94 ○	7.3.3	Wikipedia edits/mn pop. 15-69.....	57.2	56
4.3.3	Domestic market scale, bn PPP\$.....	546.6	39	7.3.4	Mobile app creation/bn PPP\$ GDP.....	11.6	42

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 II 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

Code	Indicator name	Country year	Model year	Source
4.2.2	Market capitalization, % GDP	n/a	2018	World Federation of Exchanges

Outdated data

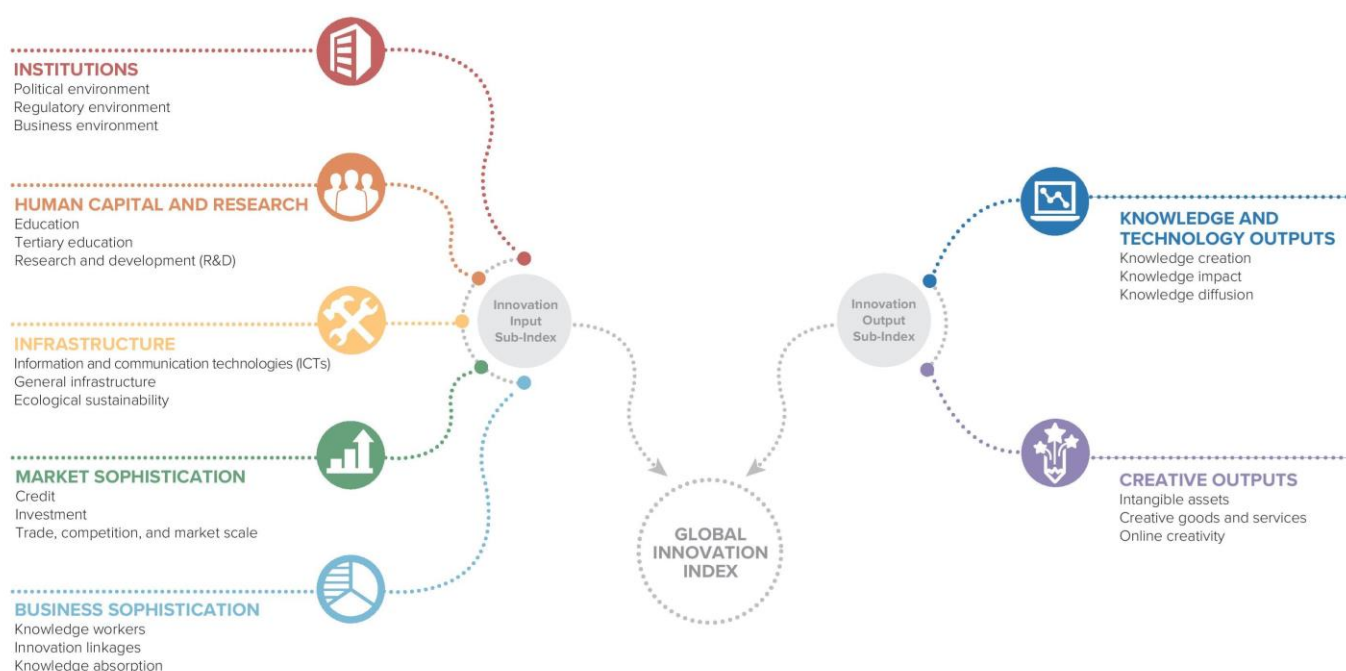
Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	2016	2018	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2017	2018	UNESCO Institute for Statistics
2.2.2	Graduates in science & engineering, %	2016	2017	UNESCO Institute for Statistics
5.1.2	Firms offering formal training, %	2012	2018	World Bank

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2020, the GII presents its 13th edition devoted to the theme *Who Will Finance Innovation?*

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.

Framework of the Global Innovation Index 2020



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.



www.globalinnovationindex.org



GII app for iOS



GII app for android