

NORTH MACEDONIA

57th North Macedonia ranks 57th 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 North Macedonia 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 North Macedonia in the GII 2020 is between ranks 55 and 65.

Rankings of North Macedonia (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	57	46	63
2019	59	52	63
2018	84	71	93

- North Macedonia performs better in innovation inputs than innovation outputs in 2020.
- This year North Macedonia ranks 46th in innovation inputs, higher than last year and higher compared to 2018.
- As for innovation outputs, North Macedonia ranks 63rd. This position is the same as last year and higher compared to 2018.

13th North Macedonia ranks 13th among the 37 upper middle-income group economies.

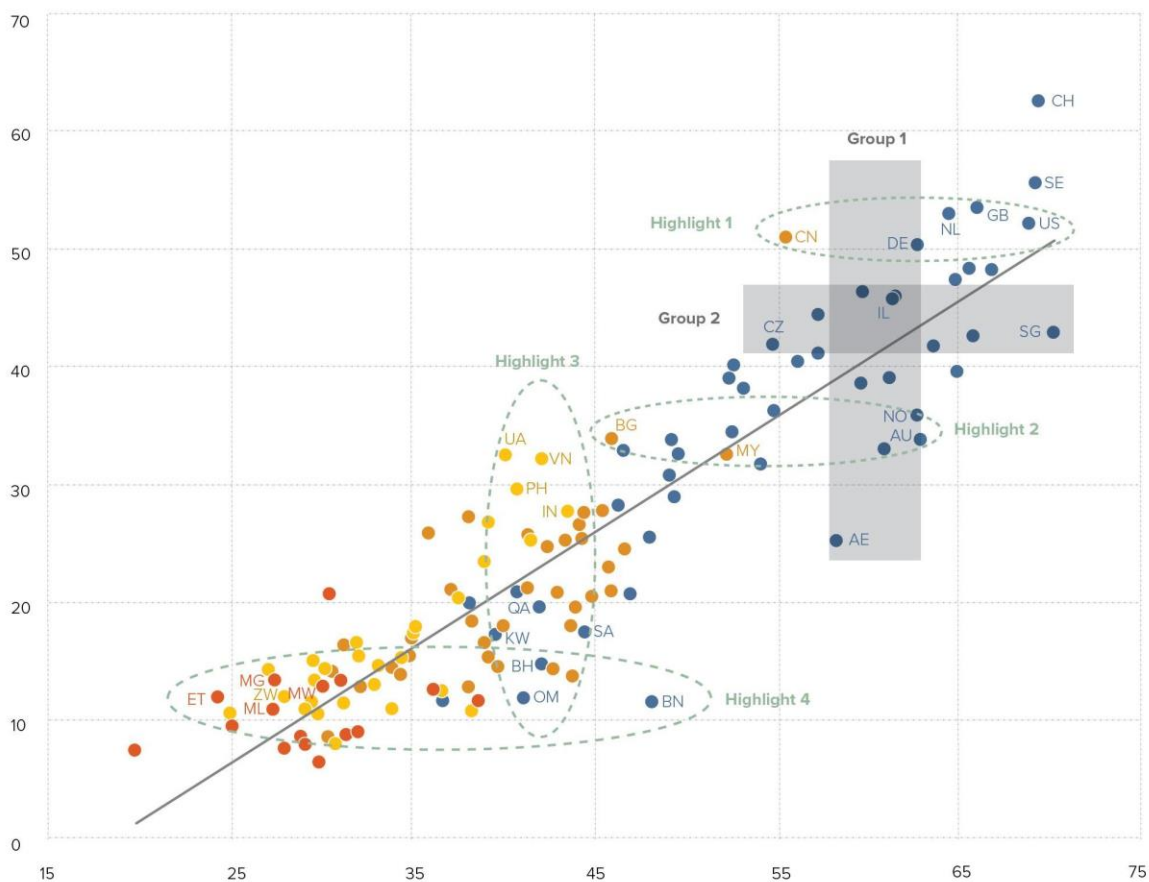
35th North Macedonia ranks 35th among the 39 economies in Europe.

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.

North Macedonia produces less innovation outputs relative to its level of innovation investments.

Innovation input to output performance, 2020

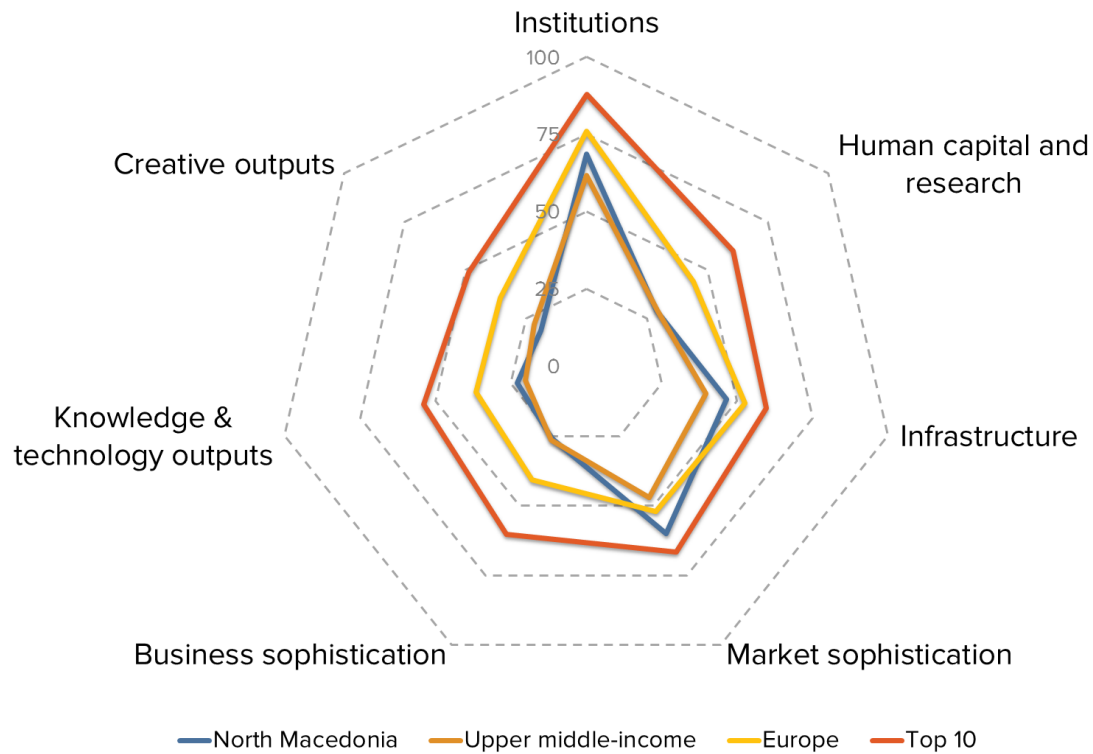


▲ Output score ● High income group ● Lower middle-income group — Fitted values
 ► Input score ● Upper middle-income group ● Low income group

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 NORTH MACEDONIA AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND EUROPE

North Macedonia's scores in the seven GII pillars



Upper middle-income group economies

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

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

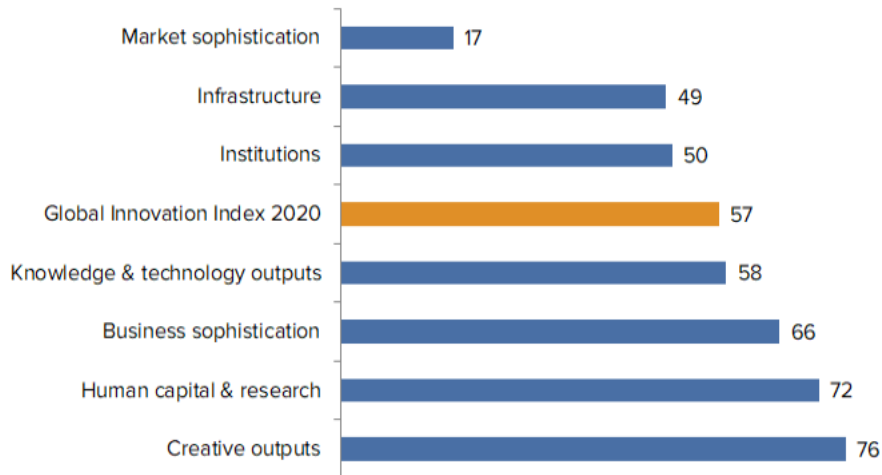
Europe

Compared to other economies in Europe, North Macedonia performs:

- above average in one out of the seven GII pillars: Market sophistication; and
- below average in six out of the seven GII pillars: Institutions, Human capital & research, Infrastructure, Business sophistication, Knowledge & technology outputs and Creative outputs.

OVERVIEW OF NORTH MACEDONIA RANKINGS IN THE SEVEN GII AREAS

North Macedonia performs best in Market sophistication and its weakest performance is in Creative outputs.



*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 North Macedonia in the GII 2020.

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
1.3	Business environment	30	2.1.4	PISA scales in reading, maths, & science	67
1.3.2	Ease of resolving insolvency*	28	2.3.3	Global R&D companies, top 3, mn US\$	42
2.1.5	Pupil-teacher ratio, secondary	18	2.3.4	QS university ranking, average score top 3*	77
3.3	Ecological sustainability	17	4.3.3	Domestic market scale, bn PPP\$	115
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	7	5.2	Innovation linkages	120
4	Market sophistication	17	5.2.1	University/industry research collaboration†	112
4.1.1	Ease of getting credit*	23	5.2.2	State of cluster development†	101
4.2.1	Ease of protecting minority investors*	12	5.2.4	JV–strategic alliance deals/bn PPP\$ GDP	102
5.3.1	Intellectual property payments, % total trade	23	6.2.1	Growth rate of PPP\$ GDP/worker, %	109
5.3.4	FDI net inflows, % GDP	33	7.1.2	Global brand value, top 5000, % GDP	80
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	22	7.1.4	ICTs & organizational model creation†	112
6.2.5	High- and medium-high-tech manufacturing, %	21			
7.2.1	Cultural & creative services exports, % total trade	29			
7.2.4	Printing and other media, % manufacturing	14			

STRENGTHS








GII strengths for North Macedonia are found in all GII pillars.

- Institutions (50): exhibits strengths in the sub-pillar Business environment (30) and in the indicator Ease of resolving insolvency (28).
- Human capital & research (72): shows strengths in the indicator Pupil-teacher ratio (18).
- Infrastructure (49): demonstrates strengths in the sub-pillar Ecological sustainability (17) and in the indicator ISO 14001 environmental certificates (7).
- Market sophistication (17): displays strengths in the indicators Ease of getting credit (23) and Ease of protecting minority investors (12).
- Business sophistication (66): exhibits strengths in the indicators Intellectual property payments (23) and FDI net inflows (33).
- Knowledge & technology outputs (58): reveals strengths in the indicators ISO 9001 quality certificates (22) and High- and medium-high-tech manufacturing (21).
- Creative outputs (76): shows strengths in the indicators Cultural & creative services exports (29) and Printing and other media (14).

WEAKNESSES

GII weaknesses for North Macedonia are found in five of the seven GII pillars.

- Human capital & research (72): exhibits weaknesses in the indicators PISA scales in reading, maths, & science (67), Global R&D companies (42) and QS university ranking (77).
- Market sophistication (17): shows weaknesses in the indicator Domestic market scale (115).
- Business sophistication (66): demonstrates weaknesses in the sub-pillar Innovation linkages (120) and in the indicators University/industry research collaboration (112), State of cluster development (101) and JV–strategic alliance deals (102).
- Knowledge & technology outputs (58): displays weaknesses in the indicator Growth rate of PPP\$ GDP/worker (109).
- Creative outputs (76): reveals weaknesses in the indicators Global brand value (80) and ICTs & organizational model creation (112).

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2019 rank		
63	46	Upper middle	EUR	2.1	34.3	14,393.0	59		
		Score/Value	Rank			Score/Value	Rank		
		INSTITUTIONS	68.9	50			BUSINESS SOPHISTICATION	25.4	66
1.1	Political environment	58.6	65	5.1	Knowledge workers	33.4	60		
1.1.1	Political and operational stability*.....	71.4	59	5.1.1	Knowledge-intensive employment, %.....	28.7	49		
1.1.2	Government effectiveness*.....	52.2	67	5.1.2	Firms offering formal training, %.....	39.0	31		
1.2	Regulatory environment	67.3	58	5.1.3	GERD performed by business, % GDP.....	0.1	60		
1.2.1	Regulatory quality*.....	55.6	44	5.1.4	GERD financed by business, %.....	30.1	59		
1.2.2	Rule of law*.....	39.3	79	5.1.5	Females employed w/advanced degrees, %.....	13.4	52		
1.2.3	Cost of redundancy dismissal, salary weeks.....	14.4	55	5.2	Innovation linkages	13.4	120 ○ ◇		
1.3	Business environment	80.7	30 ● ◆	5.2.1	University/industry research collaboration*.....	30.2	112 ○ ◇		
1.3.1	Ease of starting a business*.....	88.6	63	5.2.2	State of cluster development.....	38.6	101 ○		
1.3.2	Ease of resolving insolvency*.....	72.7	28 ● ◆	5.2.3	GERD financed by abroad, % GDP.....	0.0	69		
				5.2.4	JV-strategic alliance deals/bn PPP\$ GDP.....	0.0	102 ○		
				5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....	0.1	65		
		HUMAN CAPITAL & RESEARCH	29.1	72	5.3	Knowledge absorption	29.5	61	
2.1	Education	53.3	[44]	5.3.1	Intellectual property payments, % total trade.....	1.4	23 ●		
2.1.1	Expenditure on education, % GDP.....	n/a	n/a	5.3.2	High-tech imports, % total trade.....	5.5	103		
2.1.2	Government funding/pupil, secondary, % GDP/cap.....	n/a	n/a	5.3.3	ICT services imports, % total trade.....	1.3	55		
2.1.3	School life expectancy, years.....	13.6	76	5.3.4	FDI net inflows, % GDP.....	4.5	33 ●		
2.1.4	PISA scales in reading, maths, & science.....	400.1	67 ○	5.3.5	Research talent, % in business enterprise.....	24.1	50		
2.1.5	Pupil-teacher ratio, secondary.....	8.7	18 ●			KNOWLEDGE & TECHNOLOGY OUTPUTS	23.0	58	
2.2	Tertiary education	29.8	75	6.1	Knowledge creation	12.0	71		
2.2.1	Tertiary enrolment, % gross.....	42.5	67	6.1.1	Patents by origin/bn PPP\$ GDP.....	1.6	48		
2.2.2	Graduates in science & engineering, %.....	21.9	58	6.1.2	PCT patents by origin/bn PPP\$ GDP.....	0.1	58		
2.2.3	Tertiary inbound mobility, %.....	4.7	47	6.1.3	Utility models by origin/bn PPP\$ GDP.....	n/a	n/a		
2.3	Research & development (R&D)	4.1	79	6.1.4	Scientific & technical articles/bn PPP\$ GDP.....	8.8	57		
2.3.1	Researchers, FTE/mn pop.....	799.3	56	6.1.5	Citable documents H-index.....	6.1	95		
2.3.2	Gross expenditure on R&D, % GDP.....	0.4	74	6.2	Knowledge impact	28.7	46		
2.3.3	Global R&D companies, avg. exp. top 3, mn \$US.....	0.0	42 ○ ◇	6.2.1	Growth rate of PPP\$ GDP/worker, %.....	-1.1	109 ○		
2.3.4	QS university ranking, average score top 3*.....	0.0	77 ○ ◇	6.2.2	New businesses/th pop. 15-64.....	3.6	39		
				6.2.3	Computer software spending, % GDP.....	0.0	79		
		INFRASTRUCTURE	46.4	49	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....	13.4	22 ●	
3.1	Information & communication technologies (ICTs)	66.2	69	6.2.5	High- and medium-high-tech manufacturing, %.....	41.6	21 ● ◆		
3.1.1	ICT access*.....	63.8	68	6.3	Knowledge diffusion	28.3	48		
3.1.2	ICT use*.....	59.4	60	6.3.1	Intellectual property receipts, % total trade.....	0.1	48		
3.1.3	Government's online service*.....	71.5	70	6.3.2	High-tech net exports, % total trade.....	2.8	48		
3.1.4	E-participation*.....	70.2	70	6.3.3	ICT services exports, % total trade.....	2.6	40		
3.2	General infrastructure	19.7	100	6.3.4	FDI net outflows, % GDP.....	1.0	57		
3.2.1	Electricity output, kWh/mn pop.....	2,692.4	69			CREATIVE OUTPUTS	18.9	76	
3.2.2	Logistics performance*.....	29.8	80	7.1	Intangible assets	18.4	99		
3.2.3	Gross capital formation, % GDP.....	n/a	n/a	7.1.1	Trademarks by origin/bn PPP\$ GDP.....	n/a	n/a		
3.3	Ecological sustainability	53.2	17 ● ◆	7.1.2	Global brand value, top 5,000, % GDP.....	0.0	80 ○ ◇		
3.3.1	GDP/unit of energy use.....	10.0	55	7.1.3	Industrial designs by origin/bn PPP\$ GDP.....	1.9	51		
3.3.2	Environmental performance*.....	55.4	41 ◆	7.1.4	ICTs & organizational model creation*.....	41.1	112 ○ ◇		
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP.....	9.4	7 ● ◆	7.2	Creative goods and services	16.7	61		
		MARKET SOPHISTICATION	59.7	17 ● ◆	7.2.1	Cultural & creative services exports, % total trade.....	0.9	29 ●	
4.1	Credit	41.2	68	7.2.2	National feature films/mn pop. 15-69.....	5.1	44		
4.1.1	Ease of getting credit*.....	80.0	23 ●	7.2.3	Entertainment & Media market/th pop. 15-69.....	n/a	n/a		
4.1.2	Domestic credit to private sector, % GDP.....	50.3	68	7.2.4	Printing and other media, % manufacturing.....	2.1	14 ● ◆		
4.1.3	Microfinance gross loans, % GDP.....	0.3	43	7.2.5	Creative goods exports, % total trade.....	0.2	86		
4.2	Investment	82.0	[3]	7.3	Online creativity	22.0	51		
4.2.1	Ease of protecting minority investors*.....	82.0	12 ● ◆	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.....	6.8	47		
4.2.2	Market capitalization, % GDP.....	n/a	n/a	7.3.2	Country-code TLDs/th pop. 15-69.....	5.7	49		
4.2.3	Venture capital deals/bn PPP\$ GDP.....	n/a	n/a	7.3.3	Wikipedia edits/mn pop. 15-69.....	66.2	45		
4.3	Trade, competition, and market scale	55.9	95	7.3.4	Mobile app creation/bn PPP\$ GDP.....	11.3	43		
4.3.1	Applied tariff rate, weighted avg., %.....	1.9	55						
4.3.2	Intensity of local competition*.....	62.5	96						
4.3.3	Domestic market scale, bn PPP\$.....	34.3	115 ○ ◇						

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 North Macedonia.

Missing data

Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	n/a	2018	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2016	UNESCO Institute for Statistics
3.2.3	Gross capital formation, % GDP	n/a	2019	International Monetary Fund
4.2.2	Market capitalization, % GDP	n/a	2018	World Federation of Exchanges
4.2.3	Venture capital deals/bn PPP\$ GDP	n/a	2019	Thomson Reuters
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2018	World Intellectual Property Organization
7.1.1	Trademarks by origin/bn PPP\$ GDP	n/a	2018	World Intellectual Property Organization
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2018	PwC

Outdated data

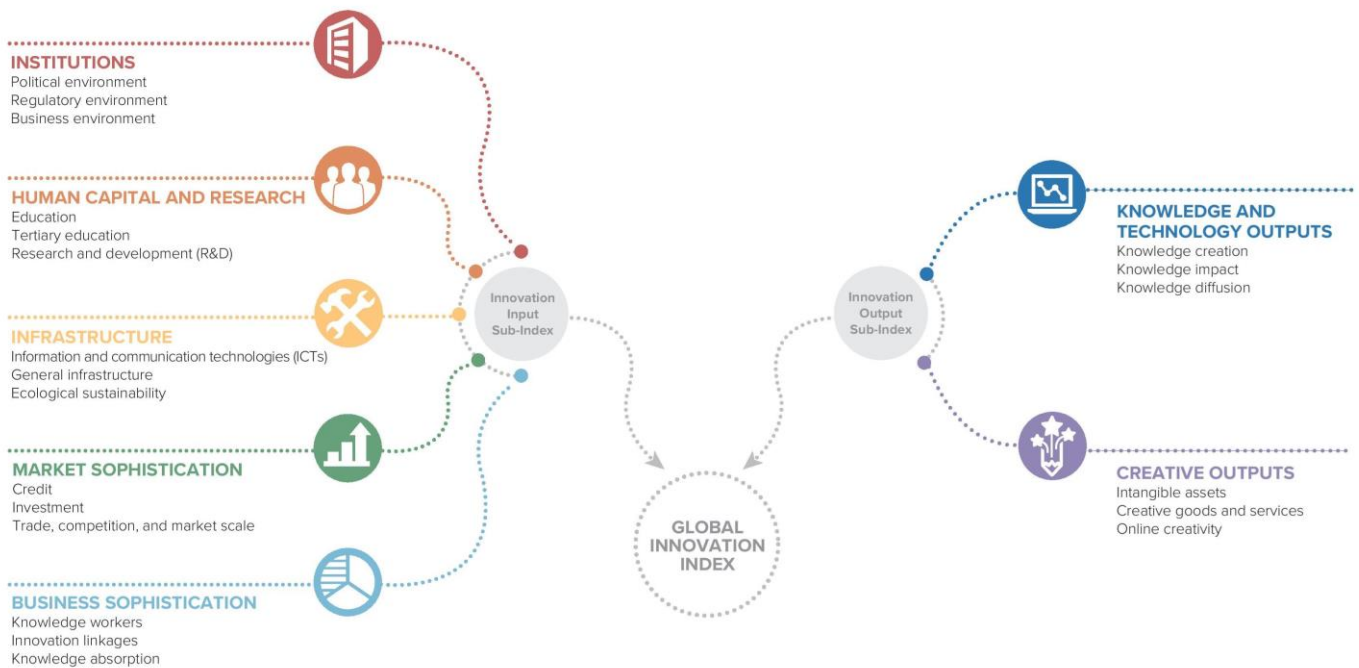
Code	Indicator name	Country year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2017	2018	UNESCO Institute for Statistics
6.1.1	Patents by origin/bn PPP\$ GDP	2013	2018	World Intellectual Property Organization
6.2.5	High- and medium-high-tech manufacturing, %	2015	2017	United Nations Industrial Development Organization
7.2.4	Printing and other media, % manufacturing	2015	2017	United Nations Industrial Development Organization

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.

