



GLOBAL INNOVATION INDEX 2019

TURKEY

49th Turkey ranks 49th among the 129 economies featured in the GII 2019.

The Global Innovation Index (GII) is a ranking of world economies based on 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 Turkey over the past three years, noting that data availability and the GII model influence year-on-year comparisons of the GII ranks. The confidence interval for Turkey's ranking in the GII 2019 is between 45 and 51.

Turkey's Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
2019	49	56	49
2018	50	62	43
2017	43	68	36

- Turkey performs better in Innovation Outputs than Inputs.
- This year Turkey ranks 56th in Innovation Inputs, better than last year and compared to 2017.
- As for Innovation Outputs, Turkey ranks 49th. This position is worse than last year and compared to 2017.

7th Turkey ranks 7th among the 34 upper middle-income economies.

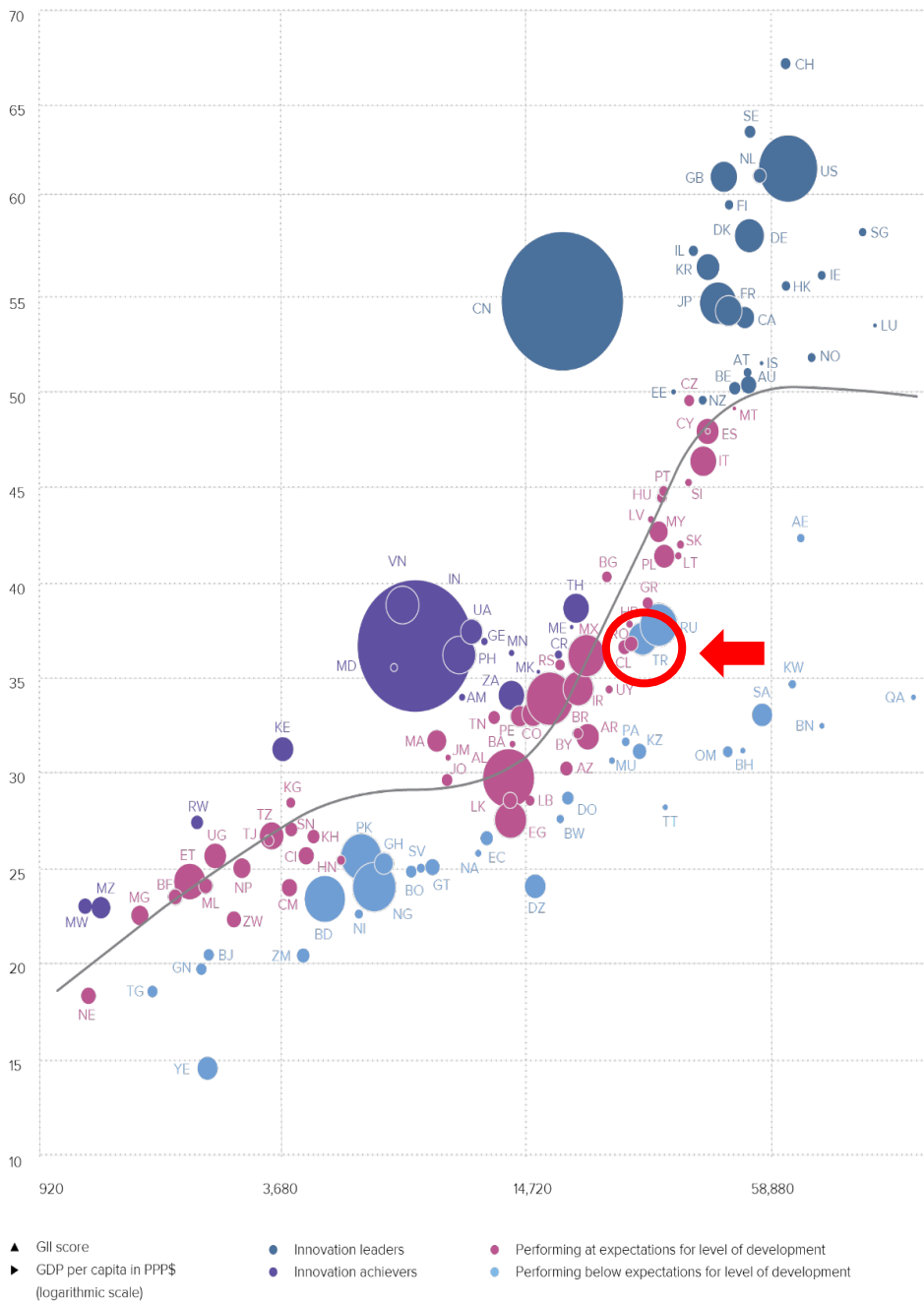
5th Turkey ranks 5th among the 19 economies in Northern Africa and Western Asia.

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 considered Innovation under-performers relative to GDP.

Relative to GDP, Turkey performs below its expected level of development.

GII scores and GDP per capita in PPP US\$ (bubbles sized by population)

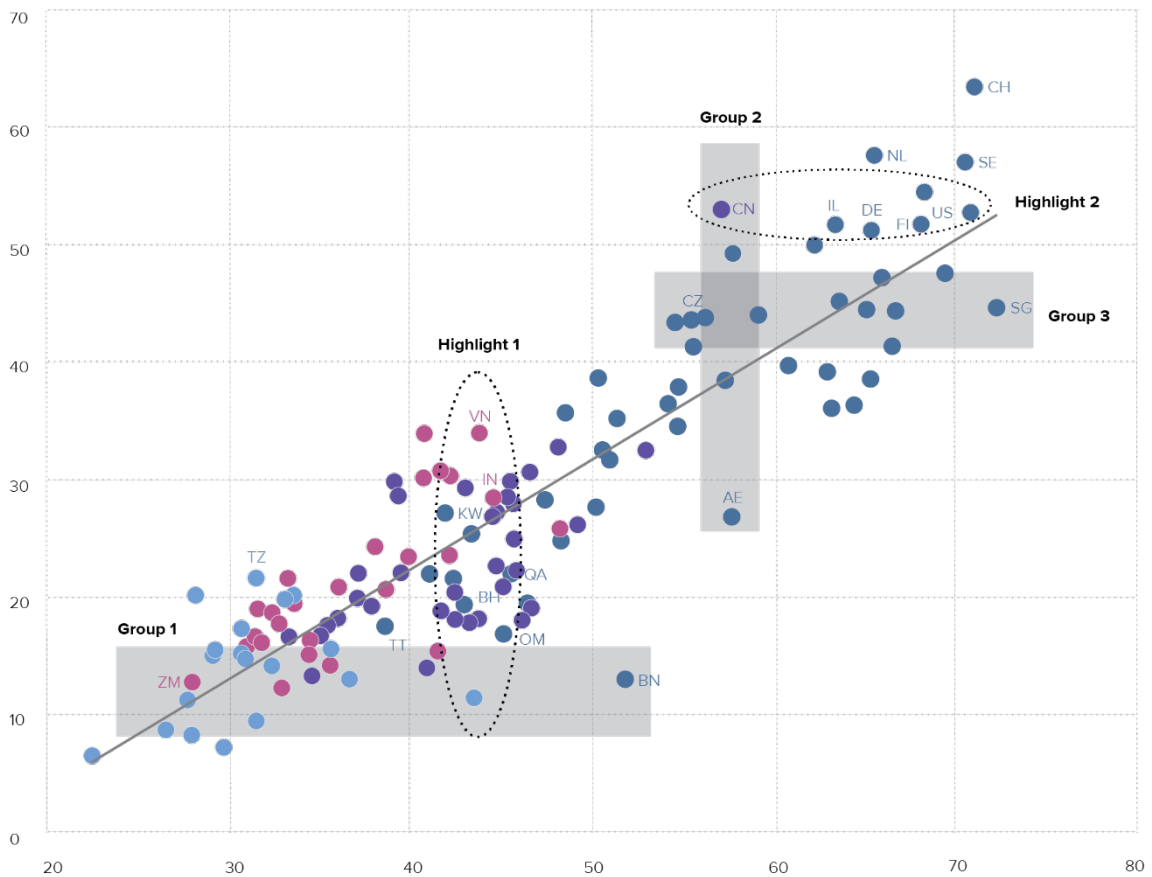


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs, indicating which economies best translate innovation inputs into innovation outputs. Economies appearing above the line are effectively translating their costly innovation investments into more and higher-quality outputs. In contrast, those below the line are not effectively translating innovation inputs into outputs.

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

Innovation input/output performance by income group, 2019

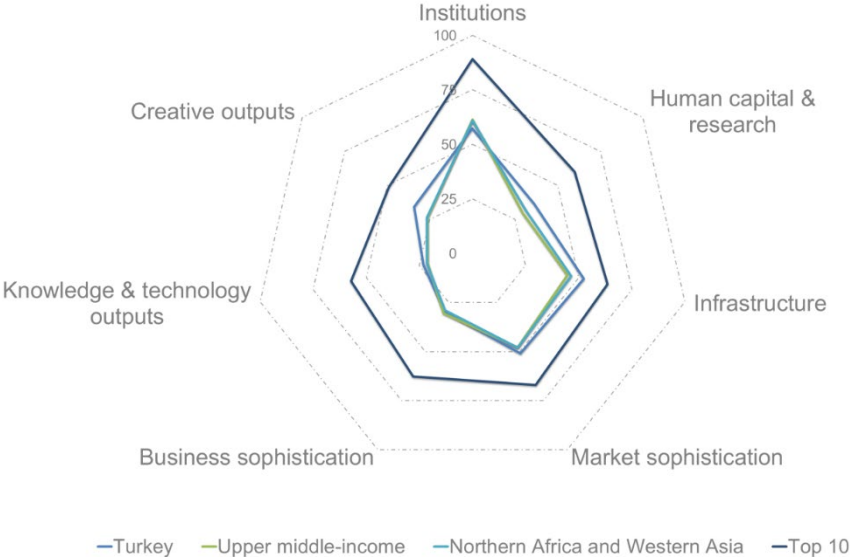


▲ Output score
 ▶ Input score
 ● High income
 ● Upper-middle income
 ● Lower-middle income
 ● Low income
 — Fitted values

AE United Arab Emirates	CZ Czech Republic	NL Netherlands	TZ United Republic of Tanzania
BH Bahrain	DE Germany	OM Oman	US United States of America
BN Brunei Darussalam	FI Finland	QA Qatar	VN Viet Nam
CH Switzerland	IL Israel	SE Sweden	ZM Zambia
CN China	IN India	SG Singapore	
	KW Kuwait	TT Trinidad and Tobago	

BENCHMARKING TURKEY TO OTHER UPPER MIDDLE-INCOME ECONOMIES AND THE NORTHERN AFRICA AND WESTERN ASIA REGION

Turkey's scores in the seven GII pillars



Upper middle-income economies

Turkey has high scores in 5 out of the 7 GII pillars: Human capital & research, Infrastructure, Market sophistication, Knowledge & technology outputs, and Creative outputs, which are above the average of the upper middle-income group.

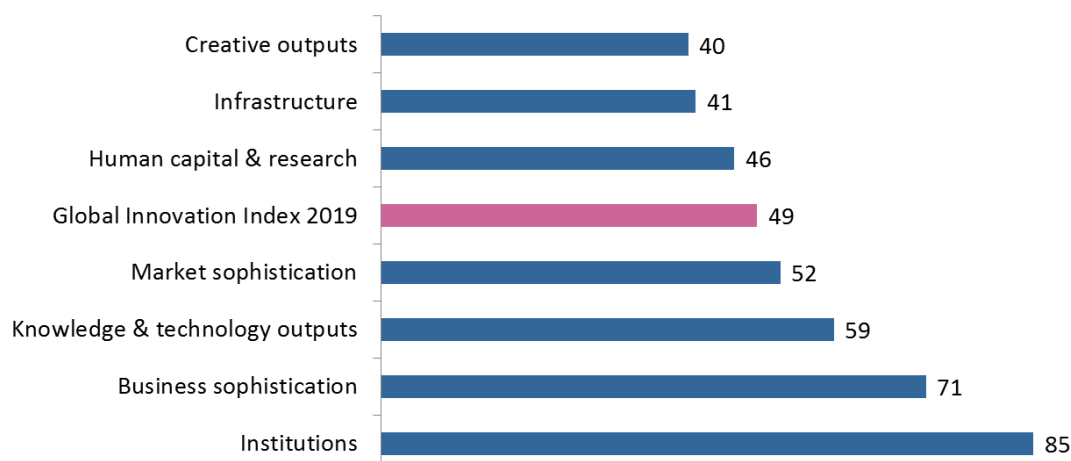
Northern Africa and Western Asia Region

Compared to other economies in Northern Africa and Western Asia, Turkey performs above average in 6 out of the 7 GII pillars: Human capital & research, Infrastructure, Market sophistication, Business sophistication, Knowledge & technology outputs, and Creative outputs.

Top ranks are found in areas such as Research and development (R&D), General infrastructure, Trade, competition, & market scale, Knowledge creation, and Intangible assets where the country ranks in the top 40 worldwide.

OVERVIEW OF TURKEY'S RANKINGS IN THE 7 GII AREAS

Turkey performs the best in Creative outputs and its weakest performance is in Institutions.



*The highest possible ranking in each pillar is 1.

TURKEY'S INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of Turkey's strengths and weaknesses in the GII 2019.

Strengths		
Code	Indicator name	Rank
2.1.3	School life expectancy, years	14
2.2.1	Tertiary enrolment, % gross	3
3.2.3	Gross capital formation, % GDP	20
3.3.1	GDP/unit of energy use	19
4.3	Trade, competition, & market scale	15
4.3.2	Intensity of local competition [†]	6
4.3.3	Domestic market scale, bn PPP\$	13
6.2.3	Computer software spending, % GDP	20
7.1	Intangible assets	20
7.1.1	Trademarks by origin/bn PPP\$ GDP	13
7.1.2	Industrial designs by origin/bn PPP\$ GDP	1
7.2.5	Creative goods exports, % total trade	21

Weaknesses		
Code	Indicator name	Rank
1.2	Regulatory environment	102
1.2.3	Cost of redundancy dismissal, salary weeks	115
2.1.2	Government funding/pupil, secondary, % GDP/cap	90
4.1.3	Microfinance gross loans, % GDP	78
4.2.2	Market capitalization, % GDP	56
4.2.3	Venture capital deals/bn PPP\$ GDP	78
5.2.4	JV-strategic alliance deals/bn PPP\$ GDP	95
5.3.3	ICT services imports, % total trade	124
6.3	Knowledge diffusion	112
6.3.1	Intellectual property receipts, % total trade	96
6.3.3	ICT services exports, % total trade	122
7.1.4	ICTs & organizational model creation [†]	98

STRENGTHS

- GII strengths for Turkey are found in five of the seven GII pillars.
- In Human capital & research (46), Turkey exhibits strengths in indicators School life expectancy (14) and Tertiary enrolment (3).
- In Infrastructure (41), Turkey's strengths are indicators Gross capital formation (20) and GDP per unit of energy use (19).
- In Market sophistication (52), GII strengths for this country are sub-pillar Trade, competition, & market scale (15) and two of its three indicators - Intensity of local competition (6) and Domestic market scale (13).
- In Knowledge & technology outputs (59), indicator Computer software spending (20) is a relative strength of Turkey.
- In Creative outputs (40), Turkey's strengths are sub-pillar Intangible assets (20) and indicators Trademarks by origin (13), Creative goods exports (21), and Industrial designs by origin, where Turkey ranks 1st worldwide.

WEAKNESSES

- Turkey's weaknesses in the GII are found in six of the seven GII pillars.
- In Institutions (85), Turkey exhibits weaknesses in sub-pillar Regulatory environment (102) and in indicator Cost of redundancy dismissal (115).
- In Human capital & research (46), a single weakness is found in indicator Government funding per pupil (90).
- In Market sophistication (52), Turkey's relative weaknesses are indicators Microfinance gross loans (78), Market capitalization (56), and Venture capital deals (78).
- In Business sophistication (71), relative weaknesses for this country are indicators Joint Ventures - strategic alliance deals (95) and ICT services imports (124).
- In Knowledge & technology outputs (59), sub-pillar Knowledge diffusion (112) and indicators Intellectual property receipts (96) and ICT services exports (122) are GII weaknesses of Turkey.
- In Creative outputs (40), only one indicator – ICTs & organizational model creation (98) – is a relative weakness for the country.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2018 rank
49	56	Upper middle	NAWA	81.9	2,314.4	27,956.1	50
INSTITUTIONS 57.4 85				BUSINESS SOPHISTICATION 29.5 71			
1.1	Political environment	53.8	69	5.1	Knowledge workers	34.6	72
1.1.1	Political and operational stability*	64.9	79	5.1.1	Knowledge-intensive employment, %	21.0	71
1.1.2	Government effectiveness*	48.2	67	5.1.2	Firms offering formal training, % firms	28.4	53
1.2	Regulatory environment	54.1	102 ○	5.1.3	GERD performed by business, % GDP	0.5	37
1.2.1	Regulatory quality*	42.9	67	5.1.4	GERD financed by business, %	49.4	27
1.2.2	Rule of law*	39.8	76	5.1.5	Females employed w/advanced degrees, %	8.9	72
1.2.3	Cost of redundancy dismissal, salary weeks	29.8	115 ○	5.2	Innovation linkages	18.5	97
1.3	Business environment	64.5	82	5.2.1	University/industry research collaboration†	37.0	88
1.3.1	Ease of starting a business*	88.2	63	5.2.2	State of cluster development†	44.4	76
1.3.2	Ease of resolving insolvency*	40.7	96	5.2.3	GERD financed by abroad, %	3.5	68
				5.2.4	JV-strategic alliance deals/bn PPP\$ GDP	0.0	95 ○
				5.2.5	Patent families 2+ offices/bn PPP\$ GDP	0.2	43
HUMAN CAPITAL & RESEARCH 36.3 46				KNOWLEDGE & TECHNOLOGY OUTPUTS... 23.0 59			
2.1	Education	44.0	73	5.3	Knowledge absorption	35.4	57
2.1.1	Expenditure on education, % GDP	4.3	70	5.3.1	Intellectual property payments, % total trade	0.3	74
2.1.2	Government funding/pupil, secondary, % GDP/cap...	11.5	90 ○	5.3.2	High-tech imports, % total trade	9.9	33
2.1.3	School life expectancy, years	17.7	14 ● ◆	5.3.3	ICT services imports, % total trade	0.2	124 ○ ◇
2.1.4	PISA scales in reading, maths, & science	424.8	49	5.3.4	FDI net inflows, % GDP	1.6	89 ○
2.1.5	Pupil-teacher ratio, secondary	18.5	81	5.3.5	Research talent, % in business enterprise	55.7	19 ◆
2.2	Tertiary education	37.3	43	6.1	Knowledge creation	22.2	38
2.2.1	Tertiary enrolment, % gross	103.7	3 ● ◆	6.1.1	Patents by origin/bn PPP\$ GDP	4.2	27
2.2.2	Graduates in science & engineering, %	20.2	65	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.7	32 ◆
2.2.3	Tertiary inbound mobility, %	1.3	82	6.1.3	Utility models by origin/bn PPP\$ GDP	1.5	17
2.3	Research & development (R&D)	27.7	39 ◆	6.1.4	Scientific & technical articles/bn PPP\$ GDP	7.8	60
2.3.1	Researchers, FTE/mn pop	1,385.8	44	6.1.5	Citable documents H-index	26.5	35 ◆
2.3.2	Gross expenditure on R&D, % GDP	1.0	37	6.2	Knowledge impact	38.1	57
2.3.3	Global R&D companies, avg. exp. top 3, mn US\$	48.5	31 ◆	6.2.1	Growth rate of PPP\$ GDP/worker, %	1.7	46
2.3.4	QS university ranking, average score top 3*	24.8	44	6.2.2	New businesses/th pop. 15-64	1.2	66
				6.2.3	Computer software spending, % GDP	0.5	20 ● ◆
				6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	2.8	80
				6.2.5	High- & medium-high-tech manufactures, %	0.3	44
INFRASTRUCTURE 52.2 41 ◇				CREATIVE OUTPUTS 34.2 40 ◇			
3.1	Information & communication technologies (ICTs)	73.3	49	6.3	Knowledge diffusion	8.8	112 ○
3.1.1	ICT access*	65.1	69	6.3.1	Intellectual property receipts, % total trade	0.0	96 ○
3.1.2	ICT use*	53.3	68	6.3.2	High-tech net exports, % total trade	1.4	63
3.1.3	Government's online service*	88.9	27 ◆	6.3.3	ICT services exports, % total trade	0.1	122 ○
3.1.4	E-participation*	86.0	37	6.3.4	FDI net outflows, % GDP	0.4	73
3.2	General infrastructure	43.0	38 ◆	7.1	Intangible assets	55.1	20 ● ◆
3.2.1	Electricity output, kWh/mn pop	3,761.1	54	7.1.1	Trademarks by origin/bn PPP\$ GDP	98.5	13 ●
3.2.2	Logistics performance*	50.6	46 ◆	7.1.2	Industrial designs by origin/bn PPP\$ GDP	18.0	1 ● ◆
3.2.3	Gross capital formation, % GDP	30.7	20 ●	7.1.3	ICTs & business model creation†	58.2	72
3.3	Ecological sustainability	40.4	52	7.1.4	ICTs & organizational model creation†	44.2	98 ○
3.3.1	GDP/unit of energy use	13.3	19 ●	7.2	Creative goods & services	17.8	60
3.3.2	Environmental performance*	53.0	88	7.2.1	Cultural & creative services exports, % total trade	0.5	46
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.9	67	7.2.2	National feature films/mn pop. 15-69	2.6	59
				7.2.3	Entertainment & Media market/th pop. 15-69	5.8	46
				7.2.4	Printing & other media, % manufacturing	0.9	71
				7.2.5	Creative goods exports, % total trade	2.9	21 ●
MARKET SOPHISTICATION 50.8 52				7.3 Online creativity 8.9 55			
4.1	Credit	36.0	66	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	11.7	36 ◆
4.1.1	Ease of getting credit*	75.0	29	7.3.2	Country-code TLDs/th pop. 15-69	1.9	68
4.1.2	Domestic credit to private sector, % GDP	70.9	44	7.3.3	Wikipedia edits/mn pop. 15-69	4.4	85
4.1.3	Microfinance gross loans, % GDP	0.0	78 ○	7.3.4	Mobile app creation/bn PPP\$ GDP	19.0	23
4.2	Investment	37.9	87				
4.2.1	Ease of protecting minority investors*	71.7	24				
4.2.2	Market capitalization, % GDP	22.9	56 ○				
4.2.3	Venture capital deals/bn PPP\$ GDP	0.0	78 ○ ◇				
4.3	Trade, competition, & market scale	78.5	15 ● ◆				
4.3.1	Applied tariff rate, weighted avg., %	3.5	67				
4.3.2	Intensity of local competition†	80.5	6 ● ◆				
4.3.3	Domestic market scale, bn PPP\$	2,314.4	13 ● ◆				

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

Turkey has complete data coverage in the GII 2019.

The following table lists data that are outdated for Turkey.

Outdated data

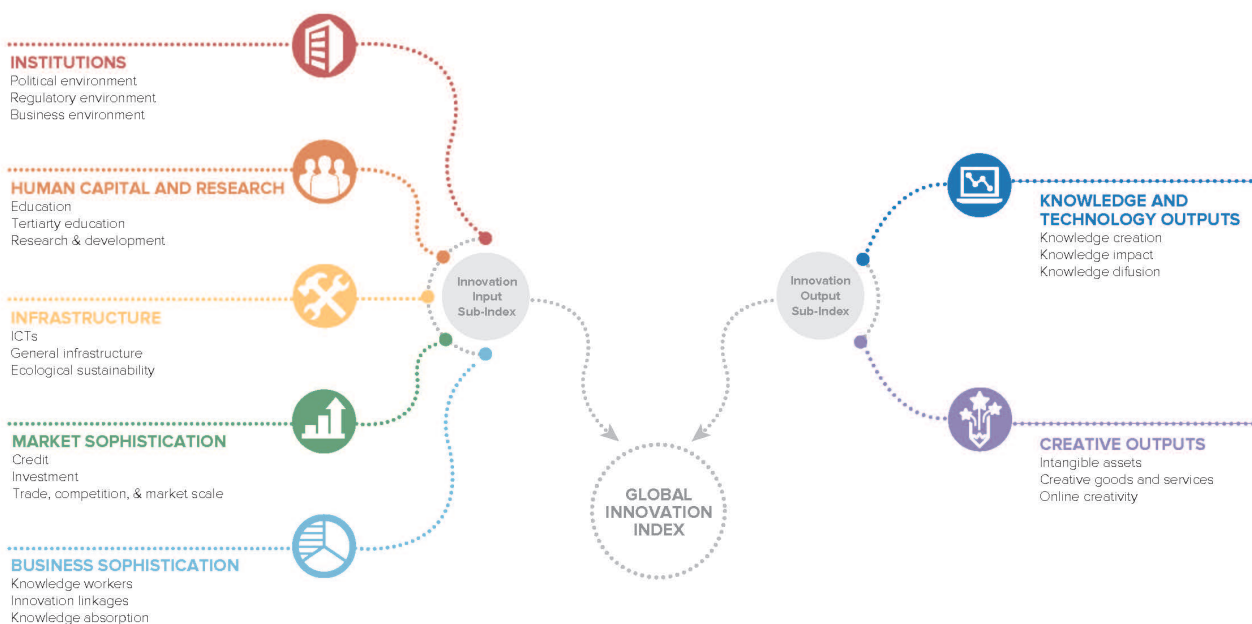
Code	Indicator name	Country year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2015	2017	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2016	2017	UNESCO Institute for Statistics
2.2.2	Graduates in science & engineering, %	2014	2016	UNESCO Institute for Statistics
4.1.3	Microfinance gross loans, % GDP	2015	2017	Microfinance Information Exchange

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 2019, the GI presents its 12th edition devoted to the theme **Creating Healthy Lives—The Future of Medical Innovation**.

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

Framework of the Global Innovation Index 2019



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

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

