



GLOBAL INNOVATION INDEX 2019

THAILAND

43rd

Thailand ranks 43rd 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 Thailand 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 Thailand's ranking in the GII 2019 is between 41 and 43.

Thailand's Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
2019	43	47	43
2018	44	52	45
2017	51	65	43

- Thailand performs better in Innovation Outputs than Inputs.
- This year Thailand ranks 47th in Innovation Inputs, better than last year and compared to 2017.
- As for Innovation Outputs, Thailand ranks 43rd. This position is better than last year and the same compared to 2017.

4th

Thailand ranks 4th among the 34 upper middle-income economies.

10th

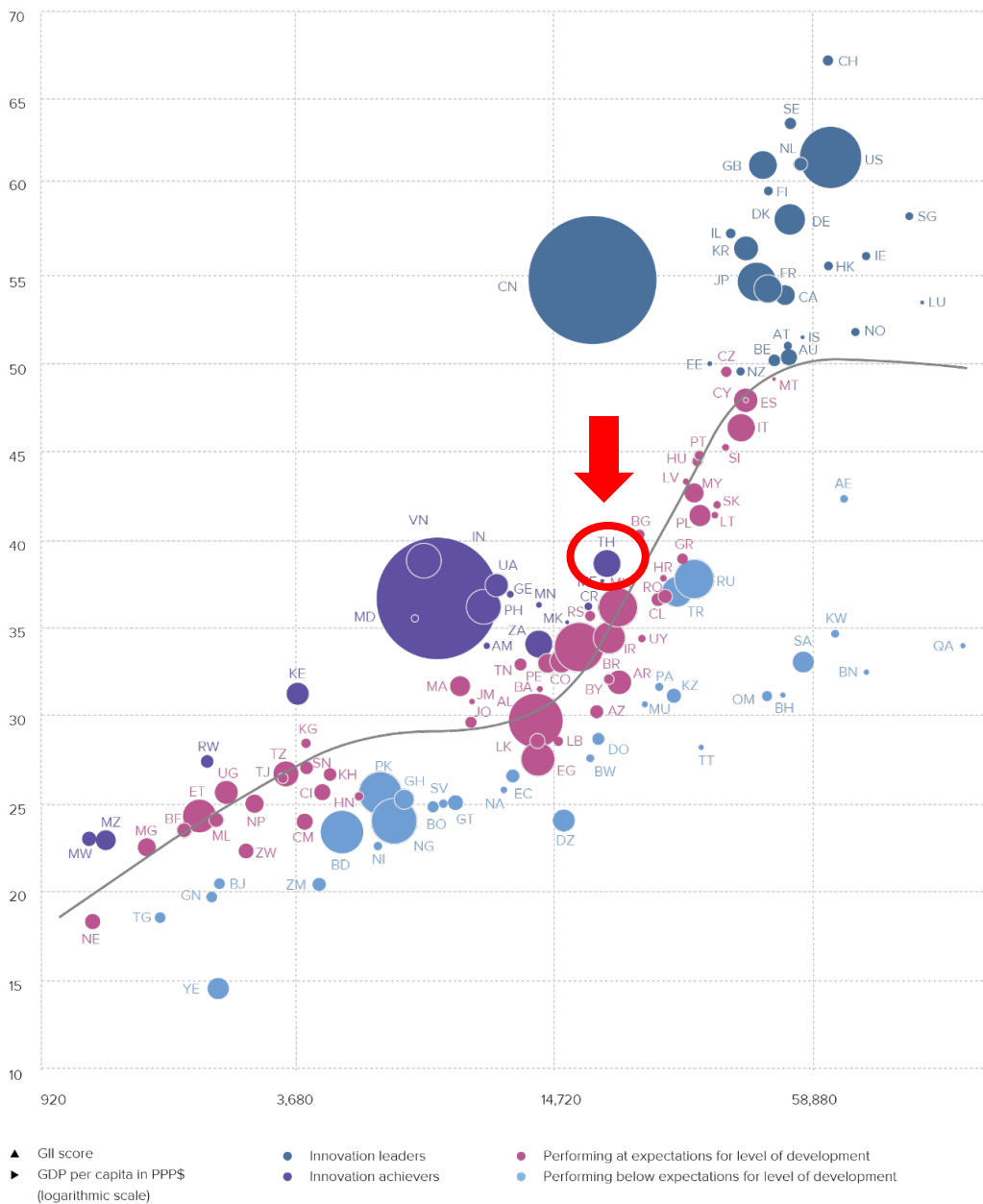
Thailand ranks 10th among the 15 economies in South East Asia, East Asia, and Oceania.

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, Thailand performs above its expected level of development.

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

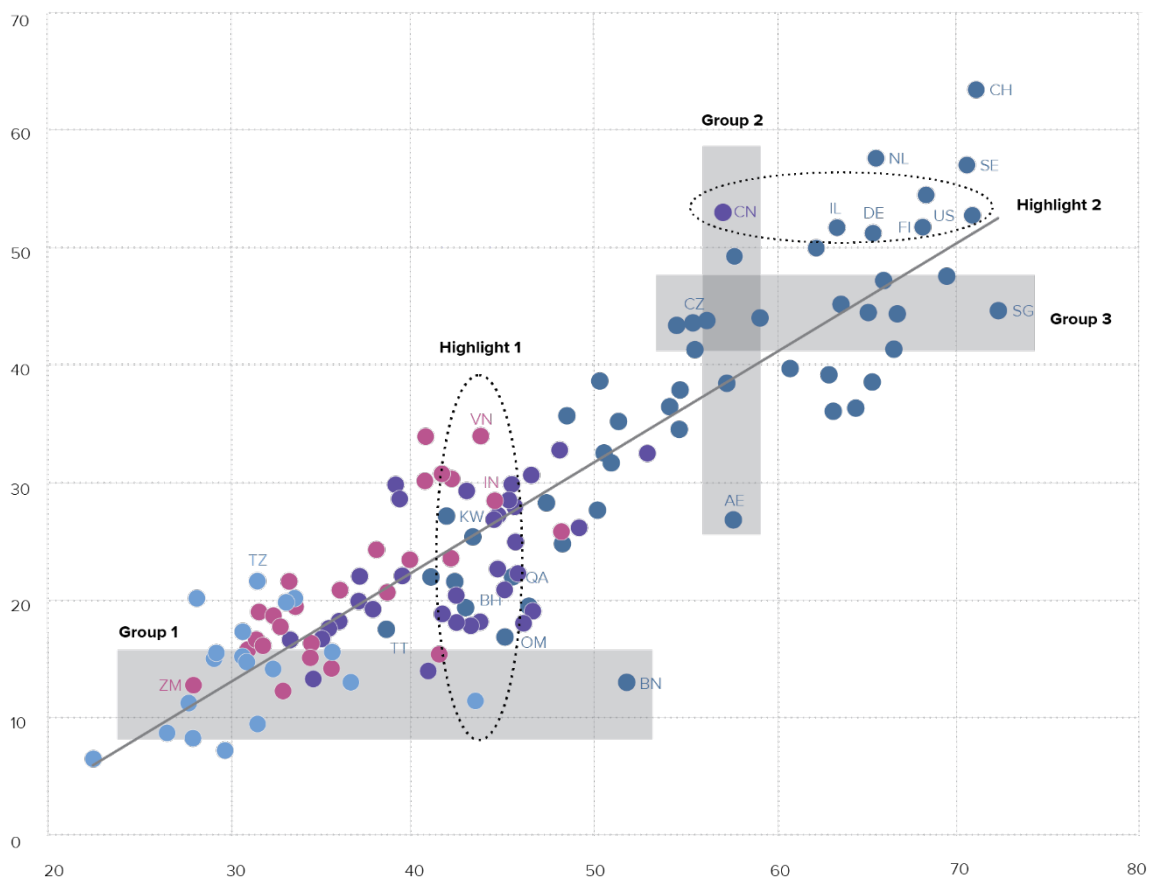


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

Innovation input/output performance by income group, 2019

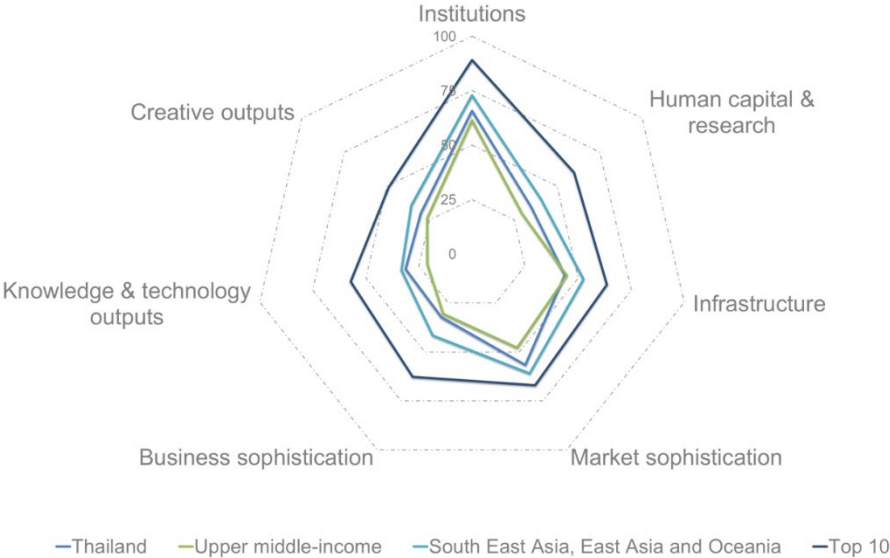


- ▲ Output score
- ▶ Input score
- High income
- Upper-middle income
- Lower-middle income
- Low income
- Fitted values

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 THAILAND TO OTHER UPPER MIDDLE-INCOME ECONOMIES AND THE SOUTH EAST ASIA, EAST ASIA, AND OCEANIA REGION

Thailand's scores in the seven GII pillars



Upper middle-income economies

Thailand has high scores in all GII pillars but Infrastructure which is below the average of the upper middle-income group.

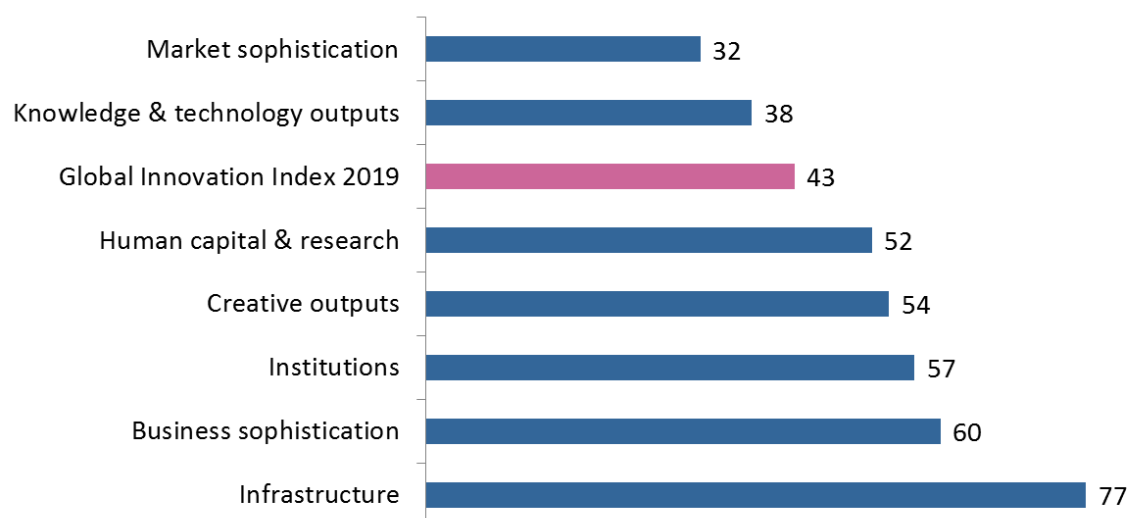
South East Asia, East Asia, and Oceania Region

Compared to other economies in the South East Asia, East Asia, and Oceania region, Thailand performs below average in all of the 7 GII pillars.

Top ranks are found in areas such as Business environment, Trade, competition, & market scale, Knowledge diffusion, and Creative goods & services, where the country ranks in the top 25 worldwide.

OVERVIEW OF THAILAND'S RANKINGS IN THE 7 GII AREAS

Thailand performs the best in Market sophistication and its weakest performance is in Infrastructure.



*The highest possible ranking in each pillar is 1.

THAILAND'S INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
1.3	Business environment	20	1.2	Regulatory environment	105
4.1.2	Domestic credit to private sector, % GDP	12	1.2.3	Cost of redundancy dismissal, salary weeks	120
4.2.1	Ease of protecting minority investors*	14	2.1.4	PISA scales in reading, maths & science	56
4.2.2	Market capitalization, % GDP	10	2.1.5	Pupil-teacher ratio, secondary	97
4.3.3	Domestic market scale, bn PPP\$	19	4.1.3	Microfinance gross loans, % GDP	80
5.1.4	GERD financed by business, %	4	4.2.3	Venture capital deals/bn PPP\$ GDP	71
5.3.1	Intellectual property payments, % total trade	20	5.1.2	Firms offering formal training, % firms	79
5.3.2	High-tech imports, % total trade	12	5.2.3	GERD financed by abroad, %	92
6.2.1	Growth rate of PPP\$ GDP/worker, %, 3-year average	14	5.3.3	ICT services imports, % total trade	123
6.3.2	High-tech net exports, % total trade	8	6.3.3	ICT services exports, % total trade	119
7.2	Creative goods & services	18	7.2.1	Cultural & creative services exports, % total trade	117
7.2.5	Creative goods exports, % total trade	1			

STRENGTHS

- GII strengths for Thailand are found in five of the seven GII pillars.
- Several of them are in Market sophistication (32), where Thailand's strengths are four indicators: Domestic credit to private sector (12), Ease of protecting minority investors (14), Market capitalization (10), and Domestic market scale (19).
- Other three relative strengths are in Business sophistication (60), and in particular in indicators R&D financed by business (4), Intellectual property payments (20), and High-tech imports (12).
- In Institutions (57), Thailand's strength is sub-pillar Business environment (20).
- In Knowledge & technology outputs (38), indicators Labor productivity growth (14) and High-tech exports (8) are GII strengths for Thailand.
- In Creative outputs (54), Thailand's strengths are sub-pillar Creative goods & services (18) and one of its indicators - Creative goods exports, where the economy achieves the top spot in the world.

WEAKNESSES

- Thailand's weaknesses in the GII are found in six of the seven GII pillars.
- In Institutions (57), Thailand's weaknesses are sub-pillar Regulatory environment (105) and one of its three indicators - Cost of redundancy dismissal (120).
- In Human capital & research (52), relative weaknesses are two indicators: PISA results (56) and Pupil-teacher ratio (97).
- In Market sophistication (32), Thailand's weaknesses are indicators Microfinance gross loans (80) and Venture capital deals (71).
- In Business sophistication (60), GII weaknesses are found in three indicators: Firms offering formal training (79), R&D financed by abroad (92), and ICT services imports (123).
- On the innovation output side only two relative weaknesses are found: ICT services exports (119) in Knowledge & technology outputs (38) and Cultural & creative services exports (117) in Creative outputs (54).

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2018 rank	
43	47	Upper middle	SEAO	69.2	1,323.2	19,476.5	44	
INSTITUTIONS 65.8 57				BUSINESS SOPHISTICATION 32.3 60				
1.1	Political environment	60.6	50	5.1	Knowledge workers	32.2	80	
1.1.1	Political and operational stability*	70.2	61	5.1.1	Knowledge-intensive employment, %	14.3	90	
1.1.2	Government effectiveness*	55.9	49	5.1.2	Firms offering formal training, % firms	18.0	79	
1.2	Regulatory environment	52.0	105 ○	5.1.3	GERD performed by business, % GDP	0.6	35	
1.2.1	Regulatory quality*	45.7	65	5.1.4	GERD financed by business, %	75.2	4	
1.2.2	Rule of law*	47.5	61	5.1.5	Females employed w/advanced degrees, %	9.5	69	
1.2.3	Cost of redundancy dismissal, salary weeks	36.0	120	○ ◇	5.2	Innovation linkages	21.0 81	
1.3	Business environment	84.7	20 ● ◆	5.2.1	University/industry research collaboration†	52.2	36	
1.3.1	Ease of starting a business*	92.7	36	5.2.2	State of cluster development†	48.8	53	
1.3.2	Ease of resolving insolvency*	76.6	22	◆	5.2.3	GERD financed by abroad, %	0.9	92
HUMAN CAPITAL & RESEARCH 34.7 52				KNOWLEDGE & TECHNOLOGY OUTPUTS 31.3 38 ◆				
2.1	Education	40.6	81	5.3	Knowledge absorption	43.8	30 ◆	
2.1.1	Expenditure on education, % GDP	4.1	74	5.3.1	Intellectual property payments, % total trade	1.6	20	
2.1.2	Government funding/pupil, secondary, % GDP/cap	18.0	62	5.3.2	High-tech imports, % total trade	15.3	12	
2.1.3	School life expectancy, years	15.4	40	5.3.3	ICT services imports, % total trade	0.2	123	
2.1.4	PISA scales in reading, maths, & science	415.3	56	○ ◇	5.3.4	FDI net inflows, % GDP	1.6	95
2.1.5	Pupil-teacher ratio, secondary	24.2	97	○ ◇	5.3.5	Research talent, % in business enterprise	56.8	17
2.2	Tertiary education	37.1	45	6.1	Knowledge creation	16.7	54	
2.2.1	Tertiary enrolment, % gross	49.3	57	6.1.1	Patents by origin/bn PPP\$ GDP	0.8	69	
2.2.2	Graduates in science & engineering, %	27.9	20	6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	69	
2.2.3	Tertiary inbound mobility, %	1.3	83	6.1.3	Utility models by origin/bn PPP\$ GDP	1.9	13	
2.3	Research & development (R&D)	26.4	41 ◆	6.1.4	Scientific & technical articles/bn PPP\$ GDP	4.5	86	
2.3.1	Researchers, FTE/mn pop	1,210.4	48	6.1.5	Citable documents H-index	20.2	38	
2.3.2	Gross expenditure on R&D, % GDP	0.8	46	6.2	Knowledge impact	43.6	34	
2.3.3	Global R&D companies, avg. exp. top 3, mn US\$	46.0	35	◆	6.2.1	Growth rate of PPP\$ GDP/worker, %	3.9	14
2.3.4	QS university ranking, average score top 3*	28.0	39	◆	6.2.2	New businesses/th pop. 15-64	1.0	71
INFRASTRUCTURE 43.6 77				CREATIVE OUTPUTS 30.0 54				
3.1	Information & communication technologies (ICTs)	60.8	77	6.3	Knowledge diffusion	33.8	25 ◆	
3.1.1	ICT access*	56.8	77	6.3.1	Intellectual property receipts, % total trade	0.0	72	
3.1.2	ICT use*	57.2	61	6.3.2	High-tech net exports, % total trade	15.0	8	
3.1.3	Government's online service*	63.9	85	◆	6.3.3	ICT services exports, % total trade	0.2	119
3.1.4	E-participation*	65.2	80	○ ◇	6.3.4	FDI net outflows, % GDP	2.9	25
3.2	General infrastructure	37.3	54	7.1	Intangible assets	41.5	61	
3.2.1	Electricity output, kWh/mn pop	2,778.4	65	7.1.1	Trademarks by origin/bn PPP\$ GDP	25.2	80	
3.2.2	Logistics performance*	63.0	31	◆	7.1.2	Industrial designs by origin/bn PPP\$ GDP	3.0	42
3.2.3	Gross capital formation, % GDP	23.4	61	7.1.3	ICTs & business model creation†	67.3	39	
3.3	Ecological sustainability	32.7	85	7.1.4	ICTs & organizational model creation†	60.3	43	
3.3.1	GDP/unit of energy use	7.6	81	7.2	Creative goods & services	33.5	18 ● ◆	
3.3.2	Environmental performance*	49.9	98	○ ◇	7.2.1	Cultural & creative services exports, % total trade	0.0	117
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	2.8	36	○ ◇	7.2.2	National feature films/mn pop. 15-69	1.0	83
MARKET SOPHISTICATION 56.5 32 ◆				7.3 Online creativity 3.5 74				
4.1	Credit	46.6	42 ◆	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	5.4	52	
4.1.1	Ease of getting credit*	70.0	40	7.3.2	Country-code TLDs/th pop. 15-69	0.4	99	
4.1.2	Domestic credit to private sector, % GDP	143.8	12	◆	7.3.3	Wikipedia edits/mn pop. 15-69	5.6	80
4.1.3	Microfinance gross loans, % GDP	0.0	80	○	7.3.4	Mobile app creation/bn PPP\$ GDP	4.4	51
4.2	Investment	48.9	41	4.3	Trade, competition, & market scale	74.0	22 ◆	
4.2.1	Ease of protecting minority investors*	75.0	14	◆	4.3.1	Applied tariff rate, weighted avg., %	3.5	68
4.2.2	Market capitalization, % GDP	104.2	10	◆	4.3.2	Intensity of local competition†	74.2	34
4.2.3	Venture capital deals/bn PPP\$ GDP	0.0	71	○	4.3.3	Domestic market scale, bn PPP\$	1,323.2	19

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

Thailand has complete data coverage in the GII 2019.

The following table lists data that are outdated for Thailand.

Outdated data

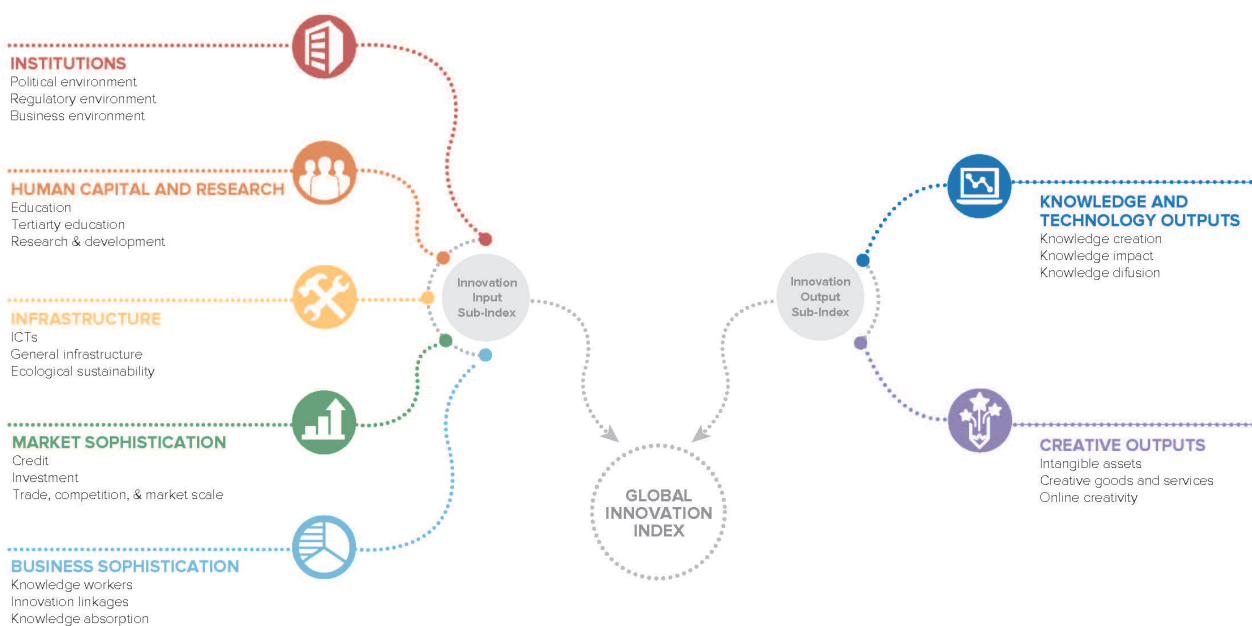
Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	2013	2015	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	2013	2015	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2016	2017	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
4.1.3	Microfinance gross loans, % GDP	2011	2017	Microfinance Information Exchange
4.3.1	Applied tariff rate, weighted mean, %	2015	2017	World Bank
5.1.1	Knowledge-intensive employment, %	2016	2017	Source: International Labour Organization
5.1.3	GERD performed by business, % GDP	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.5	Females employed w/advanced degrees, %	2016	2017	International Labour Organization
5.3.2	High-tech imports, % total trade	2016	2017	United Nations, COMTRADE
5.3.5	Research talent, % in business enterprise	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
6.2.5	High- & medium-high-tech manufactures, %	2011	2016	United Nations Industrial Development Organization
6.3.2	High-tech net exports, % total trade	2016	2017	United Nations, COMTRADE
7.2.2	National feature films/mn pop. 15–69	2010	2017	UNESCO Institute for Statistics
7.2.4	Printing & other media, % manufacturing	2011	2016	United Nations Industrial Development Organization
7.2.5	Creative goods exports, % total trade	2016	2017	United Nations, COMTRADE

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 GII 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 GII aims to provide a rich innovation ranking and 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 countries that incorporate the GII 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 GII has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each containing three sub-pillars.

