

ESTONIA

25th

Estonia ranks 25th among the 131 economies featured in the GI 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 GI aims to capture the multi-dimensional facets of innovation.

The following table shows the rankings of Estonia over the past three years, noting that data availability and changes to the GI model framework influence year-on-year comparisons of the GI rankings. The statistical confidence interval for the ranking of Estonia in the GI 2020 is between ranks 20 and 25.

Rankings of Estonia (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	25	25	20
2019	24	27	19
2018	24	26	17

- Estonia performs better in innovation outputs than innovation inputs in 2020.
- This year Estonia ranks 25th in innovation inputs, higher than last year and higher compared to 2018.
- As for innovation outputs, Estonia ranks 20th. This position is lower than last year and lower compared to 2018.

24th

Estonia ranks 24th among the 49 high-income group economies.

16th

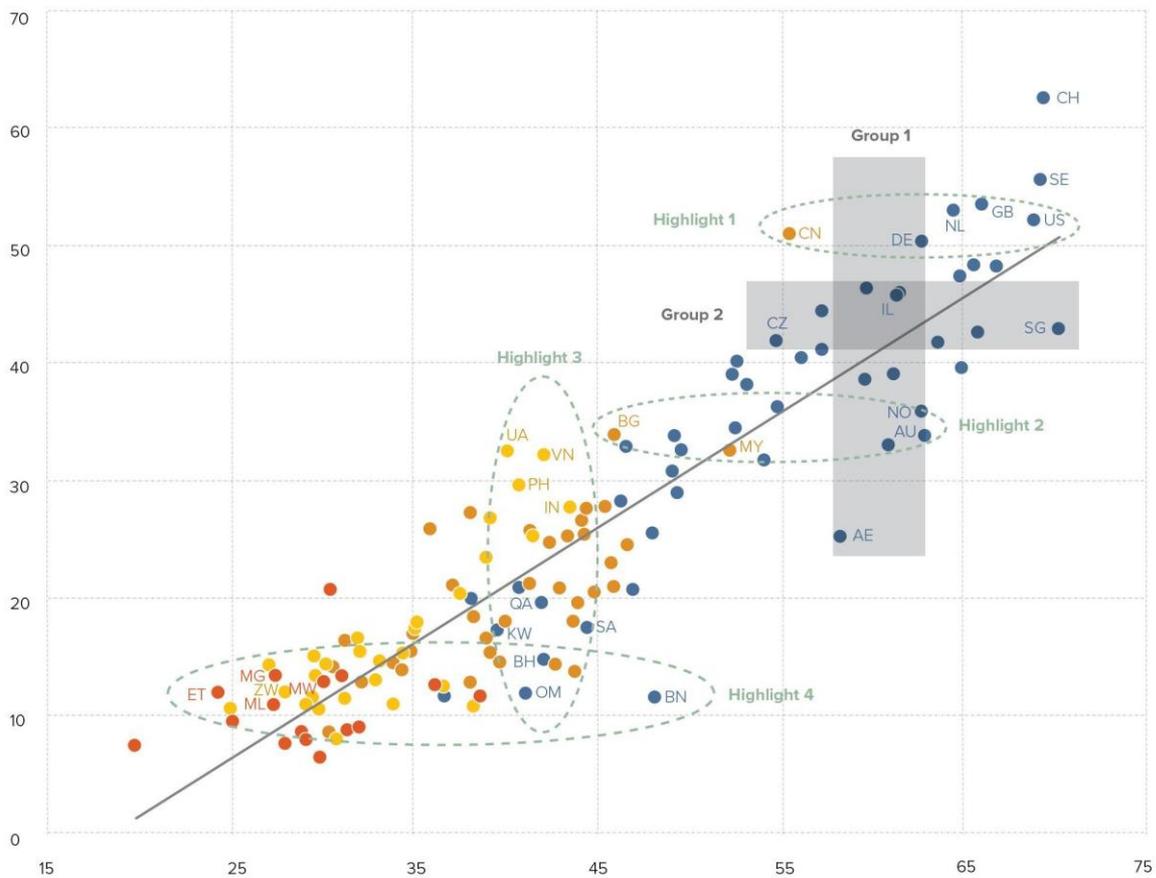
Estonia ranks 16th among the 39 economies in Europe.

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.

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

Innovation input to output performance, 2020

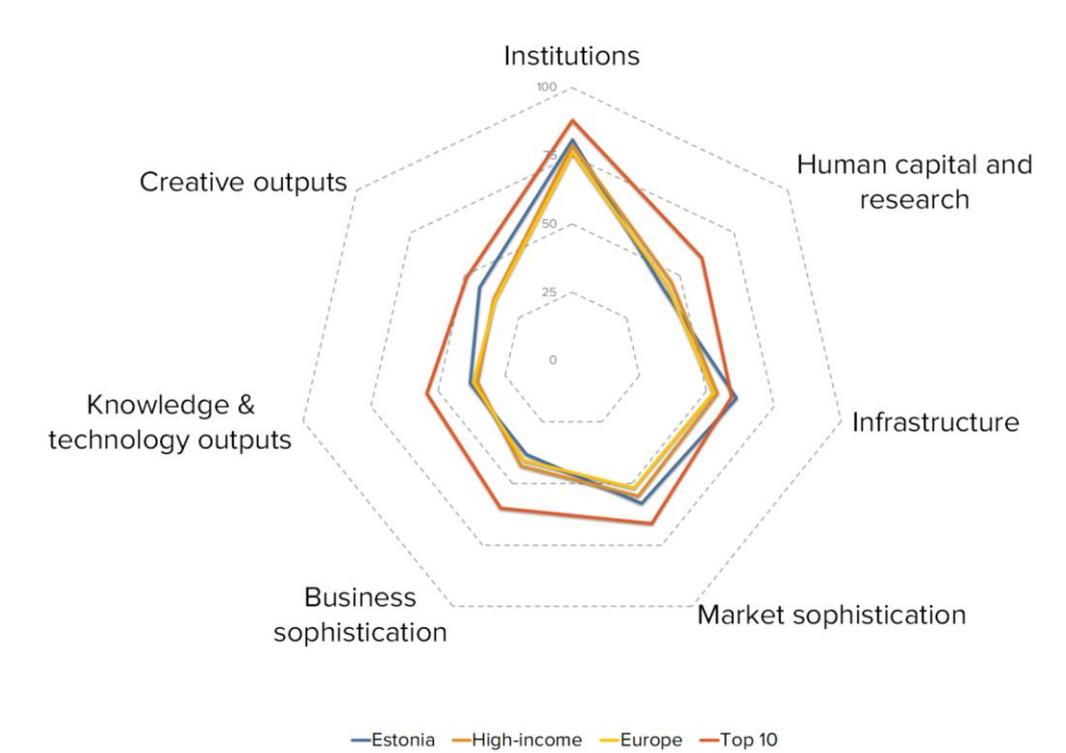


▲ Output score ● High income group ● Lower middle-income group — Fitted values
 ► Input score ● Upper middle-income group ● Low income group

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 ESTONIA AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

Estonia's scores in the seven GII pillars



High-income group economies

Estonia has high scores in five out of the seven GII pillars: Institutions, Infrastructure, Market sophistication, Knowledge & technology outputs and Creative outputs, which are above average for the high-income group.

Conversely, Estonia scores below average for its income group in two pillars: Human capital & research and Business sophistication.

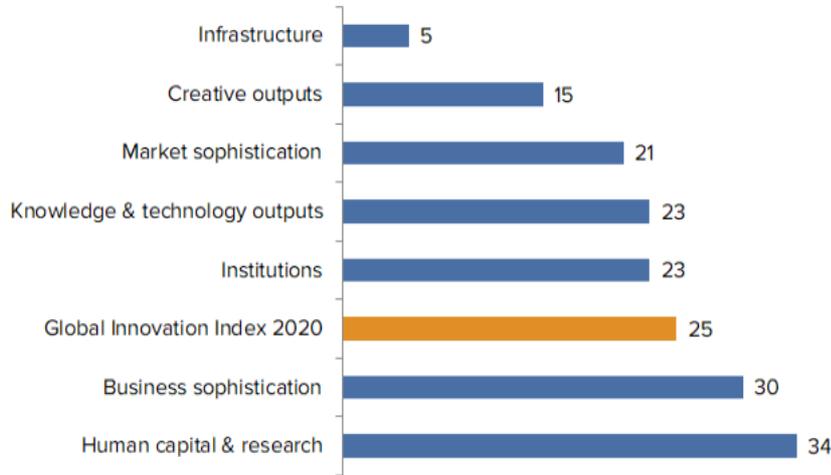
Europe

Compared to other economies in Europe, Estonia performs:

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

OVERVIEW OF ESTONIA RANKINGS IN THE SEVEN GII AREAS

Estonia performs best in Infrastructure and its weakest performance is in Human capital & research.



*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 Estonia in the GII 2020.

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
2.1.4	PISA scales in reading, maths & science	4	2.3.3	Global R&D companies, top 3, mn US\$	42
3	Infrastructure	5	3.3.1	GDP/unit of energy use	90
3.3	Ecological sustainability	1	4.2.1	Ease of protecting minority investors*	77
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	1	4.3.3	Domestic market scale, bn PPP\$	101
5.1.5	Females employed w/advanced degrees, %	7	5.2.2	State of cluster development†	82
6.2.2	New businesses/th pop. 15–64	2	5.3.1	Intellectual property payments, % total trade	79
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	6	6.2.3	Computer software spending, % GDP	80
7.1.4	ICTs & organizational model creation†	5	6.2.5	High- & medium-high-tech manufacturing, %	60
7.2.1	Cultural & creative services exports, % total trade	8	6.3.1	Intellectual property receipts, % total trade	63
7.2.2	National feature films/mn pop. 15–69	5	7.1.2	Global brand value, top 5000, % GDP	80
7.3.3	Wikipedia edits/mn pop. 15–69	2			
7.3.4	Mobile app creation/bn PPP\$ GDP	6			

STRENGTHS

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

- Human capital & research (34): the indicator PISA scales in reading, maths & science (4) is a strength.
- Infrastructure (5): demonstrates strengths in the sub-pillar Ecological sustainability (1) and in the indicator ISO 14001 environmental certificates (1).
- Business sophistication (30): the indicator Females employed with advanced degrees (7) is a strength.
- Knowledge & technology outputs (23): reveals strengths in the indicators New businesses (2) and ISO 9001 quality certificates (6).
- Creative outputs (15): has strengths in the indicators ICTs & organizational model creation (5), Cultural & creative services exports (8), National feature films (5), Wikipedia edits (2) and Mobile app creation (6).

WEAKNESSES

GII weaknesses for Estonia are found in six of the seven GII pillars.

- Human capital & research (34): the indicator Global R&D companies (42) is a weakness.
- Infrastructure (5): the indicator GDP per unit of energy use (90) is a weakness.
- Market sophistication (21): shows weaknesses in the indicators Ease of protecting minority investors (77) and Domestic market scale (101).
- Business sophistication (30): demonstrates weaknesses in the indicators State of cluster development (82) and Intellectual property payments (79).
- Knowledge & technology outputs (23): displays weaknesses in the indicators Computer software spending (80), High- & medium-high-tech manufacturing (60) and Intellectual property receipts (63).
- Creative outputs (15): the indicator Global brand value (80) is a weakness.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2019 rank
20	25	High	EUR	1.3	47.3	31,300.6	24
				Score/Value	Rank		
INSTITUTIONS				80.8	23		
1.1	Political environment		79.2	23			
1.1.1	Political and operational stability*		83.9	21			
1.1.2	Government effectiveness*		76.8	25			
1.2	Regulatory environment		85.7	18			
1.2.1	Regulatory quality*		83.0	17			
1.2.2	Rule of law*		79.0	22			
1.2.3	Cost of redundancy dismissal, salary weeks		12.9	39			
1.3	Business environment		77.7	41			
1.3.1	Ease of starting a business*		95.4	13			
1.3.2	Ease of resolving insolvency*		60.1	49			
HUMAN CAPITAL & RESEARCH				42.3	34		
2.1	Education		54.6	39			
2.1.1	Expenditure on education, % GDP		5.2	38			
2.1.2	Government funding/pupil, secondary, % GDP/cap		19.1	54			
2.1.3	School life expectancy, years		16.0	36			
2.1.4	PISA scales in reading, maths, & science		525.5	4	◆◆		
2.1.5	Pupil-teacher ratio, secondary		9.2	24			
2.2	Tertiary education		48.4	19			
2.2.1	Tertiary enrolment, % gross		69.6	29			
2.2.2	Graduates in science & engineering, %		28.8	20			
2.2.3	Tertiary inbound mobility, %		8.2	27			
2.3	Research & development (R&D)		23.9	43			
2.3.1	Researchers, FTE/mn pop.		3,755.3	27			
2.3.2	Gross expenditure on R&D, % GDP		1.4	25			
2.3.3	Global R&D companies, avg. exp. top 3, mn \$US		0.0	42	○◇		
2.3.4	QS university ranking, average score top 3*		22.0	46			
INFRASTRUCTURE				61.2	5	◆◆◆	
3.1	Information & communication technologies (ICTs)		86.0	20			
3.1.1	ICT access*		81.2	24			
3.1.2	ICT use*		81.6	16			
3.1.3	Government's online service*		90.3	26			
3.1.4	E-participation*		91.0	27			
3.2	General infrastructure		36.7	30			
3.2.1	Electricity output, kWh/mn pop.		9,318.8	16			
3.2.2	Logistics performance*		58.3	35			
3.2.3	Gross capital formation, % GDP		26.9	38			
3.3	Ecological sustainability		60.9	1	◆◆		
3.3.1	GDP/unit of energy use*		6.9	90	○		
3.3.2	Environmental performance*		65.3	30			
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP		12.5	1	◆◆		
MARKET SOPHISTICATION				58.0	21		
4.1	Credit		48.3	41			
4.1.1	Ease of getting credit*		70.0	44			
4.1.2	Domestic credit to private sector, % GDP		62.6	53			
4.1.3	Microfinance gross loans, % GDP		n/a	n/a			
4.2	Investment		61.2	15	◆		
4.2.1	Ease of protecting minority investors*		58.0	77	○		
4.2.2	Market capitalization, % GDP		n/a	n/a			
4.2.3	Venture capital deals/bn PPP\$ GDP		0.4	8	◆		
4.3	Trade, competition, and market scale		64.5	52			
4.3.1	Applied tariff rate, weighted avg., %		1.7	22			
4.3.2	Intensity of local competition†		79.7	10			
4.3.3	Domestic market scale, bn PPP\$		47.3	101	○◇		
BUSINESS SOPHISTICATION				38.1	30		
5.1	Knowledge workers		51.8	26			
5.1.1	Knowledge-intensive employment, %		47.0	14			
5.1.2	Firms offering formal training, %		40.7	26			
5.1.3	GERD performed by business, % GDP		0.6	34			
5.1.4	GERD financed by business, %		43.6	38			
5.1.5	Females employed w/advanced degrees, %		26.4	7	◆◆		
5.2	Innovation linkages		29.9	34			
5.2.1	University/industry research collaboration†		47.6	48			
5.2.2	State of cluster development†		43.9	82	○◇		
5.2.3	GERD financed by abroad, % GDP		0.2	19			
5.2.4	JV-strategic alliance deals/bn PPP\$ GDP		0.1	22			
5.2.5	Patent families 2+ offices/bn PPP\$ GDP		0.5	32			
5.3	Knowledge absorption		32.7	50			
5.3.1	Intellectual property payments, % total trade		0.3	79	○		
5.3.2	High-tech imports, % total trade		9.7	37			
5.3.3	ICT services imports, % total trade		2.6	13			
5.3.4	FDI net inflows, % GDP		4.7	32			
5.3.5	Research talent, % in business enterprise		33.3	39			
KNOWLEDGE & TECHNOLOGY OUTPUTS				37.9	23		
6.1	Knowledge creation		29.6	33			
6.1.1	Patents by origin/bn PPP\$ GDP		1.6	50			
6.1.2	PCT patents by origin/bn PPP\$ GDP		0.8	29			
6.1.3	Utility models by origin/bn PPP\$ GDP		0.6	33			
6.1.4	Scientific & technical articles/bn PPP\$ GDP		30.7	9	◆		
6.1.5	Citable documents H-index		17.0	49			
6.2	Knowledge impact		42.4	13			
6.2.1	Growth rate of PPP\$ GDP/worker, %		3.2	24	◆		
6.2.2	New businesses/th pop. 15-64		23.6	2	◆◆◆		
6.2.3	Computer software spending, % GDP		0.0	80	○◇		
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP		23.4	6	◆◆		
6.2.5	High- and medium-high-tech manufacturing, %		17.8	60	○		
6.3	Knowledge diffusion		41.8	26			
6.3.1	Intellectual property receipts, % total trade		0.1	63	○		
6.3.2	High-tech net exports, % total trade		9.3	16			
6.3.3	ICT services exports, % total trade		4.0	21			
6.3.4	FDI net outflows, % GDP		1.0	54			
CREATIVE OUTPUTS				43.0	15		
7.1	Intangible assets		39.4	29			
7.1.1	Trademarks by origin/bn PPP\$ GDP		100.6	10	◆		
7.1.2	Global brand value, top 5,000, % GDP		0.0	80	○◇		
7.1.3	Industrial designs by origin/bn PPP\$ GDP		5.4	24			
7.1.4	ICTs & organizational model creation†		79.3	5	◆◆		
7.2	Creative goods and services		36.5	18			
7.2.1	Cultural & creative services exports, % total trade		1.8	8	◆		
7.2.2	National feature films/mn pop. 15-69		19.5	5	◆◆		
7.2.3	Entertainment & Media market/th pop. 15-69		n/a	n/a			
7.2.4	Printing and other media, % manufacturing		2.0	16			
7.2.5	Creative goods exports, % total trade		1.1	41			
7.3	Online creativity		56.6	14			
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69		9.9	40			
7.3.2	Country-code TLDs/th pop. 15-69		42.0	17			
7.3.3	Wikipedia edits/mn pop. 15-69		99.5	2	◆◆◆		
7.3.4	Mobile app creation/bn PPP\$ GDP		75.0	6	◆◆◆		

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * 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 Estonia.

Missing data

Code	Indicator name	Country year	Model year	Source
4.1.3	Microfinance gross loans, % GDP	n/a	2018	Microfinance Information Exchange
4.2.2	Market capitalization, % GDP	n/a	2018	World Federation of Exchanges
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2018	PwC

Outdated data

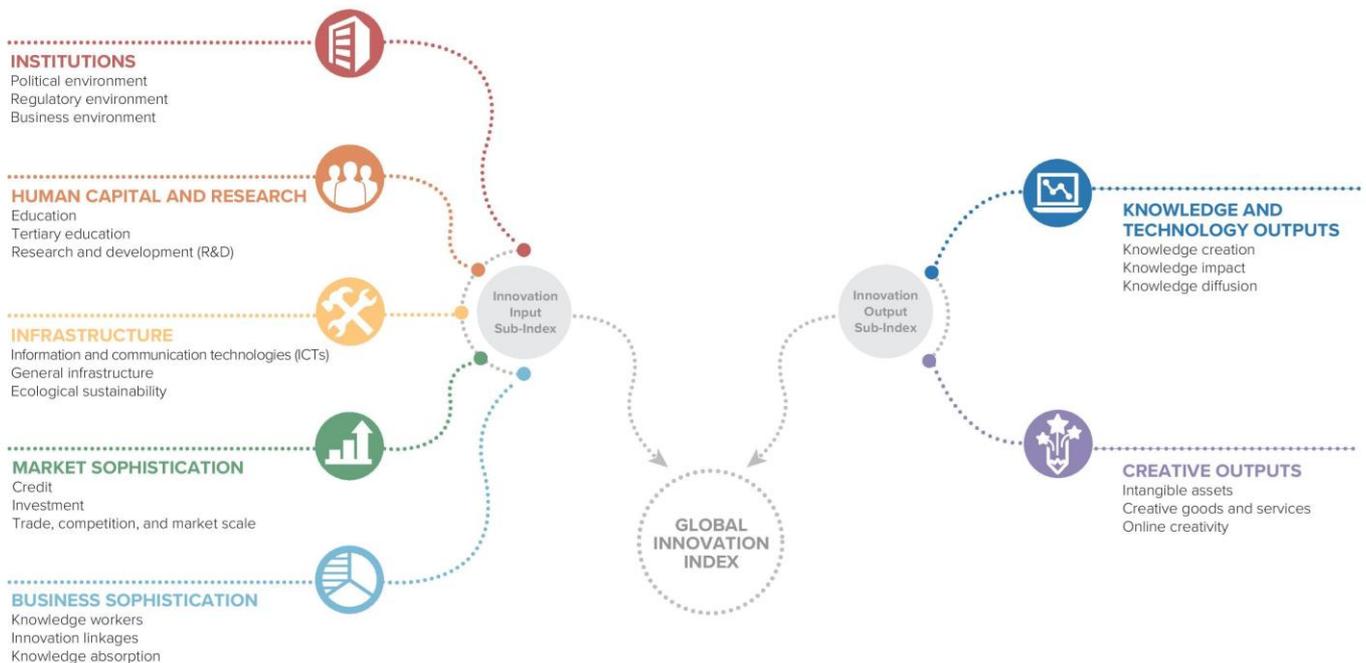
Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	2016	2018	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2017	2018	UNESCO Institute for Statistics

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.

