



# GLOBAL INNOVATION INDEX 2019

## HUNGARY

**33rd**

Hungary ranks 33rd 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 Hungary 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 Hungary's ranking in the GII 2019 is between 31 and 33.

**Hungary's Rankings, 2017 - 2019**

	<b>GII</b>	<b>Innovation Inputs</b>	<b>Innovation Outputs</b>
<b>2019</b>	33	39	26
<b>2018</b>	33	41	25
<b>2017</b>	39	41	37

- Hungary performs better in Innovation Outputs than Inputs.
- This year Hungary ranks 39rd in Innovation Inputs, better than last year and compared to 2017.
- As for Innovation Outputs, Hungary ranks 26th. This position is worse than last year but better compared to 2017.

**32nd**

Hungary ranks 32nd among the 50 high-income economies.

**22nd**

Hungary ranks 22nd among the 39 economies in Europe.

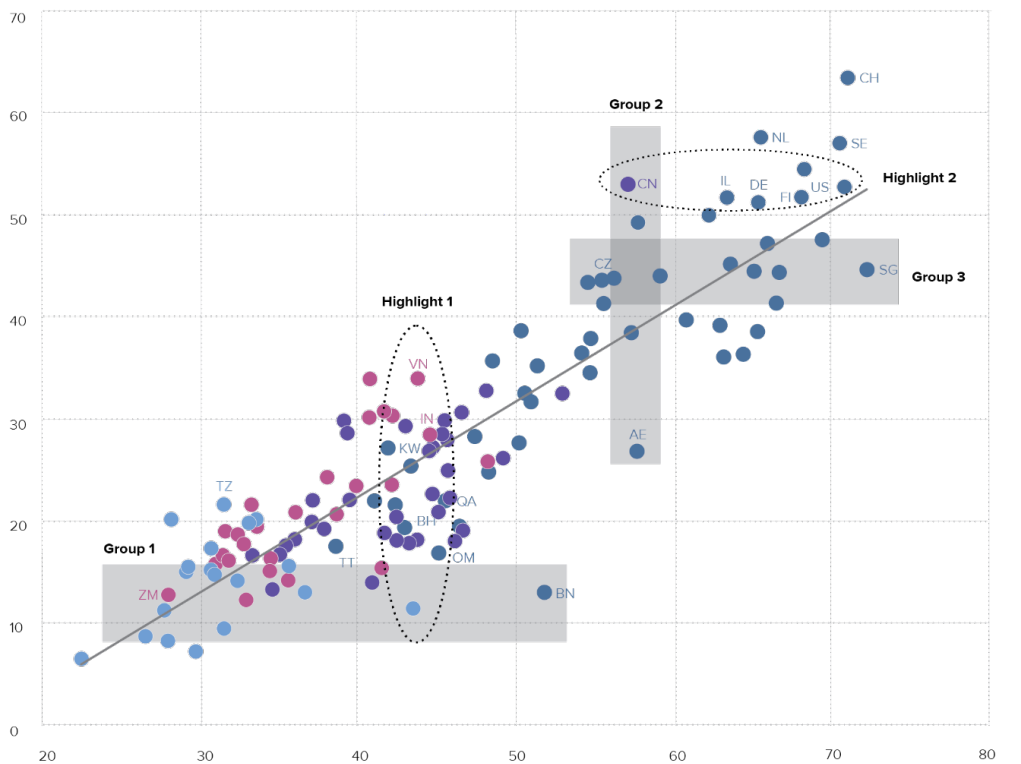


# EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs, 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.

Hungary 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

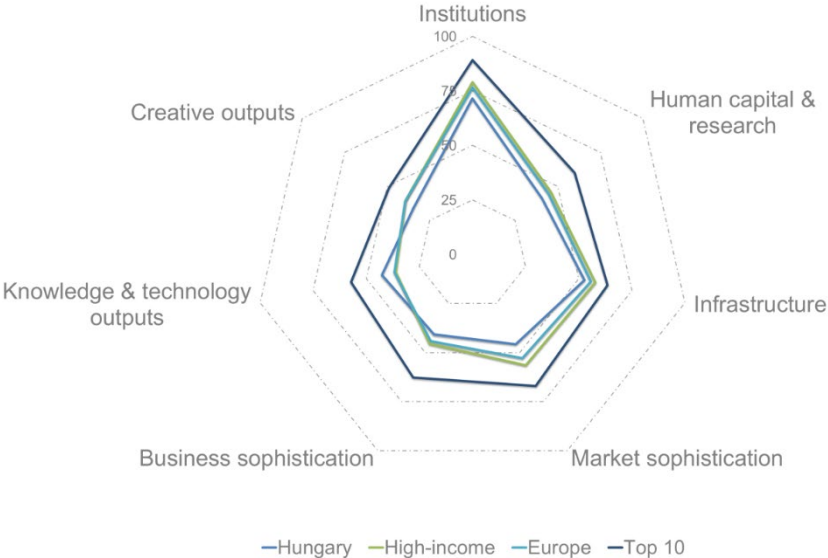
● Lower-middle income  
 ● Low income

— 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 HUNGARY TO OTHER HIGH-INCOME ECONOMIES AND THE EUROPE REGION

Hungary's scores in the seven GII pillars



## High-income economies

Hungary has high scores in Knowledge & technology outputs which is above the average of the high-income group.

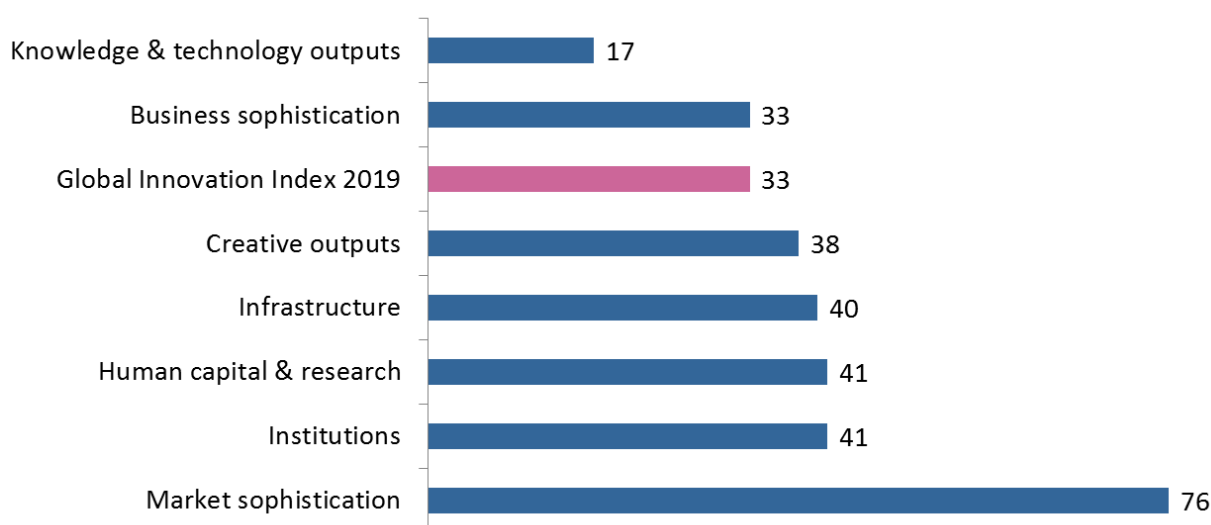
## Europe Region

Compared to other economies in the Europe region, Hungary performs above average in Knowledge & technology outputs.

Top ranks are found in sub-pillars Knowledge absorption, Knowledge impact, Knowledge diffusion, and Creative goods & services where the country ranks in the top 25 worldwide.

## OVERVIEW OF HUNGARY'S RANKINGS IN THE 7 GII AREAS

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



\*The highest possible ranking in each pillar is 1.

## HUNGARY'S INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths		
Code	Indicator name	Rank
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	11
5.3	Knowledge absorption	16
5.3.2	High-tech imports, % total trade	17
5.3.4	FDI net inflows, % GDP, 3-year average	9
5.3.5	Research talent, % in business enterprise	11
6	Knowledge & technology outputs	17
6.2	Knowledge impact	15
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	16
6.2.5	High- & medium-high-tech manufactures, %	8
6.3	Knowledge diffusion	8
6.3.1	Intellectual property receipts, % total trade	16
6.3.2	High-tech net exports, % total trade	11
6.3.4	FDI net outflows, % GDP, 3-year average	1
7.2.5	Creative goods exports, % total trade	9

Weaknesses		
Code	Indicator name	Rank
3.1.4	E-participation*	67
4	Market sophistication	76
4.1.2	Domestic credit to private sector, % GDP	89
4.2	Investment	124
4.2.1	Ease of protecting minority investors*	93
4.2.2	Market capitalization, % GDP	62
4.2.3	Venture capital deals/bn PPP\$ GDP	56
4.3.2	Intensity of local competition†	110
5.1.2	Firms offering formal training, % firms	84
5.2.4	JV–strategic alliance deals/bn PPP\$ GDP	73
7.1.1	Trademarks by origin/bn PPP\$ GDP	64
7.2.4	Printing & other media, % manufacturing	75

## **STRENGTHS**

- GII strengths for Hungary are found in four of the seven GII pillars.
- Pillar Knowledge & technology outputs (17) is a notable GII strength for Hungary. Most of its relative strengths are concentrated in this area.
- In Knowledge & technology outputs (17), strengths are two of its three sub-pillars - Knowledge impact (15), Knowledge diffusion (8) - and their indicators ISO 9001 quality certificates (16), High- & medium-high-tech manufactures (8), Intellectual property receipts (16), High-tech exports (11), FDI outflows. In the latter, Hungary ranks first in the world.
- Several other relative strengths are in Business sophistication (33), where Hungary's strengths are sub-pillars Knowledge absorption (16) and indicators High-tech imports (17), FDI inflows (9), and Research talent (11).
- The other relative strengths for this country are indicators:
  - ISO 14001 environmental certificates (11) in Infrastructure (40); and
  - Creative goods exports (9) in Creative outputs (38).

## **WEAKNESSES**

- Hungary's weaknesses in the GII are found in four of the seven GII pillars.
- Pillar Market sophistication (76) is a notable weakness for Hungary. Most of its relative weaknesses are in this pillar.
- In Market sophistication (76), Hungary's weaknesses are sub-pillar Investment (124) and indicators Domestic credit to private sector (89), Ease of protecting minority investors (93), Market capitalization (62), Venture capital deals (56), Intensity of local competition (110).
- Other two weaknesses for Hungary are in Business sophistication (33), where indicators Firms offering formal training (84) and Joint Venture–strategic alliance deals (73) are GII weaknesses.
- In Creative outputs (38), Hungary's weaknesses are indicators Trademarks by origin (64) and Printing & other media (75).
- The last relative weakness is found in Infrastructure (40), where indicator E-participation (67) is a GII weakness for the country.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2018 rank
26	39	High	EUR	9.7	308.2	31,902.7	33
				Score/Value	Rank		
<b>INSTITUTIONS</b> .....				71.6	41		
<b>1.1</b>	<b>Political environment</b> .....	67.4	41				
1.1.1	Political and operational stability*.....	84.2	25				
1.1.2	Government effectiveness*.....	59.0	43	◇			
<b>1.2</b>	<b>Regulatory environment</b> .....	75.8	36				
1.2.1	Regulatory quality*.....	59.4	42				
1.2.2	Rule of law*.....	60.4	40				
1.2.3	Cost of redundancy dismissal, salary weeks.....	13.4	50				
<b>1.3</b>	<b>Business environment</b> .....	71.5	59				
1.3.1	Ease of starting a business*.....	87.9	66				
1.3.2	Ease of resolving insolvency*.....	55.0	60				
<b>HUMAN CAPITAL &amp; RESEARCH</b> .....				41.0	41		
<b>2.1</b>	<b>Education</b> .....	51.8	52				
2.1.1	Expenditure on education, % GDP.....	4.6	59				
2.1.2	Government funding/pupil, secondary, % GDP/cap... ..	21.2	45				
2.1.3	School life expectancy, years.....	15.1	49				
2.1.4	PISA scales in reading, maths, & science.....	474.4	36				
2.1.5	Pupil-teacher ratio, secondary.....	10.0	30				
<b>2.2</b>	<b>Tertiary education</b> .....	36.8	47				
2.2.1	Tertiary enrolment, % gross.....	48.0	59				
2.2.2	Graduates in science & engineering, %.....	22.8	45				
2.2.3	Tertiary inbound mobility, %.....	8.9	22				
<b>2.3</b>	<b>Research &amp; development (R&amp;D)</b> .....	34.4	34				
2.3.1	Researchers, FTE/mn pop.....	2,924.0	31				
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\$.....	52.5	27				
2.3.4	QS university ranking, average score top 3*.....	20.5	50				
<b>INFRASTRUCTURE</b> .....				52.7	40		
<b>3.1</b>	<b>Information &amp; communication technologies (ICTs)</b> .....	71.5	54	◇			
3.1.1	ICT access*.....	77.9	34				
3.1.2	ICT use*.....	63.6	48	◇			
3.1.3	Government's online service*.....	73.6	57	◇			
3.1.4	E-participation*.....	70.8	67	○ ◇			
<b>3.2</b>	<b>General infrastructure</b> .....	37.8	52				
3.2.1	Electricity output, kWh/mn pop.....	3,354.0	58				
3.2.2	Logistics performance*.....	63.4	30				
3.2.3	Gross capital formation, % GDP.....	23.3	62				
<b>3.3</b>	<b>Ecological sustainability</b> .....	48.9	35				
3.3.1	GDP/unit of energy use.....	9.4	61				
3.3.2	Environmental performance*.....	65.0	39				
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP..	7.6	11	● ◆			
<b>MARKET SOPHISTICATION</b> .....				45.7	76	○	
<b>4.1</b>	<b>Credit</b> .....	44.5	46				
4.1.1	Ease of getting credit*.....	75.0	29				
4.1.2	Domestic credit to private sector, % GDP.....	33.4	89	○ ◇			
4.1.3	Microfinance gross loans, % GDP.....	n/a	n/a				
<b>4.2</b>	<b>Investment</b> .....	27.1	124	○ ◇			
4.2.1	Ease of protecting minority investors*.....	50.0	93	○ ◇			
4.2.2	Market capitalization, % GDP.....	18.3	62	○			
4.2.3	Venture capital deals/bn PPP\$ GDP.....	0.0	56	○			
<b>4.3</b>	<b>Trade, competition, &amp; market scale</b> .....	65.5	51				
4.3.1	Applied tariff rate, weighted avg., %.....	1.8	23				
4.3.2	Intensity of local competition*.....	59.3	110	○ ◇			
4.3.3	Domestic market scale, bn PPP\$.....	308.2	54				
<b>BUSINESS SOPHISTICATION</b> .....				40.8	33		
<b>5.1</b>	<b>Knowledge workers</b> .....	42.1	51				
5.1.1	Knowledge-intensive employment, %.....	34.3	38				
5.1.2	Firms offering formal training, % firms.....	15.8	84	○ ◇			
5.1.3	GERD performed by business, % GDP.....	1.0	22				
5.1.4	GERD financed by business, %.....	56.4	47				
5.1.5	Females employed w/advanced degrees, %.....	14.4	43				
<b>5.2</b>	<b>Innovation linkages</b> .....	27.3	57				
5.2.1	University/industry research collaboration*.....	44.4	53				
5.2.2	State of cluster development*.....	46.8	62				
5.2.3	GERD financed by abroad, %.....	16.6	21				
5.2.4	JV-strategic alliance deals/bn PPP\$ GDP.....	0.0	73	○			
5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....	0.4	35				
<b>5.3</b>	<b>Knowledge absorption</b> .....	53.0	16	●			
5.3.1	Intellectual property payments, % total trade.....	1.5	22				
5.3.2	High-tech imports, % total trade.....	13.2	17	●			
5.3.3	ICT services imports, % total trade.....	1.3	58				
5.3.4	FDI net inflows, % GDP.....	13.6	9	●			
5.3.5	Research talent, % in business enterprise.....	61.7	11	●			
<b>KNOWLEDGE &amp; TECHNOLOGY OUTPUTS</b> .....				42.8	17	●	
<b>6.1</b>	<b>Knowledge creation</b> .....	20.3	43				
6.1.1	Patents by origin/bn PPP\$ GDP.....	2.0	42				
6.1.2	PCT patents by origin/bn PPP\$ GDP.....	0.5	36				
6.1.3	Utility models by origin/bn PPP\$ GDP.....	0.7	31				
6.1.4	Scientific & technical articles/bn PPP\$ GDP.....	15.8	34				
6.1.5	Citable documents H-index.....	28.3	33				
<b>6.2</b>	<b>Knowledge impact</b> .....	49.6	15	●			
6.2.1	Growth rate of PPP\$ GDP/worker, %.....	1.4	54				
6.2.2	New businesses/th pop. 15-64.....	3.4	37				
6.2.3	Computer software spending, % GDP.....	0.3	36				
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....	20.5	16	●			
6.2.5	High- & medium-high-tech manufactures, %.....	0.6	8	● ◆			
<b>6.3</b>	<b>Knowledge diffusion</b> .....	58.4	8	● ◆			
6.3.1	Intellectual property receipts, % total trade.....	1.6	16	●			
6.3.2	High-tech net exports, % total trade.....	12.5	11	● ◆			
6.3.3	ICT services exports, % total trade.....	1.9	58				
6.3.4	FDI net outflows, % GDP.....	11.6	1	● ◆			
<b>CREATIVE OUTPUTS</b> .....				34.6	38		
<b>7.1</b>	<b>Intangible assets</b> .....	43.0	56				
7.1.1	Trademarks by origin/bn PPP\$ GDP.....	40.5	64	○			
7.1.2	Industrial designs by origin/bn PPP\$ GDP.....	3.2	40				
7.1.3	ICTs & business model creation*.....	65.5	50				
7.1.4	ICTs & organizational model creation*.....	60.3	42				
<b>7.2</b>	<b>Creative goods &amp; services</b> .....	31.6	24				
7.2.1	Cultural & creative services exports, % total trade.....	0.8	36				
7.2.2	National feature films/mn pop. 15-69.....	5.2	42				
7.2.3	Entertainment & Media market/th pop. 15-69.....	14.1	29	◇			
7.2.4	Printing & other media, % manufacturing.....	0.8	75	○			
7.2.5	Creative goods exports, % total trade.....	6.1	9	● ◆			
<b>7.3</b>	<b>Online creativity</b> .....	20.6	32				
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.....	10.4	39				
7.3.2	Country-code TLDs/th pop. 15-69.....	29.1	20				
7.3.3	Wikipedia edits/mn pop. 15-69.....	53.7	21				
7.3.4	Mobile app creation/bn PPP\$ GDP.....	6.7	46				

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 missing or are outdated for Hungary.

### Missing data

Code	Indicator name	Country year	Model year	Source
4.1.3	Microfinance gross loans, % GDP	n/a	2017	Microfinance Information Exchange

### Outdated data

Code	Indicator name	Country year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2016	2017	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2016	2017	UNESCO Institute for Statistics

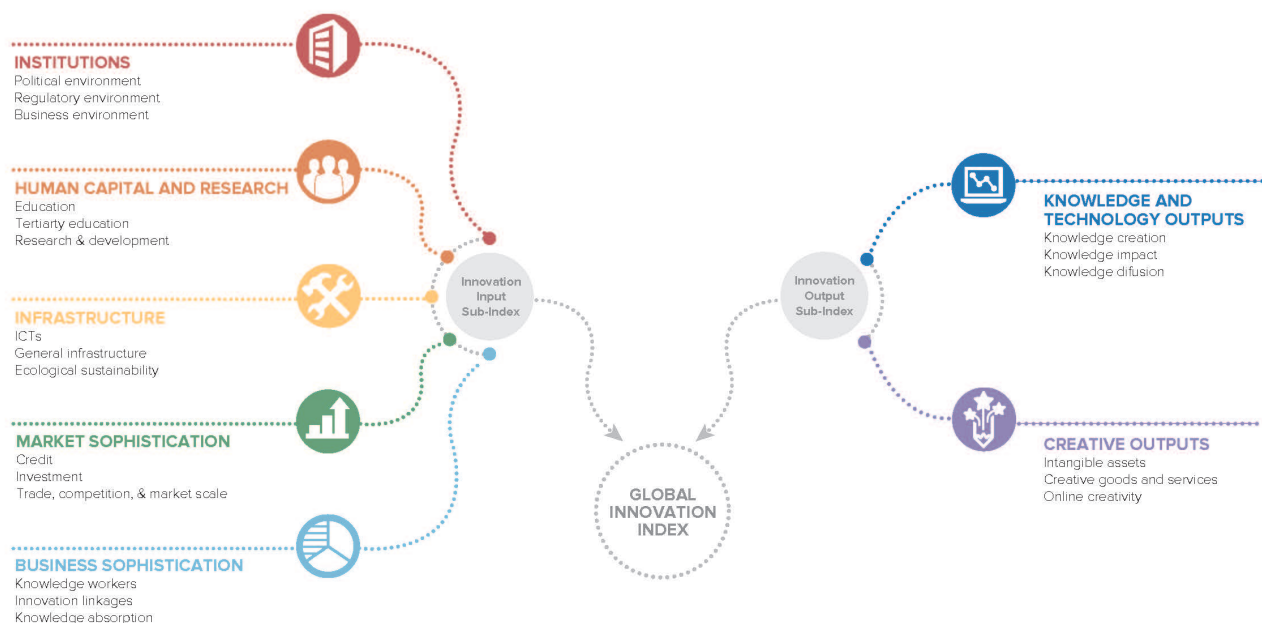


# ABOUT THE GLOBAL INNOVATION INDEX

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 2019, the GII presents its 12<sup>th</sup> 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.

