

# GLOBAL INNOVATION INDEX 2019

## ARMENIA

**64th** Armenia ranks 64th 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 Armenia 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 Armenia's ranking in the GII 2019 is between 61 and 67.

### Armenia's Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
<b>2019</b>	64	85	50
<b>2018</b>	68	94	50
<b>2017</b>	59	82	47

- Armenia performs better in Innovation Outputs than Inputs.
- This year Armenia ranks 85th in Innovation Inputs, better than last year but worse compared to 2017.
- As for Innovation Outputs, Armenia ranks 50th. This position is the same as last year and worse compared to 2017.

**15th** Armenia ranks 15th among the 34 upper middle-income economies.

**7th** Armenia ranks 7th among the 19 economies in Northern Africa and Western Asia.

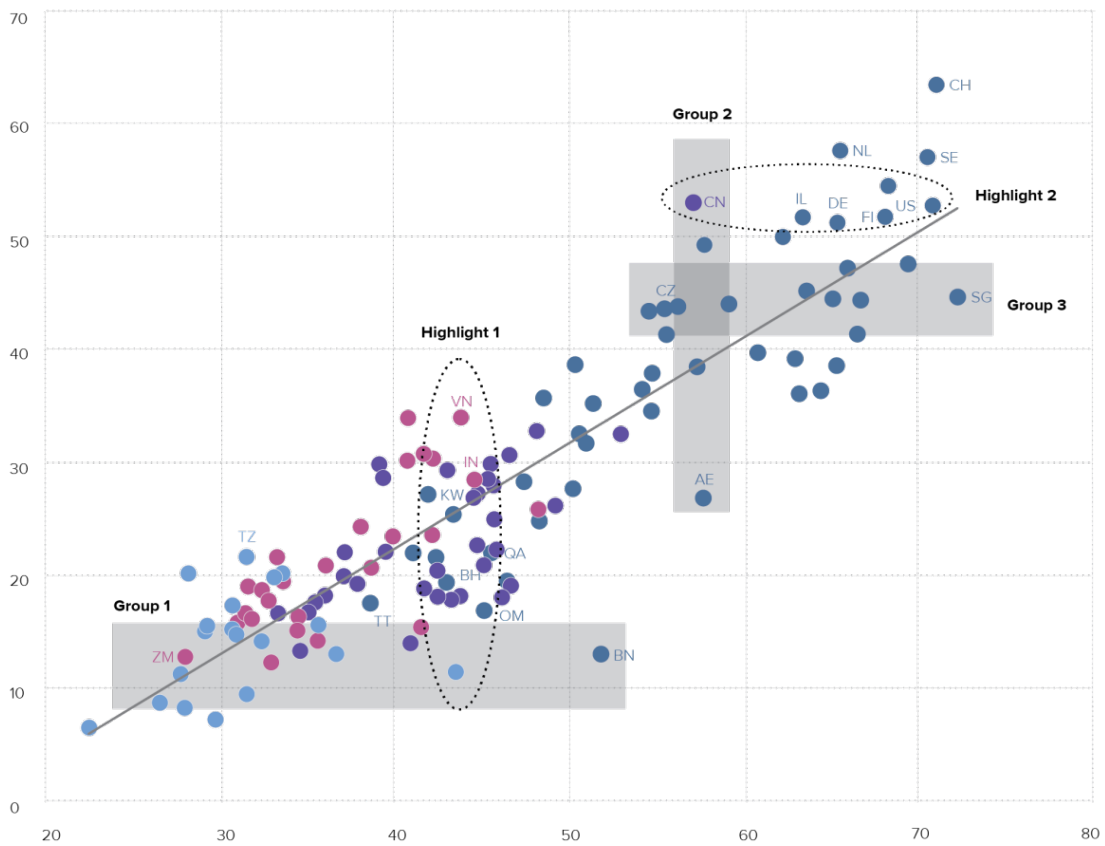


# EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

**Innovation input/output performance by income group, 2019**

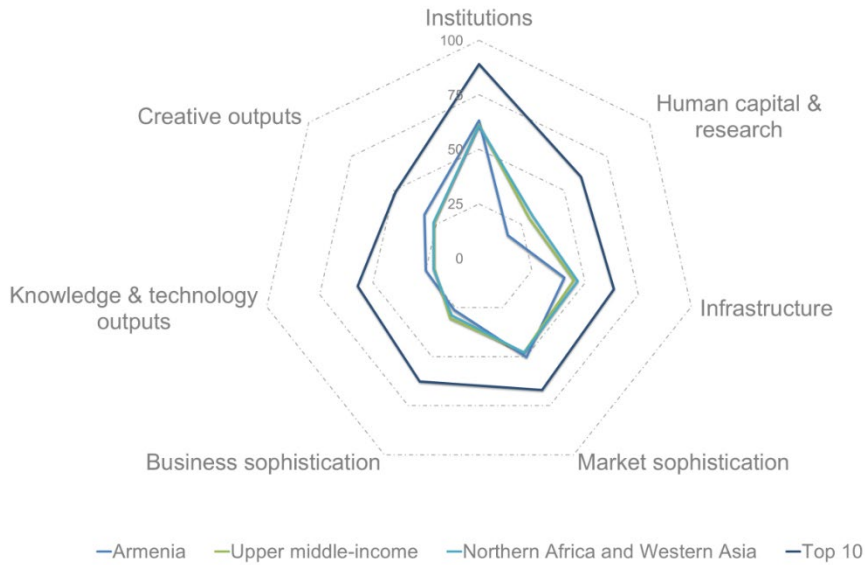


- ▲ Output score
- ▶ Input score
- High income
- Upper-middle income
- Lower-middle income
- Low income
- Fitted values

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

**Armenia's scores in the seven GII pillars**



## Upper middle-income economies

Armenia has high scores in 4 out of the 7 GII pillars: Institutions, Market sophistication, Knowledge & technology outputs, and Creative outputs, which are above the average of the upper-middle income group.

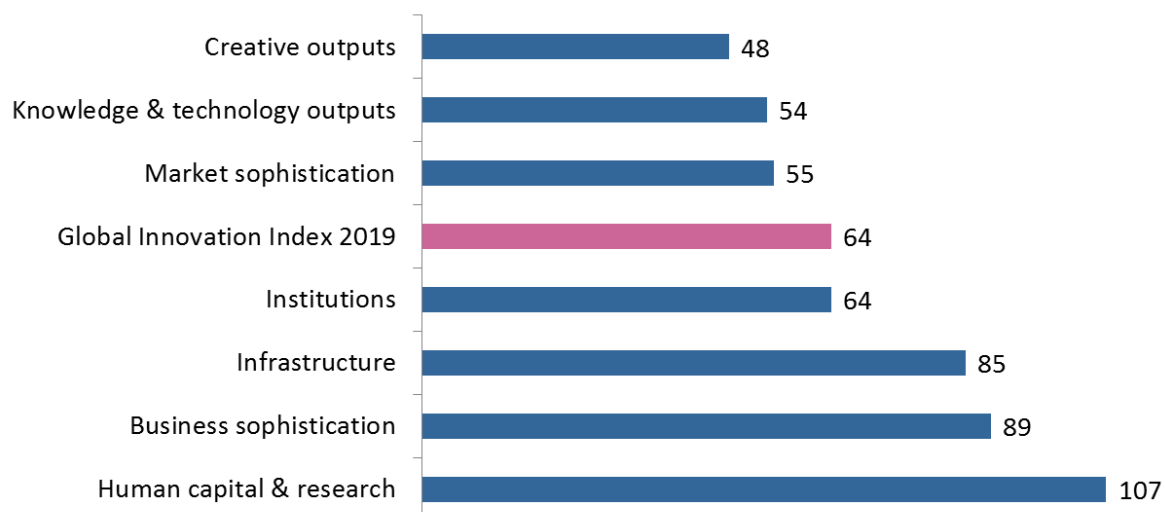
## Northern Africa and Western Asia Region

Compared to other economies in the Northern Africa and Western Asia region, Armenia performs above average in 4 out of the 7 GII pillars: Institutions, Market sophistication, Knowledge & technology outputs, and Creative outputs.

Top ranks are found in sub-pillars Investment, Knowledge creation, Creative goods & services, and Online creativity where the country ranks in the top 50 worldwide.

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

Armenia performs the best in Creative outputs and its weakest performance is in Human capital & research.



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

## ARMENIA'S INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths		
Code	Indicator name	Rank
1.3.1	Ease of starting a business*	8
3.1.1	ICT access*	36
6.1.1	Patents by origin/bn PPP\$ GDP	29
6.1.3	Utility models by origin/bn PPP\$ GDP	18
6.1.4	Scientific & technical articles/bn PPP\$ GDP	13
6.2.1	Growth rate of PPP\$ GDP/worker, %, 3-year average	2
6.3.3	ICT services exports, % total trade	15
7.1.1	Trademarks by origin/bn PPP\$ GDP	18
7.2.2	National feature films/mn pop. 15–69	11
7.3	Online creativity	34
7.3.3	Wikipedia edits/mn pop. 15–69	6

Weaknesses		
Code	Indicator name	Rank
2.1.1	Expenditure on education, % GDP	111
2.2.2	Graduates in science & engineering, %	88
2.3.3	Global R&D companies, top 3, in mn US\$	43
2.3.4	QS university ranking, average score top 3*	78
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	120
4.3.3	Domestic market scale, bn PPP\$	113
5.1.2	Firms offering formal training, % firms	82
5.3	Knowledge absorption	114
5.3.1	Intellectual property payments, % total trade	120
6.2.5	High- & medium-high-tech manufactures, %	96
6.3.1	Intellectual property receipts, % total trade	109

## **STRENGTHS**

- GII strengths for Armenia are found in four of the seven GII pillars.
- Most of these strengths are in Knowledge & technology outputs (54), where Armenia shows strength in five indicators: Patents by origin (29), Utility models by origin (18), Scientific & technical articles (13), ICT services exports (15), and Labor productivity growth– where it ranks 2nd worldwide.
- Several other relative strengths of Armenia are in Creative outputs (48), where the country's strengths are sub-pillar Online creativity (34) as well as in three indicators: Trademarks by origin (18), National feature films (11), and Wikipedia edits (6).
- The last two strengths for Armenia are indicators Ease of starting a business (8) in Institutions (64) and ICT access (36) in Infrastructure (85).

## **WEAKNESSES**

- Armenia's weaknesses in the GII are found in five of the seven GII pillars.
- Most of these weaknesses are in Human capital & research (107), where Armenia's weaknesses are indicators Expenditure on education (111), Graduates in science & engineering (88), Global R&D companies (43), and Quality of universities (78).
- Other three weaknesses are in Business sophistication (89), where sub-pillar Knowledge absorption (114) and indicators: Firms offering formal training (82) and Intellectual property payments (120) are GII weaknesses of Armenia.
- In Knowledge & technology outputs (54), Armenia's weaknesses are indicators High- & medium-high-tech manufactures (96) and Intellectual property receipts (109).
- In Infrastructure (85), only one relative weakness is found in indicator ISO 14001 environmental certificates (120).
- In Market sophistication (55), indicator Domestic market scale (113) is a GII weakness for Armenia.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2018 rank
<b>50</b>	<b>85</b>	<b>Upper middle</b>	<b>NAWA</b>	<b>2.9</b>	<b>30.7</b>	<b>10,176.1</b>	<b>68</b>
				Score/Value	Rank		
<b>INSTITUTIONS</b> .....				<b>63.2</b>	<b>64</b>		
<b>1.1</b>	<b>Political environment</b> .....		<b>50.5</b>	<b>81</b>			
1.1.1	Political and operational stability*		63.2	86			
1.1.2	Government effectiveness*		44.2	77			
<b>1.2</b>	<b>Regulatory environment</b> .....		<b>69.1</b>	<b>55</b>			
1.2.1	Regulatory quality*		49.5	57			
1.2.2	Rule of law*		42.3	69			
1.2.3	Cost of redundancy dismissal, salary weeks.....		13.0	42			
<b>1.3</b>	<b>Business environment</b> .....		<b>70.1</b>	<b>65</b>			
1.3.1	Ease of starting a business*		96.2	8	◆		
1.3.2	Ease of resolving insolvency*		44.0	85			
<b>HUMAN CAPITAL &amp; RESEARCH</b> .....				<b>16.9</b>	<b>107</b>	◇	
<b>2.1</b>	<b>Education</b> .....		<b>26.9</b>	<b>[112]</b>			
2.1.1	Expenditure on education, % GDP.....		2.8	111	○	◇	
2.1.2	Government funding/pupil, secondary, % GDP/cap.Ⓞ		14.5	85			
2.1.3	School life expectancy, years.Ⓞ		13.0	81			
2.1.4	PISA scales in reading, maths, & science.....		n/a	n/a			
2.1.5	Pupil-teacher ratio, secondary.....		n/a	n/a			
<b>2.2</b>	<b>Tertiary education</b> .....		<b>22.1</b>	<b>87</b>			
2.2.1	Tertiary enrolment, % gross.....		52.2	54			
2.2.2	Graduates in science & engineering, %.....		14.7	88	○	◇	
2.2.3	Tertiary inbound mobility, %.....		4.3	48			
<b>2.3</b>	<b>Research &amp; development (R&amp;D)</b> .....		<b>1.6</b>	<b>97</b>			
2.3.1	Researchers, FTE/mn pop.....		n/a	n/a			
2.3.2	Gross expenditure on R&D, % GDP.....		0.2	86			
2.3.3	Global R&D companies, avg. exp. top 3, mn US\$.....		0.0	43	○	◇	
2.3.4	QS university ranking, average score top 3*.....		0.0	78	○	◇	
<b>INFRASTRUCTURE</b> .....				<b>40.2</b>	<b>85</b>		
<b>3.1</b>	<b>Information &amp; communication technologies (ICTs)</b>		<b>60.1</b>	<b>78</b>			
3.1.1	ICT access*.....		76.7	36	◆		
3.1.2	ICT use*.....		50.7	70			
3.1.3	Government's online service*.....		56.3	95			
3.1.4	E-participation*.....		56.7	97			
<b>3.2</b>	<b>General infrastructure</b> .....		<b>26.7</b>	<b>93</b>			
3.2.1	Electricity output, kWh/mn pop.....		2,496.6	71			
3.2.2	Logistics performance*.....		25.4	87			
3.2.3	Gross capital formation, % GDP.....		22.5	68			
<b>3.3</b>	<b>Ecological sustainability</b> .....		<b>33.9</b>	<b>82</b>			
3.3.1	GDP/unit of energy use.....		7.8	80			
3.3.2	Environmental performance*.....		62.1	56			
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP..		0.1	120	○		
<b>MARKET SOPHISTICATION</b> .....				<b>50.1</b>	<b>55</b>		
<b>4.1</b>	<b>Credit</b> .....		<b>31.2</b>	<b>86</b>			
4.1.1	Ease of getting credit*.....		70.0	40			
4.1.2	Domestic credit to private sector, % GDP.....		51.5	66			
4.1.3	Microfinance gross loans, % GDP.....		0.0	60			
<b>4.2</b>	<b>Investment</b> .....		<b>63.3</b>	<b>[17]</b>			
4.2.1	Ease of protecting minority investors*.....		63.3	48			
4.2.2	Market capitalization, % GDP.....		n/a	n/a			
4.2.3	Venture capital deals/bn PPP\$ GDP.....		n/a	n/a			
<b>4.3</b>	<b>Trade, competition, &amp; market scale</b> .....		<b>55.9</b>	<b>86</b>			
4.3.1	Applied tariff rate, weighted avg., %.....		2.2	56			
4.3.2	Intensity of local competition*.....		73.6	36			
4.3.3	Domestic market scale, bn PPP\$.....		30.7	113	○	◇	
<b>BUSINESS SOPHISTICATION</b> .....				<b>26.3</b>	<b>89</b>		
<b>5.1</b>	<b>Knowledge workers</b> .....		<b>36.5</b>	<b>[66]</b>			
5.1.1	Knowledge-intensive employment, %.....		29.4	46			
5.1.2	Firms offering formal training, % firms.....		16.2	82	○	◇	
5.1.3	GERD performed by business, % GDP.....		n/a	n/a			
5.1.4	GERD financed by business, %.....		n/a	n/a			
5.1.5	Females employed w/advanced degrees, %.....		14.9	42			
<b>5.2</b>	<b>Innovation linkages</b> .....		<b>20.0</b>	<b>88</b>			
5.2.1	University/industry research collaboration*.....		36.3	89			
5.2.2	State of cluster development*.....		46.0	69			
5.2.3	GERD financed by abroad, %.....		1.7	82			
5.2.4	JV-strategic alliance deals/bn PPP\$ GDP.....		n/a	n/a			
5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....		0.2	47			
<b>5.3</b>	<b>Knowledge absorption</b> .....		<b>22.4</b>	<b>114</b>	○	◇	
5.3.1	Intellectual property payments, % total trade.Ⓞ		0.0	120	○	◇	
5.3.2	High-tech imports, % total trade.....		4.8	109			
5.3.3	ICT services imports, % total trade.....		0.5	102			
5.3.4	FDI net inflows, % GDP.....		2.4	74			
5.3.5	Research talent, % in business enterprise.....		n/a	n/a			
<b>KNOWLEDGE &amp; TECHNOLOGY OUTPUTS</b> .....				<b>25.0</b>	<b>54</b>		
<b>6.1</b>	<b>Knowledge creation</b> .....		<b>22.6</b>	<b>37</b>			
6.1.1	Patents by origin/bn PPP\$ GDP.....		3.9	29	●		
6.1.2	PCT patents by origin/bn PPP\$ GDP.....		0.2	50			
6.1.3	Utility models by origin/bn PPP\$ GDP.....		1.4	18	●		
6.1.4	Scientific & technical articles/bn PPP\$ GDP.....		25.2	13	◆		
6.1.5	Citable documents H-index.....		9.8	69			
<b>6.2</b>	<b>Knowledge impact</b> .....		<b>35.3</b>	<b>70</b>			
6.2.1	Growth rate of PPP\$ GDP/worker, %.....		6.2	2	◆		
6.2.2	New businesses/th pop. 15-64.....		1.7	55			
6.2.3	Computer software spending, % GDP.....		0.1	84			
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....		1.0	107			
6.2.5	High- & medium-high-tech manufactures, %.....		0.0	96	○	◇	
<b>6.3</b>	<b>Knowledge diffusion</b> .....		<b>17.2</b>	<b>67</b>			
6.3.1	Intellectual property receipts, % total trade.Ⓞ		0.0	109	○	◇	
6.3.2	High-tech net exports, % total trade.....		0.6	77			
6.3.3	ICT services exports, % total trade.....		4.3	15	◆		
6.3.4	FDI net outflows, % GDP.....		0.3	77			
<b>CREATIVE OUTPUTS</b> .....				<b>32.2</b>	<b>48</b>		
<b>7.1</b>	<b>Intangible assets</b> .....		<b>43.2</b>	<b>55</b>			
7.1.1	Trademarks by origin/bn PPP\$ GDP.....		94.7	18	●		
7.1.2	Industrial designs by origin/bn PPP\$ GDP.....		1.9	52			
7.1.3	ICTs & business model creation*.....		54.2	88			
7.1.4	ICTs & organizational model creation*.....		52.8	67			
<b>7.2</b>	<b>Creative goods &amp; services</b> .....		<b>22.4</b>	<b>49</b>			
7.2.1	Cultural & creative services exports, % total trade.....		0.6	41			
7.2.2	National feature films/mn pop. 15-69.....		12.5	11	◆		
7.2.3	Entertainment & Media market/th pop. 15-69.....		n/a	n/a			
7.2.4	Printing & other media, % manufacturing.....		1.5	33			
7.2.5	Creative goods exports, % total trade.....		0.6	55			
<b>7.3</b>	<b>Online creativity</b> .....		<b>19.8</b>	<b>34</b>	◆		
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.....		3.0	64			
7.3.2	Country-code TLDs/th pop. 15-69.....		4.6	53			
7.3.3	Wikipedia edits/mn pop. 15-69.....		102.5	6	◆		
7.3.4	Mobile app creation/bn PPP\$ GDP.....		2.5	60			

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 Armenia.

### Missing data

Code	Indicator name	Country year	Model year	Source
2.1.4	PISA scales in reading, maths & science	n/a	2015	OECD Programme for International Student Assessment (PISA)
2.1.5	Pupil-teacher ratio, secondary	n/a	2017	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	n/a	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
4.2.2	Market capitalization, % GDP	n/a	2017	World Federation of Exchanges
4.2.3	Venture capital deals/bn PPP\$ GDP	n/a	2018	Thomson Reuters
5.1.3	GERD performed by business, % GDP	n/a	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.4	GERD financed by business, %	n/a	2016	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.2.4	JV–strategic alliance deals/bn PPP\$ GDP	n/a	2018	Thomson Reuters
5.3.5	Research talent, % in business enterprise	n/a	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2017	PwC

### Outdated data

Code	Indicator name	Country year	Model year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	2014	2015	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2015	2016	UNESCO Institute for Statistics
5.3.1	Intellectual property payments, % total trade	2014	2017	World Trade Organization
6.3.1	Intellectual property receipts, % total trade	2015	2017	World Trade Organization

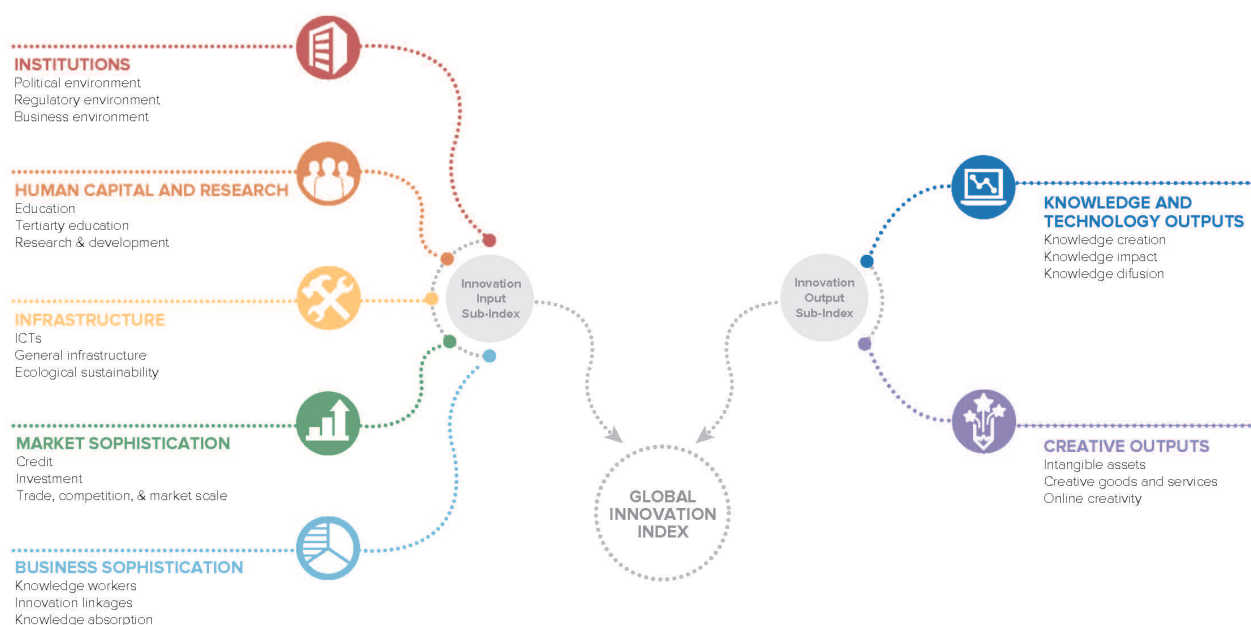


# ABOUT THE GLOBAL INNOVATION INDEX

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 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.

