Global Innovation Index 2021

GUATEMALA

101st Guatemala ranks 101st among the 132 economies featured in the GII 2021.

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 GII aims to capture the multi-dimensional facets of innovation.

The following table shows the rankings of Guatemala over the past three years, noting that data availability and changes to the GII model framework influence year-on-year comparisons of the GII rankings. The statistical confidence interval for the ranking of Guatemala in the GII 2021 is between ranks 95 and 107.

Rankings for Guatemala (2019–2021)

	GII	Innovation inputs	Innovation outputs
2021	101	112	83
2020	106	110	96
2019	107	105	102

- Guatemala performs better in innovation outputs than innovation inputs in 2021.
- This year Guatemala ranks 112th in innovation inputs, lower than both 2020 and 2019.
- As for innovation outputs, Guatemala ranks 83rd. This position is higher than both 2020 and 2019.

33rd Guatemala ranks 33rd among the 34 upper middle-income group economies.

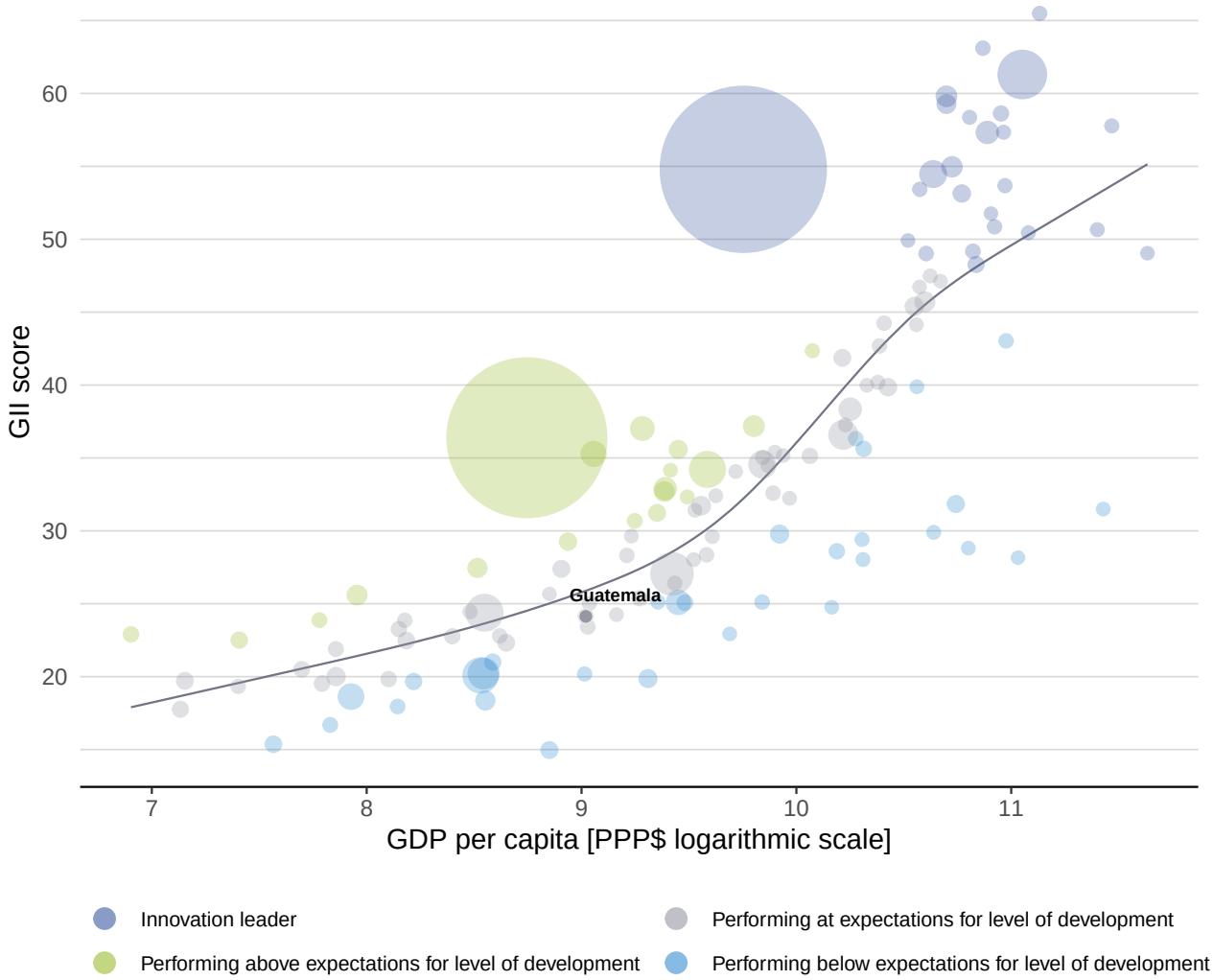
16th Guatemala ranks 16th among the 18 economies in Latin America and the Caribbean.

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 performing below expectations.

Relative to GDP, Guatemala's performance is at expectations for its level of development.

The positive relationship between innovation and development

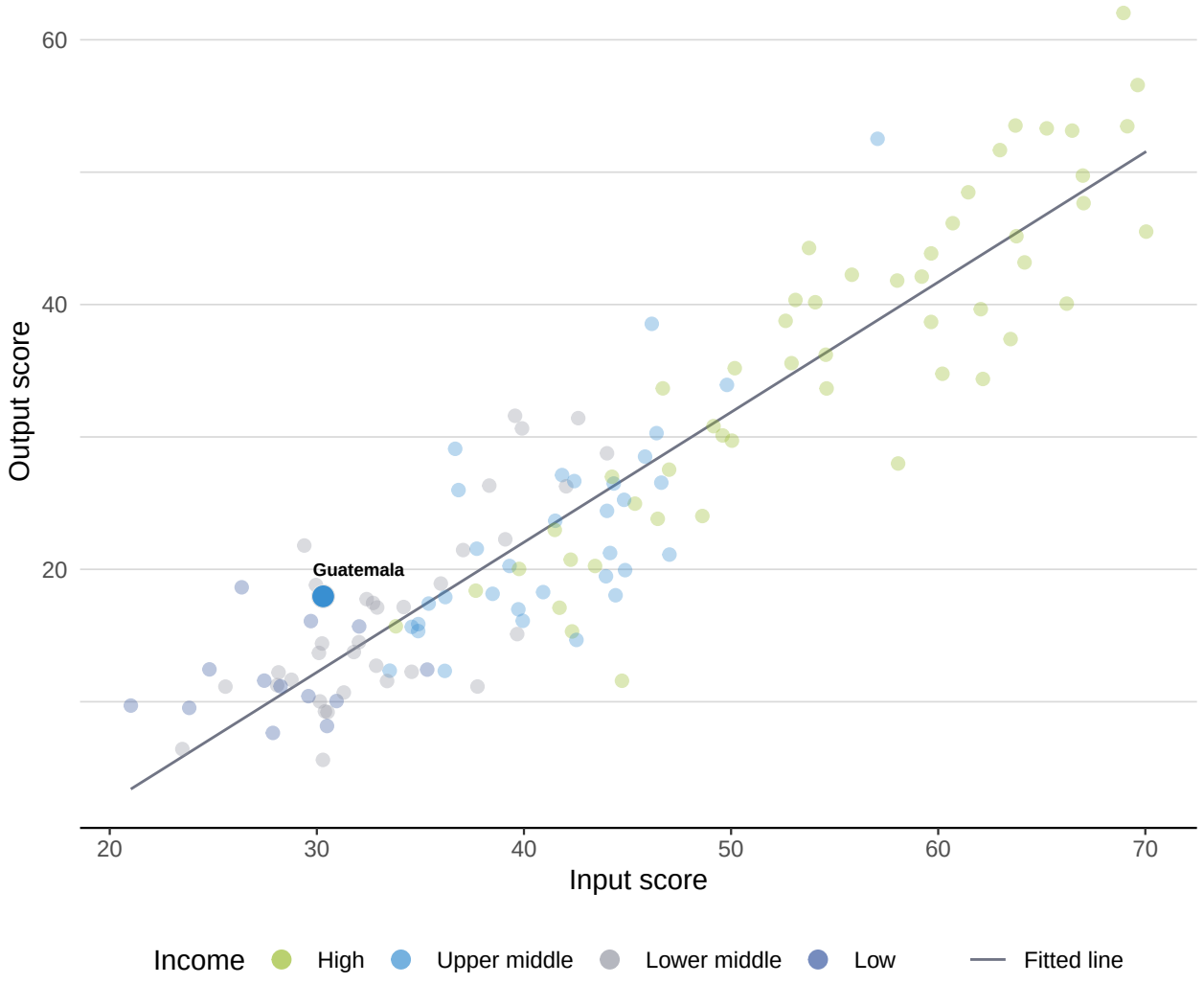


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

Innovation input to output performance



BENCHMARKING AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND LATIN AMERICA AND THE CARIBBEAN

The seven GII pillar scores for Guatemala

Upper middle-income group economies

Guatemala performs below the upper middle-income group average in all GII pillars.

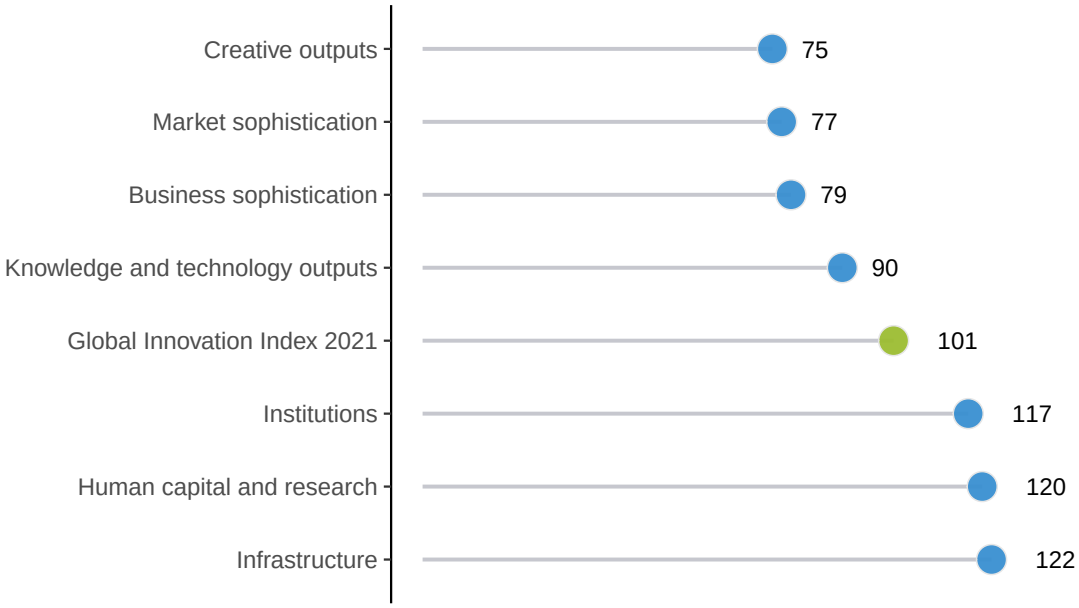
Latin America and the Caribbean

Guatemala performs above the regional average in Market sophistication.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2021 AREAS

Guatemala performs best in Creative outputs and its weakest performance is in Infrastructure.

The seven GII pillar ranks for Guatemala



Note: The highest possible ranking in each pillar is one.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Guatemala in the GII 2021.

Strengths and weaknesses for Guatemala

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
2.1.5	Pupil-teacher ratio, secondary	51	2.1.2	Government funding/pupil, secondary, % GDP/cap	102
4.1.1	Ease of getting credit	14	2.2.2	Graduates in science and engineering, %	107
4.3.1	Applied tariff rate, weighted avg., %	16	2.3.1	Researchers, FTE/mn pop.	108
5.1.2	Firms offering formal training, %	11	2.3.2	Gross expenditure on R&D, % GDP	115
5.3.1	Intellectual property payments, % total trade	30	2.3.3	Global corporate R&D investors, top 3, mn US$	41
5.3.2	High-tech imports, % total trade	31	2.3.4	QS university ranking, top 3	74
5.3.3	ICT services imports, % total trade	36	3.2	General infrastructure	130
6.2.1	Labor productivity growth, %	20	5.2.3	GERD financed by abroad, % GDP	102
6.3.4	ICT services exports, % total trade	22	5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	126
7.1	Intangible assets	43	5.2.5	Patent families/bn PPP$ GDP	100
7.1.1	Trademarks by origin/bn PPP$ GDP	50	7.3.4	Mobile app creation/bn PPP$ GDP	102

Guatemala

GII 2021 rank
101

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$	GII 2020 rank
83	112	Upper middle	LCN	17.9	148.6	8,267	106

		Score/ Value	Rank	
Institutions		**48.3**	**117**	◇
1.1	**Political environment**	**42.2**	**109**	◇
1.1.1	Political and operational stability*	55.4	112	◇
1.1.2	Government effectiveness*	35.6	109	◇
1.2	**Regulatory environment**	**45.4**	**115**	◇
1.2.1	Regulatory quality*	37.6	88	
1.2.2	Rule of law*	19.0	124	◇
1.2.3	Cost of redundancy dismissal	27.0	107	
1.3	**Business environment**	**57.2**	**113**	◇
1.3.1	Ease of starting a business*	86.8	77	
1.3.2	Ease of resolving insolvency*	27.6	124	◇
Human capital and research		**12.2**	**120**	◇
2.1	**Education**	**28.5**	**119**	◇
2.1.1	Expenditure on education, % GDP	3.2	90	
2.1.2	Government funding/pupil, secondary, % GDP/cap	5.5	102 ○	◇
2.1.3	School life expectancy, years ◴	10.8	101	◇
2.1.4	PISA scales in reading, maths and science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	12.2	51 ●	
2.2	**Tertiary education**	**7.9**	**116**	◇
2.2.1	Tertiary enrolment, % gross ◴	21.8	96	◇
2.2.2	Graduates in science and engineering, % ◴	9.8	107 ○	◇
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research and development (R&D)**	**0.1**	**120**	
2.3.1	Researchers, FTE/mn pop. ◴	12.9	108 ○	◇
2.3.2	Gross expenditure on R&D, % GDP ◴	0.0	115 ○	◇
2.3.3	Global corporate R&D investors, top 3, mn US$	0.0	41 ○	◇
2.3.4	QS university ranking, top 3*	0.0	74 ○	◇
Infrastructure		**23.7**	**122**	◇
3.1	**Information and communication technologies (ICTs)**	**42.5**	**105**	◇
3.1.1	ICT access*	48.1	93	◇
3.1.2	ICT use*	20.8	114	◇
3.1.3	Government's online service*	51.2	104	◇
3.1.4	E-participation*	50.0	103	◇
3.2	**General infrastructure**	**9.4**	**130** ○	◇
3.2.1	Electricity output, GWh/mn pop.	818.8	102	◇
3.2.2	Logistics performance*	17.1	114	◇
3.2.3	Gross capital formation, % GDP	11.6	122	◇
3.3	**Ecological sustainability**	**19.2**	**107**	◇
3.3.1	GDP/unit of energy use	9.9	70	
3.3.2	Environmental performance*	31.8	115	◇
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	113	
Market sophistication		**44.4**	**77**	
4.1	**Credit**	**39.7**	**72**	
4.1.1	Ease of getting credit*	85.0	14 ●	
4.1.2	Domestic credit to private sector, % GDP	34.3	91	
4.1.3	Microfinance gross loans, % GDP	0.2	48	
4.2	**Investment**	**30.0**	**[69]**	
4.2.1	Ease of protecting minority investors*	30.0	122	◇
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital investors, deals/bn PPP$ GDP	n/a	n/a	
4.2.4	Venture capital recipients, deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, diversification, and market scale**	**63.6**	**80**	
4.3.1	Applied tariff rate, weighted avg., % ◴	1.4	16 ●	
4.3.2	Domestic industry diversification	n/a	n/a	
4.3.3	Domestic market scale, bn PPP$	148.6	72	

		Score/ Value	Rank	
Business sophistication		**22.9**	**79**	
5.1	**Knowledge workers**	**27.9**	**79**	
5.1.1	Knowledge-intensive employment, %	9.3	111	◇
5.1.2	Firms offering formal training, % ◴	55.7	11 ●	◆
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, %	12.5	74	
5.1.5	Females employed w/advanced degrees, %	2.7	102	◇
5.2	**Innovation linkages**	**14.8**	**110**	
5.2.1	University-industry R&D collaboration†	37.3	92	
5.2.2	State of cluster development and depth†	47.3	61	
5.2.3	GERD financed by abroad, % GDP	0.0	102 ○	◇
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP ◴	0.0	126 ○	
5.2.5	Patent families/bn PPP$ GDP	0.0	100 ○	◇
5.3	**Knowledge absorption**	**26.1**	**67**	
5.3.1	Intellectual property payments, % total trade	1.3	30 ●	
5.3.2	High-tech imports, % total trade	10.2	31 ●	
5.3.3	ICT services imports, % total trade	1.8	36 ●	◆
5.3.4	FDI net inflows, % GDP	1.3	102	
5.3.5	Research talent, % in businesses ◴	1.4	78	◇
Knowledge and technology outputs		**14.2**	**90**	
6.1	**Knowledge creation**	**1.9**	**127**	◇
6.1.1	Patents by origin/bn PPP$ GDP	0.0	122	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	93	
6.1.3	Utility models by origin/bn PPP$ GDP	0.0	60	
6.1.4	Scientific and technical articles/bn PPP$ GDP	1.8	127	◇
6.1.5	Citable documents H-index	4.5	111	
6.2	**Knowledge impact**	**22.3**	**91**	
6.2.1	Labor productivity growth, %	2.6	20 ●	
6.2.2	New businesses/th pop. 15–64	0.5	96	
6.2.3	Software spending, % GDP	0.0	120	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.5	98	
6.2.5	High-tech manufacturing, %	n/a	n/a	
6.3	**Knowledge diffusion**	**18.4**	**59**	
6.3.1	Intellectual property receipts, % total trade	0.1	59	
6.3.2	Production and export complexity	33.4	81	
6.3.3	High-tech exports, % total trade	1.4	67	
6.3.4	ICT services exports, % total trade	3.7	22 ●	◆
Creative outputs		**21.7**	**75**	
7.1	**Intangible assets**	**38.0**	**43** ●	
7.1.1	Trademarks by origin/bn PPP$ GDP	46.7	50 ●	
7.1.2	Global brand value, top 5,000, % GDP	n/a	n/a	
7.1.3	Industrial designs by origin/bn PPP$ GDP	0.0	116	
7.1.4	ICTs and organizational model creation†	57.0	56	
7.2	**Creative goods and services**	**2.8**	**[111]**	
7.2.1	Cultural and creative services exports, % total trade	0.1	88	
7.2.2	National feature films/mn pop. 15–69 ◴	1.2	80	
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing and other media, % manufacturing	n/a	n/a	
7.2.5	Creative goods exports, % total trade	0.2	76	
7.3	**Online creativity**	**8.1**	**108**	◇
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.0	59	
7.3.2	Country-code TLDs/th pop. 15–69	0.6	97	
7.3.3	Wikipedia edits/mn pop. 15–69	30.5	102	◇
7.3.4	Mobile app creation/bn PPP$ GDP ◴	0.0	102 ○	

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 IV 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 Guatemala.

Missing data for Guatemala

Code	Indicator name	Economy year	Model year	Source
2.1.4	PISA scales in reading, maths and science	n/a	2018	OECD Programme for International Student Assessment (PISA)
2.2.3	Tertiary inbound mobility, %	n/a	2018	UNESCO Institute for Statistics
4.2.2	Market capitalization, % GDP	n/a	2019	World Federation of Exchanges
4.2.3	Venture capital investors, deals/bn PPP$ GDP	n/a	2020	Refinitiv Eikon
4.2.4	Venture capital recipients, deals/bn PPP$ GDP	n/a	2020	Refinitiv Eikon
4.3.2	Domestic industry diversification	n/a	2018	United Nations Industrial Development Organization
5.1.3	GERD performed by business, % GDP	n/a	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
6.2.5	High-tech manufacturing, %	n/a	2018	United Nations Industrial Development Organization
7.1.2	Global brand value, top 5,000, % GDP	n/a	2020	Brand Finance
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2020	PwC
7.2.4	Printing and other media, % manufacturing	n/a	2018	United Nations Industrial Development Organization

Outdated data for Guatemala

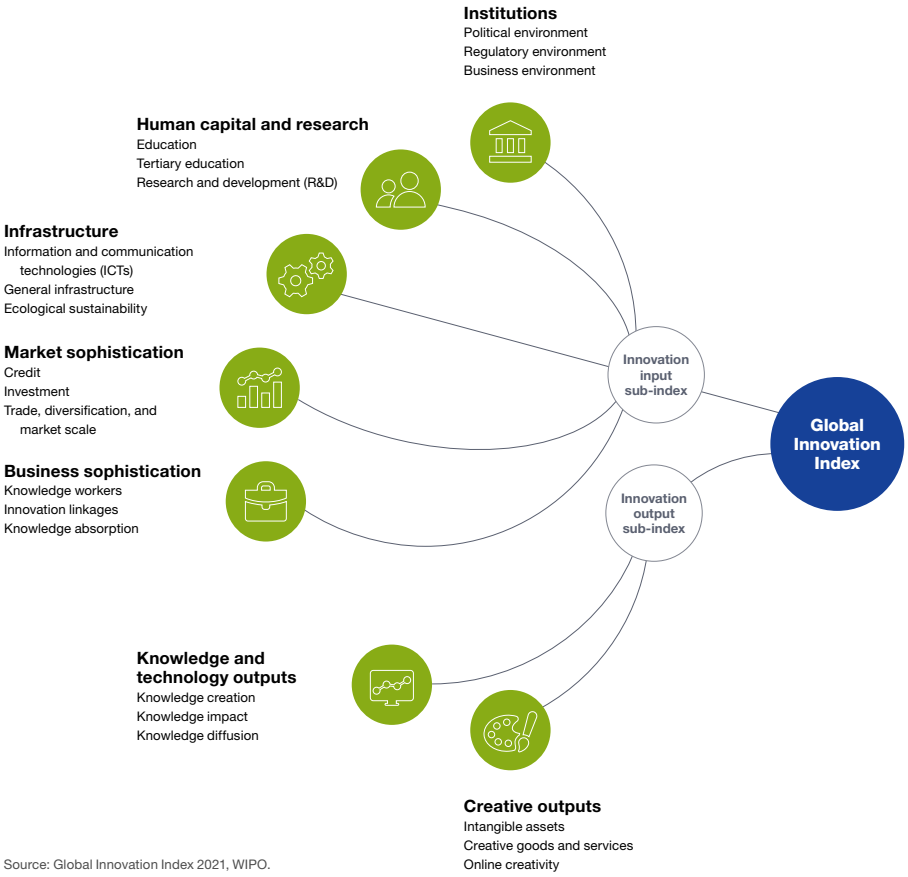
Code	Indicator name	Economy year	Model year	Source
2.1.3	School life expectancy, years	2015	2018	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2015	2018	UNESCO Institute for Statistics

Code	Indicator name	Economy year	Model year	Source
2.2.2	Graduates in science and engineering, %	2015	2018	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.1	Researchers, FTE/mn pop.	2018	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2018	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
4.3.1	Applied tariff rate, weighted avg., %	2015	2019	World Bank
5.1.2	Firms offering formal training, %	2017	2019	World Bank
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	2019	2020	Refinitiv
5.3.5	Research talent, % in businesses	2018	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
7.2.2	National feature films/mn pop. 15–69	2010	2017	UNESCO Institute for Statistics
7.3.4	Mobile app creation/bn PPP$ GDP	2019	2020	App Annie

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.

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.



Source: Global Innovation Index 2021, WIPO.

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.