Global Innovation Index 2021

AZERBAIJAN

80th Azerbaijan ranks 80th 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 Azerbaijan 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 Azerbaijan in the GII 2021 is between ranks 80 and 91.

Rankings for Azerbaijan (2019–2021)

	GII	Innovation inputs	Innovation outputs
2021	80	74	91
2020	82	76	86
2019	84	77	90

- Azerbaijan performs better in innovation inputs than innovation outputs in 2021.
- This year Azerbaijan ranks 74th in innovation inputs, higher than both 2020 and 2019.
- As for innovation outputs, Azerbaijan ranks 91st. This position is lower than both 2020 and 2019.

24th Azerbaijan ranks 24th among the 34 upper middle-income group economies.

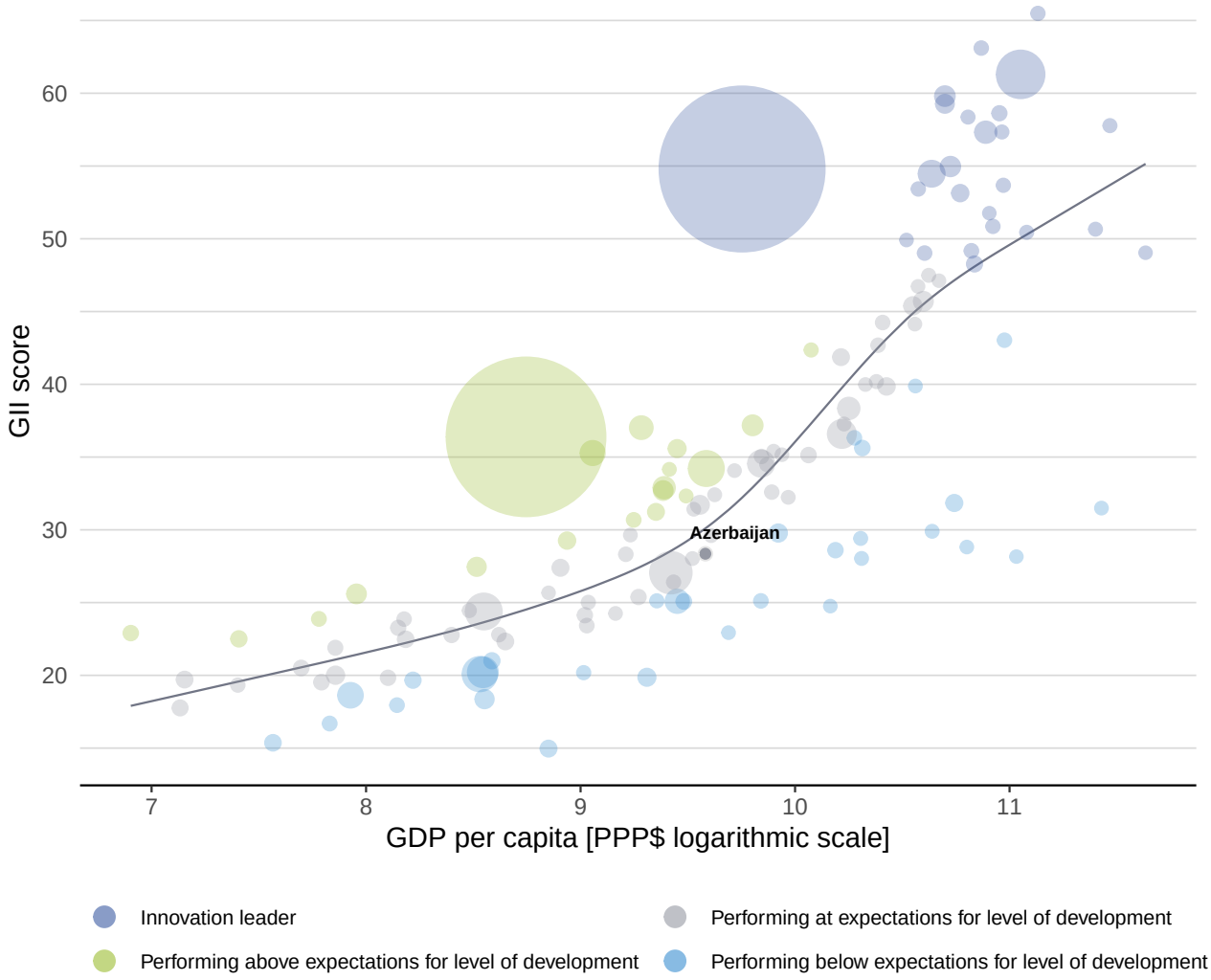
14th Azerbaijan ranks 14th among the 19 economies in Northern Africa and Western Asia.

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, Azerbaijan's performance is at expectations for its level of development.

The positive relationship between innovation and development

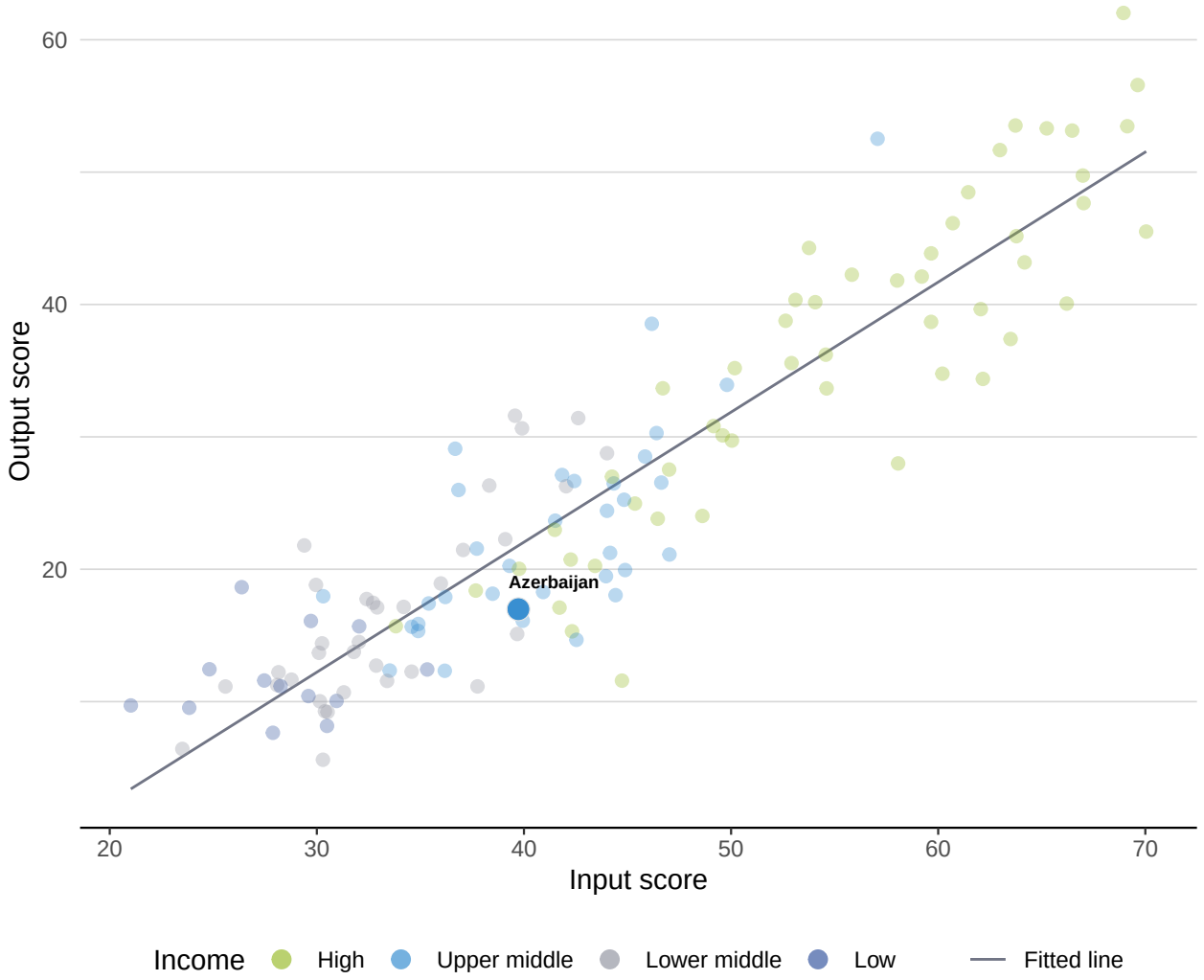


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

Azerbaijan produces less innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND NORTHERN AFRICA AND WESTERN ASIA

The seven GII pillar scores for Azerbaijan

Upper middle-income group economies

Azerbaijan performs above the upper middle-income group average in two pillars, namely: Institutions; and, Market sophistication.

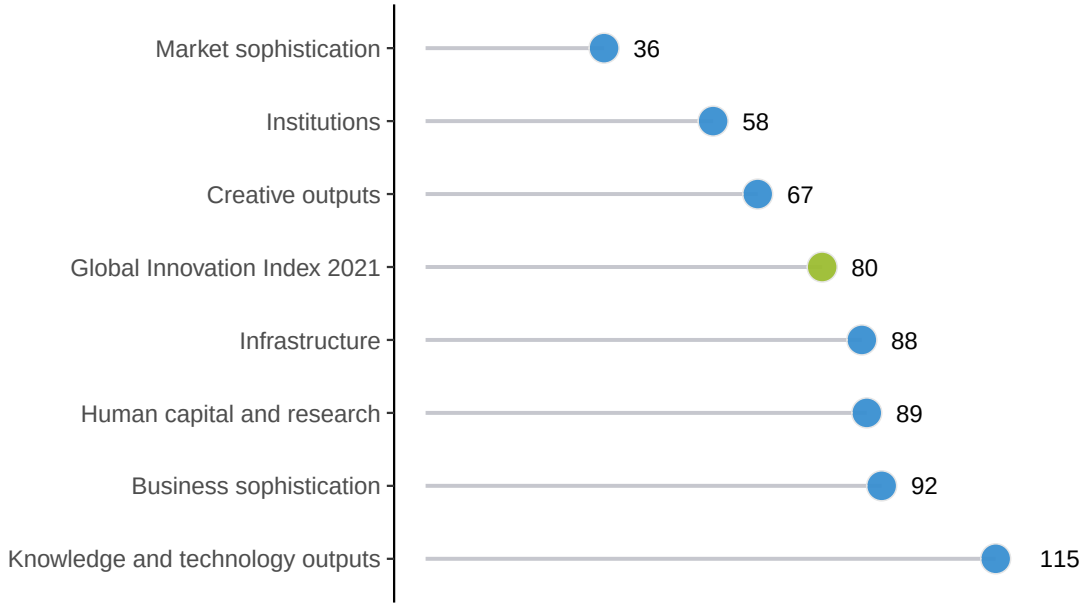
Northern Africa and Western Asia

Azerbaijan performs above the regional average in three pillars, namely: Institutions; Market sophistication; and, Creative outputs.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2021 AREAS

Azerbaijan performs best in Market sophistication and its weakest performance is in Knowledge and technology outputs.

The seven GII pillar ranks for Azerbaijan



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 Azerbaijan in the GII 2021.

Strengths and weaknesses for Azerbaijan

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
1.3	Business environment	33	2.3.3	Global corporate R&D investors, top 3, mn US$	41
1.3.1	Ease of starting a business	9	2.3.4	QS university ranking, top 3	74
2.1.5	Pupil-teacher ratio, secondary	8	3.2	General infrastructure	127
2.2.2	Graduates in science and engineering, %	35	3.2.3	Gross capital formation, % GDP	118
4.1	Credit	33	4.3.1	Applied tariff rate, weighted avg., %	125
4.1.1	Ease of getting credit	1	5.1.3	GERD performed by business, % GDP	85
4.1.3	Microfinance gross loans, % GDP	13	5.2.3	GERD financed by abroad, % GDP	100
5.2.1	University-industry R&D collaboration	23	5.3	Knowledge absorption	128
5.2.2	State of cluster development and depth	27	5.3.1	Intellectual property payments, % total trade	124
5.3.4	FDI net inflows, % GDP	25	6.3	Knowledge diffusion	126
7.1.4	ICTs and organizational model creation	35	6.3.1	Intellectual property receipts, % total trade	113
7.2.2	National feature films/mn pop. 15–69	27	6.3.2	Production and export complexity	117
			7.2.5	Creative goods exports, % total trade	122

Azerbaijan

GII 2021 rank
80

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$	GII 2020 rank
91	74	Upper middle	NAWA	10.1	146.5	14,499	82

		Score/ Value	Rank
Institutions		**65.5**	**58**
1.1	**Political environment**	**54.9**	**77**
1.1.1	Political and operational stability*	69.6	60
1.1.2	Government effectiveness*	47.6	83
1.2	**Regulatory environment**	**61.6**	**77**
1.2.1	Regulatory quality*	37.6	89
1.2.2	Rule of law*	31.5	100
1.2.3	Cost of redundancy dismissal	13.7	51
1.3	**Business environment**	**79.8**	**33** ● ◆
1.3.1	Ease of starting a business*	96.2	9 ● ◆
1.3.2	Ease of resolving insolvency*	63.5	43
Human capital and research		**24.2**	**89**
2.1	**Education**	**42.7**	**84**
2.1.1	Expenditure on education, % GDP	2.5	106 ◇
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a
2.1.3	School life expectancy, years	13.5	78
2.1.4	PISA scales in reading, maths and science	402.2	65
2.1.5	Pupil-teacher ratio, secondary	7.8	8 ● ◆
2.2	**Tertiary education**	**28.7**	**76**
2.2.1	Tertiary enrolment, % gross	31.5	83
2.2.2	Graduates in science and engineering, %	25.9	35 ●
2.2.3	Tertiary inbound mobility, %	2.2	74
2.3	**Research and development (R&D)**	**1.2**	**104**
2.3.1	Researchers, FTE/mn pop.	n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP ◴	0.2	93
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		**35.1**	**88**
3.1	**Information and communication technologies (ICTs)**	**66.6**	**67**
3.1.1	ICT access*	68.6	64
3.1.2	ICT use*	58.0	65
3.1.3	Government's online service*	70.6	65
3.1.4	E-participation*	69.0	73
3.2	**General infrastructure**	**12.0**	**127** ○ ◇
3.2.1	Electricity output, GWh/mn pop.	2,537.6	73
3.2.2	Logistics performance*	n/a	n/a
3.2.3	Gross capital formation, % GDP	14.4	118 ○ ◇
3.3	**Ecological sustainability**	**26.8**	**75**
3.3.1	GDP/unit of energy use	11.8	51
3.3.2	Environmental performance*	46.5	66
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	90
Market sophistication		**53.2**	**36** ●
4.1	**Credit**	**49.7**	**33** ● ◆
4.1.1	Ease of getting credit*	100.0	1 ● ◆
4.1.2	Domestic credit to private sector, % GDP	23.1	110 ◇
4.1.3	Microfinance gross loans, % GDP	1.9	13 ●
4.2	**Investment**	**50.0**	**[19]**
4.2.1	Ease of protecting minority investors*	50.0	92
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**	**59.8**	**95**
4.3.1	Applied tariff rate, weighted avg., %	12.0	125 ○ ◇
4.3.2	Domestic industry diversification ◴	83.8	71
4.3.3	Domestic market scale, bn PPP$	146.5	73

		Score/ Value	Rank
Business sophistication		**20.7**	**92**
5.1	**Knowledge workers**	**29.0**	**75**
5.1.1	Knowledge-intensive employment, %	23.1	67
5.1.2	Firms offering formal training, %	33.9	43
5.1.3	GERD performed by business, % GDP ◴	0.0	85 ○
5.1.4	GERD financed by business, %	30.8	58
5.1.5	Females employed w/advanced degrees, % ◴	12.9	56
5.2	**Innovation linkages**	**20.6**	**66**
5.2.1	University-industry R&D collaboration† ◴	59.5	23 ● ◆
5.2.2	State of cluster development and depth† ◴	58.3	27 ● ◆
5.2.3	GERD financed by abroad, % GDP ◴	0.0	100 ○
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	87
5.2.5	Patent families/bn PPP$ GDP	0.0	81
5.3	**Knowledge absorption**	**12.6**	**128** ○ ◇
5.3.1	Intellectual property payments, % total trade ◴	0.0	124 ○ ◇
5.3.2	High-tech imports, % total trade	3.9	118
5.3.3	ICT services imports, % total trade	0.5	109
5.3.4	FDI net inflows, % GDP	4.4	25 ●
5.3.5	Research talent, % in businesses	n/a	n/a
Knowledge and technology outputs		**10.5**	**115** ◇
6.1	**Knowledge creation**	**7.5**	**92**
6.1.1	Patents by origin/bn PPP$ GDP	1.3	56
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	76
6.1.3	Utility models by origin/bn PPP$ GDP	0.4	39
6.1.4	Scientific and technical articles/bn PPP$ GDP	5.9	106
6.1.5	Citable documents H-index	5.6	97
6.2	**Knowledge impact**	**21.0**	**99**
6.2.1	Labor productivity growth, %	0.9	47
6.2.2	New businesses/th pop. 15–64	1.7	62
6.2.3	Software spending, % GDP	0.1	96
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.6	94
6.2.5	High-tech manufacturing, %	15.1	74
6.3	**Knowledge diffusion**	**3.0**	**126** ○ ◇
6.3.1	Intellectual property receipts, % total trade ◴	0.0	113 ○ ◇
6.3.2	Production and export complexity	12.3	117 ○ ◇
6.3.3	High-tech exports, % total trade	0.1	114
6.3.4	ICT services exports, % total trade	0.3	112
Creative outputs		**23.5**	**67**
7.1	**Intangible assets**	**34.3**	**54**
7.1.1	Trademarks by origin/bn PPP$ GDP	26.0	80
7.1.2	Global brand value, top 5,000, % GDP	n/a	n/a
7.1.3	Industrial designs by origin/bn PPP$ GDP	0.9	74
7.1.4	ICTs and organizational model creation†	63.4	35 ● ◆
7.2	**Creative goods and services**	**9.4**	**83**
7.2.1	Cultural and creative services exports, % total trade	0.1	86
7.2.2	National feature films/mn pop. 15–69	7.4	27 ●
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a
7.2.4	Printing and other media, % manufacturing	1.1	49
7.2.5	Creative goods exports, % total trade	0.0	122 ○
7.3	**Online creativity**	**15.7**	**72**
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.9	96
7.3.2	Country-code TLDs/th pop. 15–69	1.4	77
7.3.3	Wikipedia edits/mn pop. 15–69	59.3	53
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	96

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 Azerbaijan.

Missing data for Azerbaijan

Code	Indicator name	Economy year	Model year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2017	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	n/a	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
3.2.2	Logistics performance	n/a	2018	World Bank
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
5.3.5	Research talent, % in businesses	n/a	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
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

Outdated data for Azerbaijan

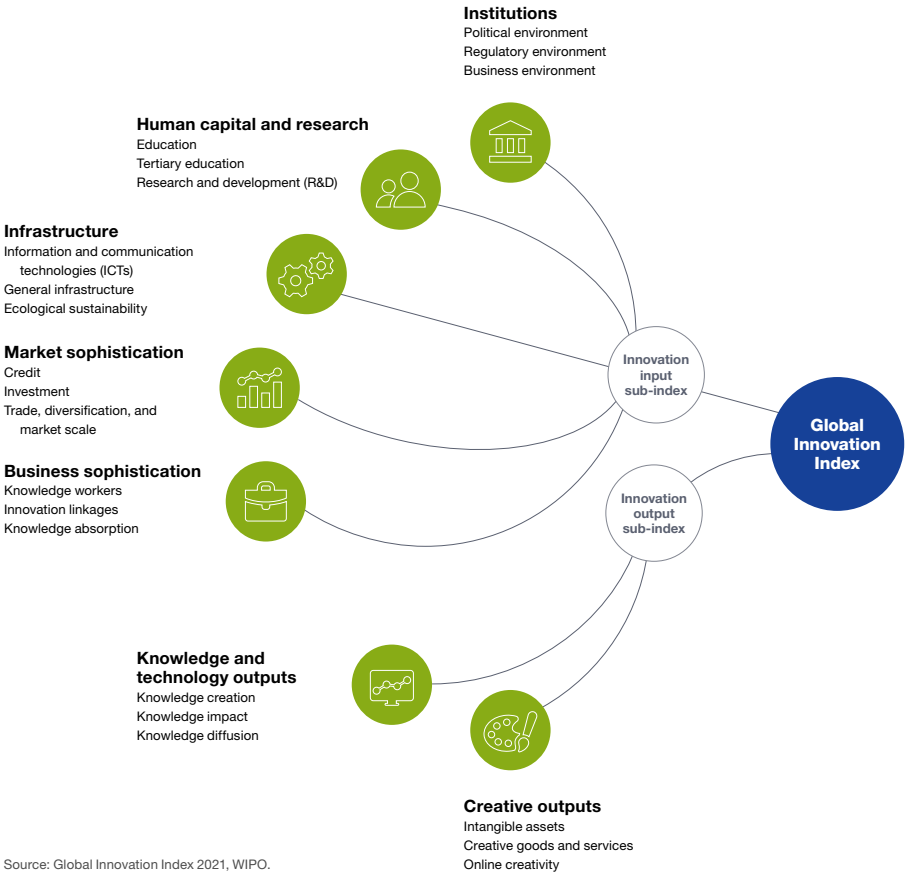
Code	Indicator name	Economy year	Model year	Source
2.3.2	Gross expenditure on R&D, % GDP	2018	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
4.3.2	Domestic industry diversification	2017	2018	United Nations Industrial Development Organization
5.1.3	GERD performed by business, % GDP	2017	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.5	Females employed w/advanced degrees, %	2013	2019	International Labour Organization

Code	Indicator name	Economy year	Model year	Source
5.2.1	University-industry R&D collaboration	2019	2020	World Economic Forum
5.2.2	State of cluster development and depth	2019	2020	World Economic Forum
5.2.3	GERD financed by abroad, % GDP	2017	2018	UNESCO Institute for Statistics
5.3.1	Intellectual property payments, % total trade	2015	2019	World Trade Organization
6.3.1	Intellectual property receipts, % total trade	2014	2019	World Trade Organization

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.