

Global Innovation Index 2023

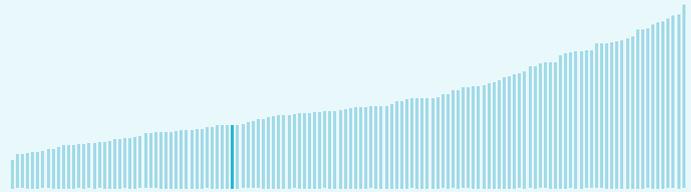


The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**

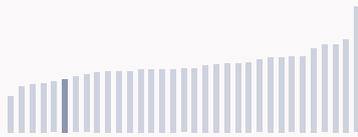
Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation.**

Azerbaijan ranking in the Global Innovation Index 2023

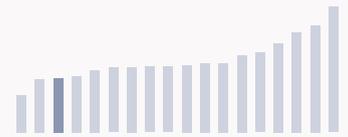
> Azerbaijan ranks **89th** among the 132 economies featured in the GII 2023.



> Azerbaijan ranks **28th** among the 33 upper-middle-income group economies.



> Azerbaijan ranks **16th** among the 18 economies in Northern Africa and Western Asia.



> Azerbaijan GII Ranking (2020-2023)

The table shows the rankings of Azerbaijan over the past four years. 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 2023 is between ranks 85 and 96.

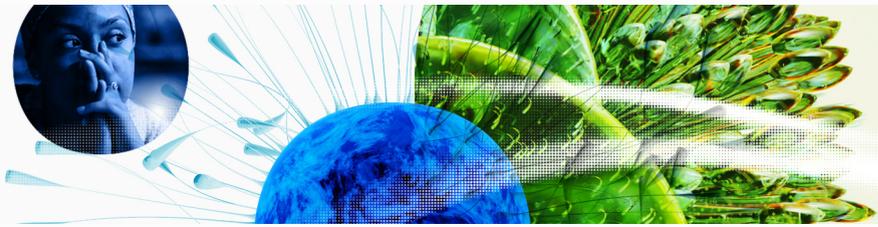
	GII Position	Innovation Inputs	Innovation Outputs
2020	82nd	76th	86th
2021	80th	74th	91st
2022	93rd	79th	110th
2023	89th	76th	104th

Azerbaijan performs worse in innovation outputs than innovation inputs in 2023.

This year Azerbaijan ranks **76th** in innovation inputs. This position is higher than last year.

Azerbaijan ranks **104th** in innovation outputs. This position is higher than last year.

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→ Expected vs. observed innovation performance

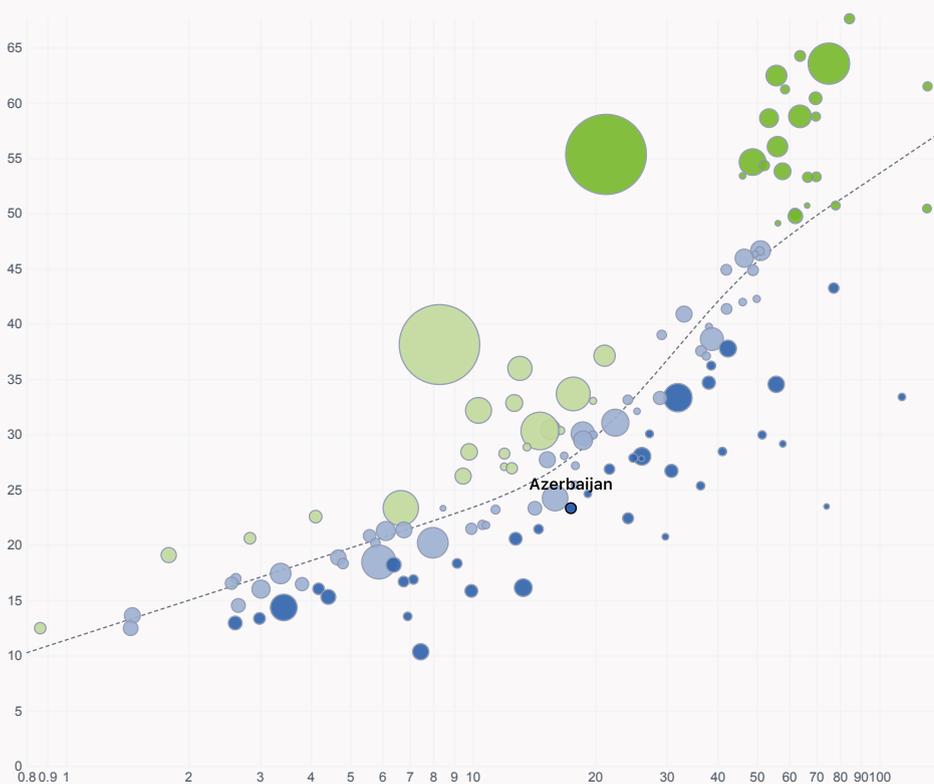
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.



> Relative to GDP, Azerbaijan's performance is below expectations for its level of development.

> Innovation overperformers relative to their economic development

↑ **GII Score**



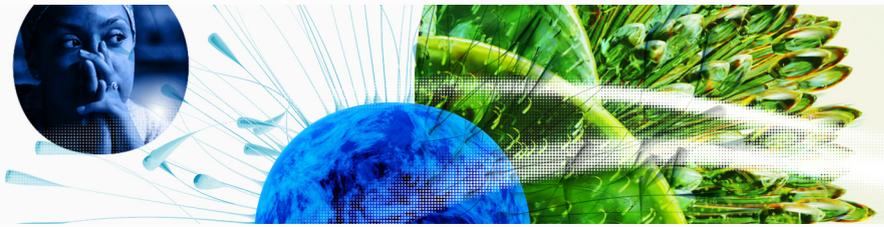
- Innovation leader
- Performing above expectations for level of development
- Performing at expectations for level of development
- Performing below expectations for level of development

Size legend (Population)



→ **GDP per capita, PPP logarithmic scale (thousands of \$)**

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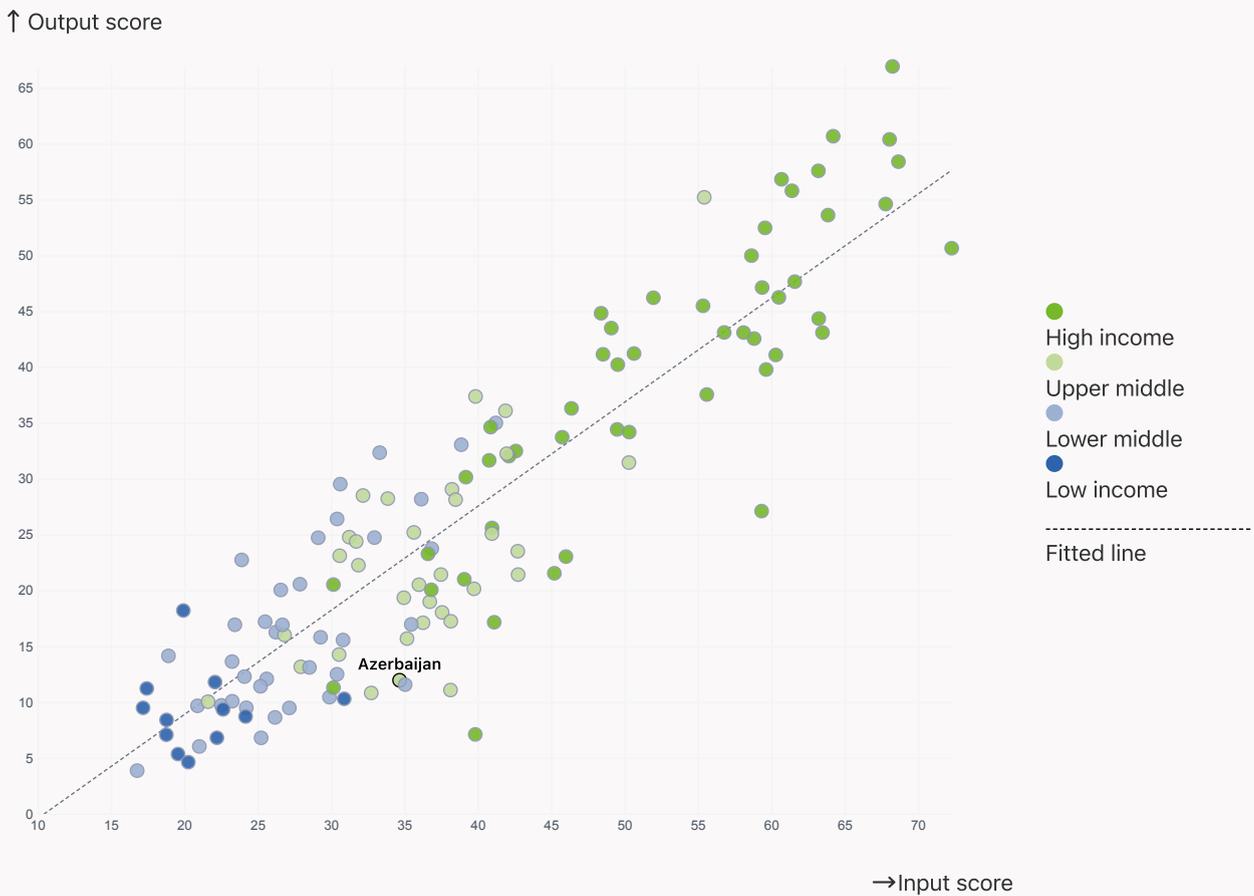
→ Effectively translating innovation investments into innovation outputs

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.

> Relationship between innovation inputs and outputs

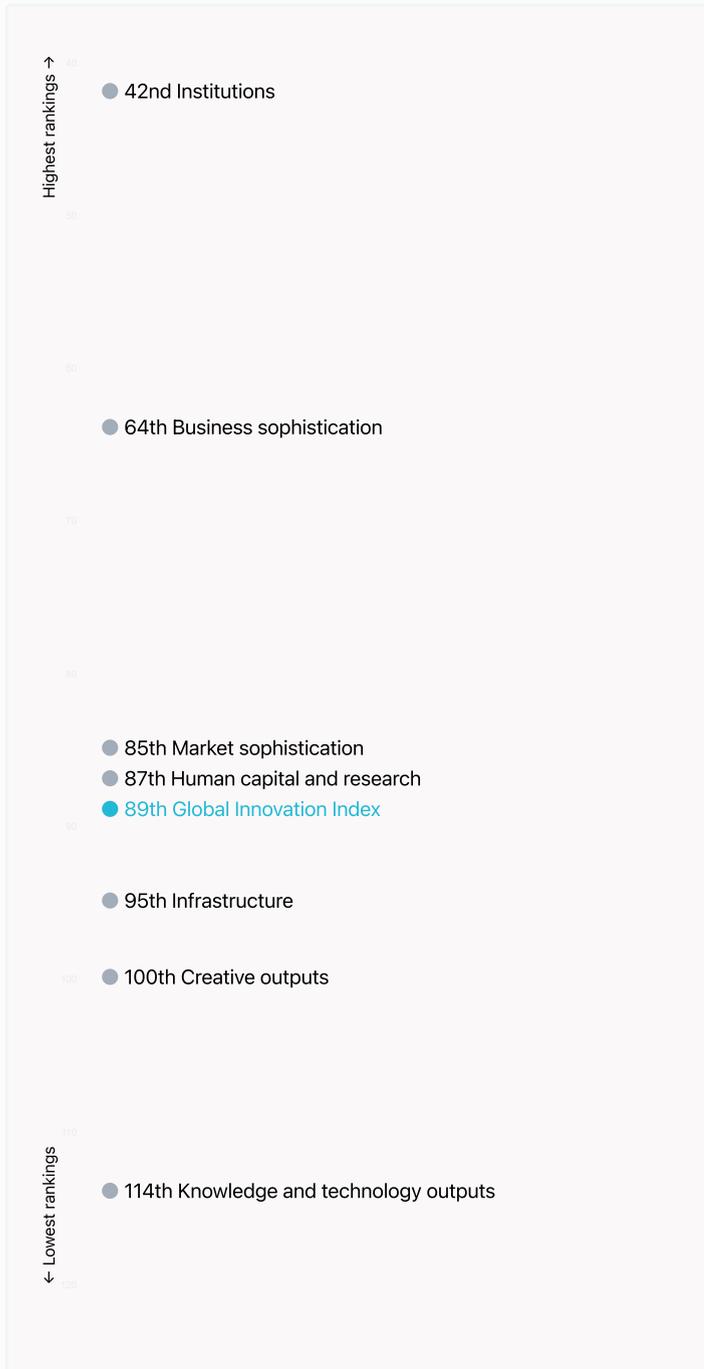


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→ Overview of Azerbaijan's rankings in the seven areas of the GII in 2023

The chart shows the ranking for each of the seven areas that the GII comprises. The strongest areas for Azerbaijan are those that rank above the GII (shown in blue) and the weakest are those that rank below.



> Highest rankings



Azerbaijan ranks highest in Institutions (42nd), Business sophistication (64th), Market sophistication (85th) and Human capital and research (87th).

> Lowest rankings



Azerbaijan ranks lowest in Knowledge and technology outputs (114th), Creative outputs (100th) and Infrastructure (95th).



The full WIPO Intellectual Property Statistics profile for Azerbaijan can be found on [this link](#).

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→ Benchmark of Azerbaijan against other country groupings for each of the seven areas of the GII Index

The charts show the relative position of Azerbaijan (blue bar) against other country groupings (grey bars), for each of the seven areas of the GII Index.

> Upper-Middle-Income economies

Azerbaijan performs below the upper-middle-income group average in Knowledge and technology outputs, Creative outputs, Business sophistication, Market sophistication, Human capital and research, Infrastructure.

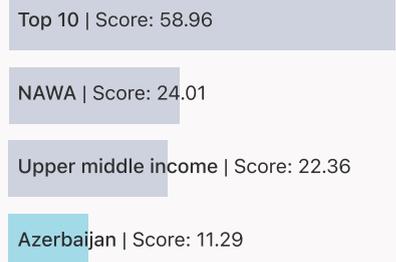


> Northern Africa And Western Asia

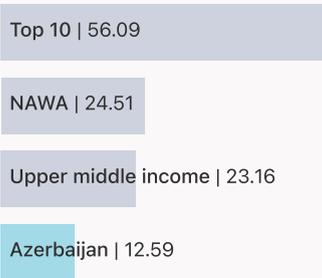
Azerbaijan performs below the regional average in Knowledge and technology outputs, Creative outputs, Business sophistication, Market sophistication, Human capital and research, Infrastructure.



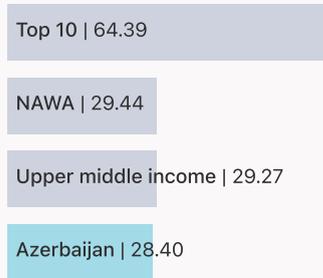
Knowledge and technology outputs



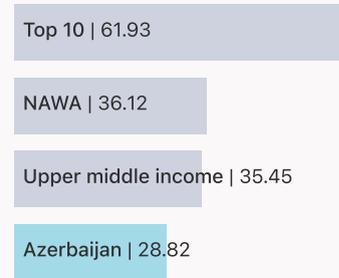
Creative outputs



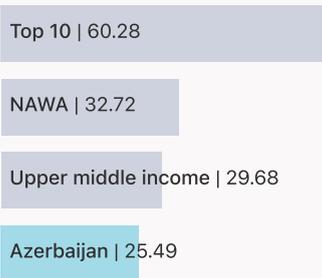
Business sophistication



Market sophistication



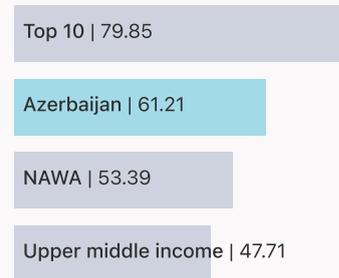
Human capital and research



Infrastructure



Institutions



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→ Innovation strengths and weaknesses in Azerbaijan

The table below gives an overview of the indicator strengths and weaknesses of Azerbaijan in the GII 2023.



> Azerbaijan's main innovation strengths are **Pupil-teacher ratio, secondary** (rank 17), **Policies for doing business** (rank 22) and **University-industry R&D collaboration** (rank 25).

Strengths

Weaknesses

Rank	Code	Indicator name	Rank	Code	Indicator name
17	2.1.5	Pupil-teacher ratio, secondary	122	3.2.3	Gross capital formation, % GDP
22	1.3.1	Policies for doing business	121	7.2.4	Creative goods exports, % total trade
25	5.2.1	University-industry R&D collaboration	115	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP
28	2.1.2	Government funding/pupil, secondary, % GDP/cap	114	6.3.2	Production and export complexity
28	5.2.2	State of cluster development	96	5.2.3	GERD financed by abroad, % GDP
44	2.3.1	Researchers, FTE/mn pop.	95	5.2.5	Patent families/bn PPP\$ GDP
47	2.2.2	Graduates in science and engineering, %	89	5.1.3	GERD performed by business, % GDP
51	1.2.3	Cost of redundancy dismissal	71	2.3.4	QS university ranking, top 3
55	5.1.5	Females employed w/advanced degrees, %	48	6.2.2	Unicorn valuation, % GDP
58	1.1.2	Government effectiveness	40	2.3.3	Global corporate R&D investors, top 3, mn US\$

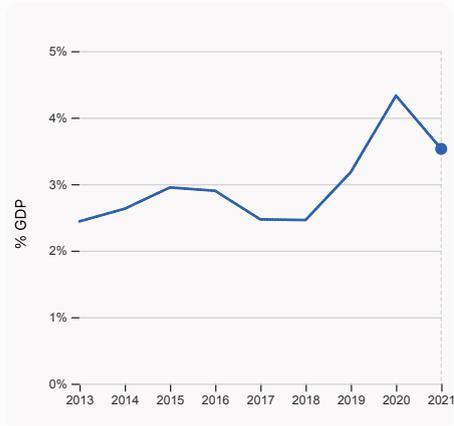
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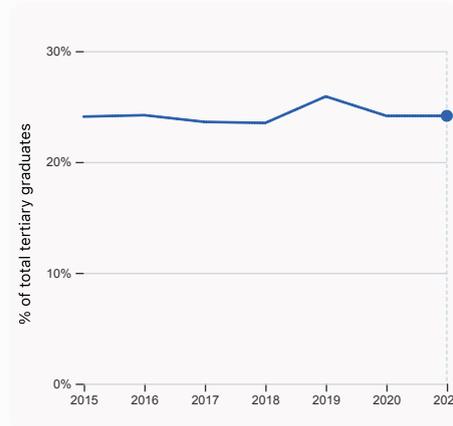
→ Azerbaijan's innovation system

As far as practicable, the plots below present unscaled indicator data.

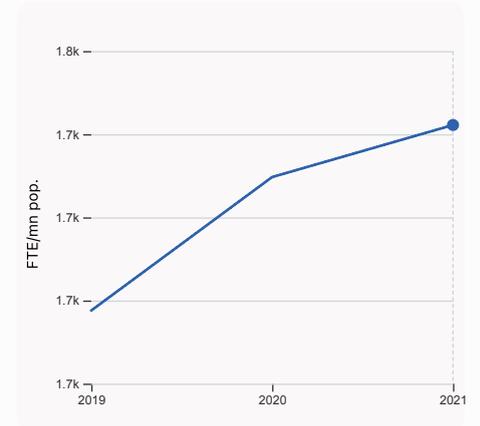
> Innovation inputs in Azerbaijan



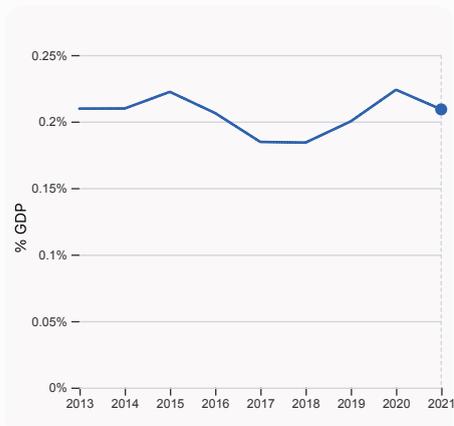
2.1.1 Expenditure on education, % GDP
was equal to 3.53% GDP in 2021, down by 0.8 percentage points from the year prior – and equivalent to an indicator rank of 89.



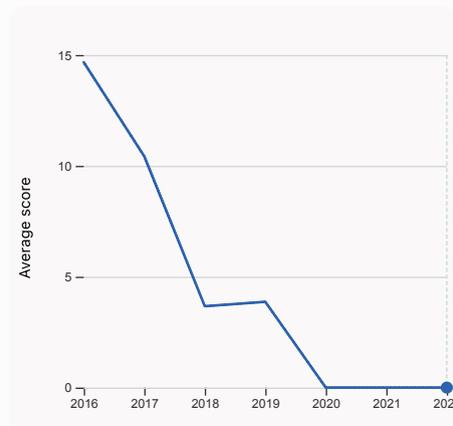
2.2.2 Graduates in science and engineering, %
was equal to 24.16% of total tertiary graduates in 2021, with no change from the year prior – and equivalent to an indicator rank of 47.



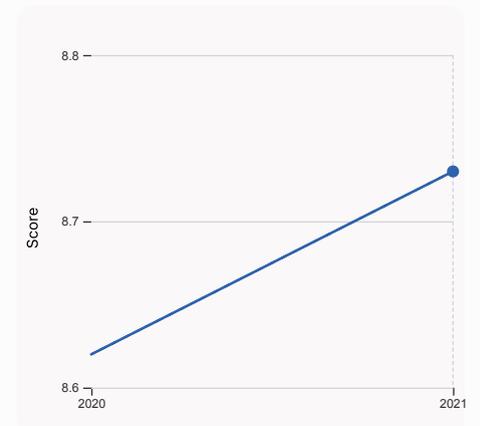
2.3.1 Researchers, FTE/mn pop.
was equal to 1,741.11 FTE/mn pop. in 2021, up by 0.36% from the year prior – and equivalent to an indicator rank of 44.



2.3.2 Gross expenditure on R&D, % GDP
was equal to 0.209% GDP in 2021, down by 0.015 percentage points from the year prior – and equivalent to an indicator rank of 87.

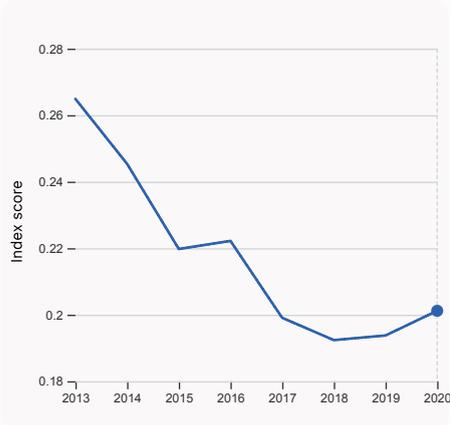


2.3.4 QS university ranking, top 3
was equal to an average score of 0 for the top 3 universities in 2022, equivalent to an indicator rank of 71.



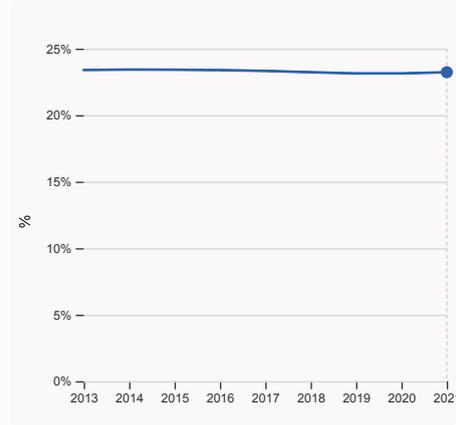
3.1.1 ICT access
was equal to a score of 8.73 in 2021, up by 1.28% from the year prior – and equivalent to an indicator rank of 71.

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4.3.2 Domestic industry diversification

was equal to an index score of 0.201 in 2020, up by 3.83% from the year prior – and equivalent to an indicator rank of 68.



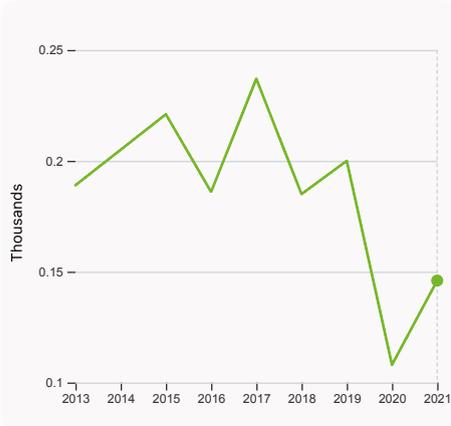
5.1.1 Knowledge-intensive employment, %

was equal to 23.23% in 2021, up by 0.09 percentage points from the year prior – and equivalent to an indicator rank of 62.

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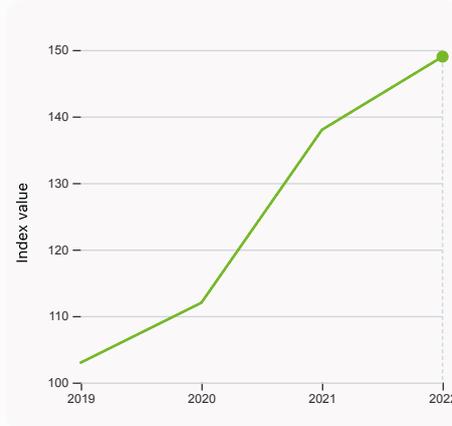


> Innovation outputs in Azerbaijan



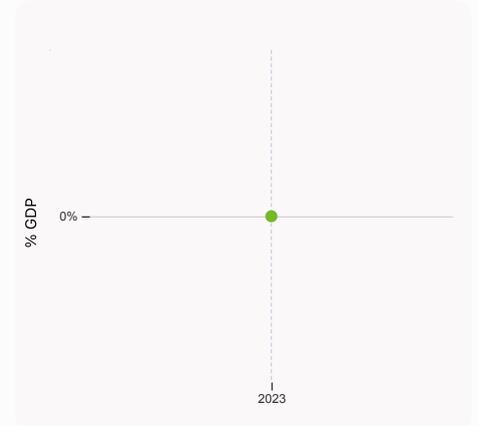
6.1.1 Patents by origin

was equal to 0.15 Thousands in 2021, up by 35.19% from the year prior – and equivalent to an indicator rank of 63.



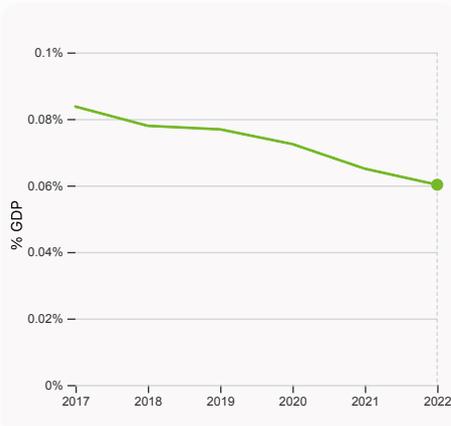
6.1.5 Citable documents H-index

was equal to an index value of 149 in 2022, up by 7.97% from the year prior – and equivalent to an indicator rank of 95.



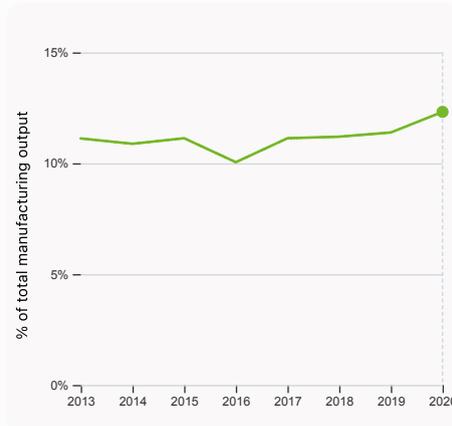
6.2.2 Unicorn valuation, % GDP

was equal to 0 % GDP in 2023 – and equivalent to an indicator rank of 48.



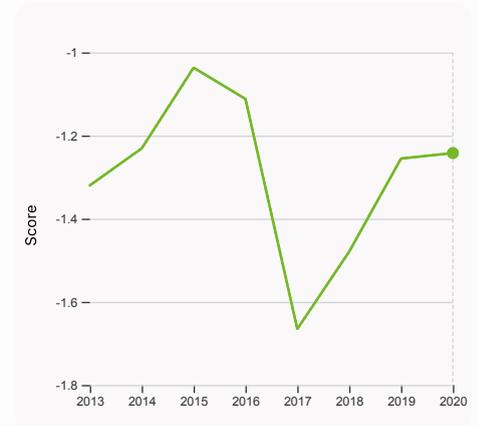
6.2.3 Software spending, % GDP

was equal to 0.06% GDP in 2022, down by 0.0048 percentage points from the year prior – and equivalent to an indicator rank of 102.



6.2.4 High-tech manufacturing, %

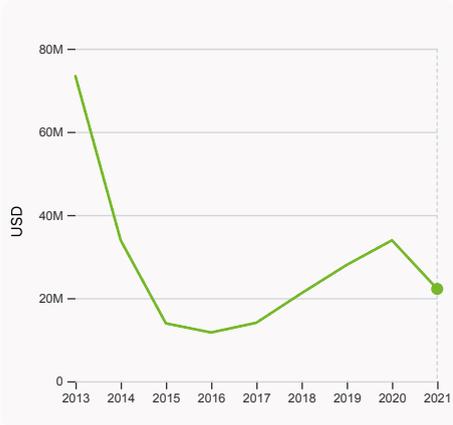
was equal to 12.32% of total manufacturing output in 2020, up by 0.93 percentage points from the year prior – and equivalent to an indicator rank of 85.



6.3.2 Production and export complexity

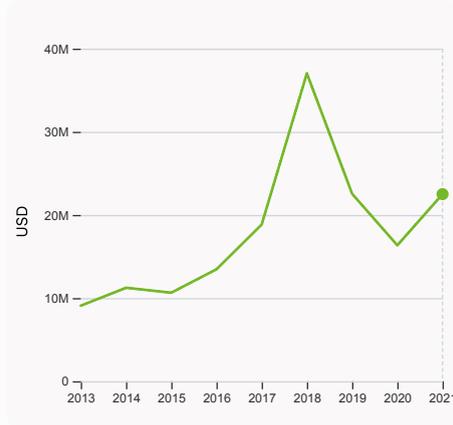
was equal to a score of -1.242 in 2020, up by 1.045% from the year prior – and equivalent to an indicator rank of 114.

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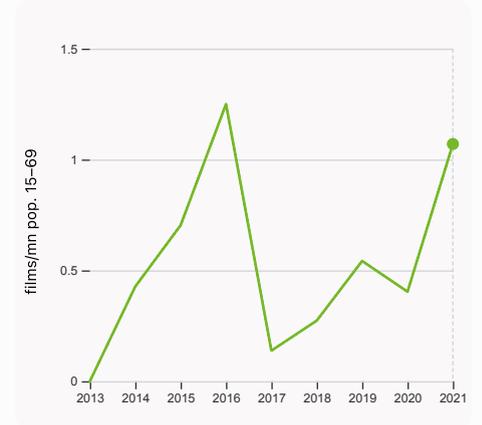
6.3.3 High-tech exports

was equal to 22,213,261 USD in 2021, down by 34.5% from the year prior – and equivalent to an indicator rank of 118.



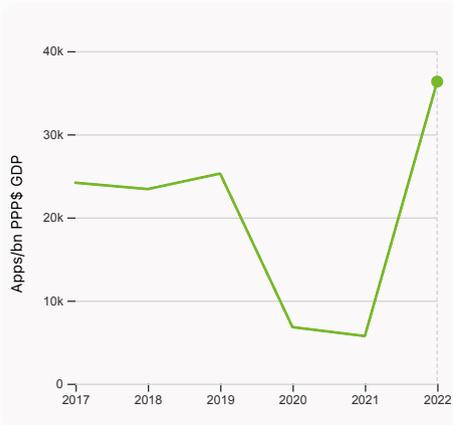
7.2.1 Cultural and creative services exports

was equal to 22,505,000 USD in 2021, up by 37.63% from the year prior – and equivalent to an indicator rank of 83.



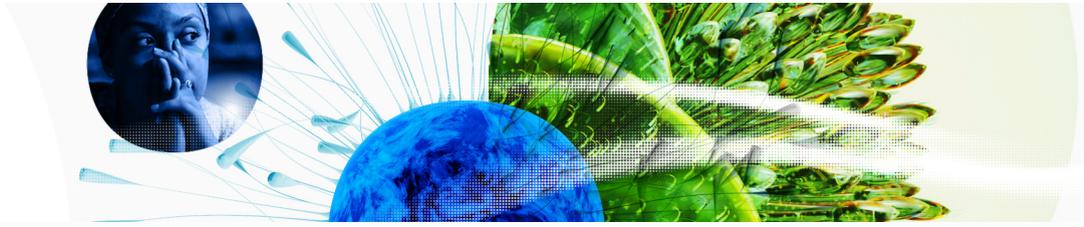
7.2.2 National feature films/mn pop. 15-69

was equal to 1.07 films/mn pop. 15-69 in 2021, up by 164.85% from the year prior – and equivalent to an indicator rank of 60.



7.3.4 Mobile app creation/bn PPP\$ GDP

was equal to 36,338.64 Apps/bn PPP\$ GDP in 2022, up by 533.92% from the year prior – and equivalent to an indicator rank of 97.



→ Azerbaijan's innovation top performers

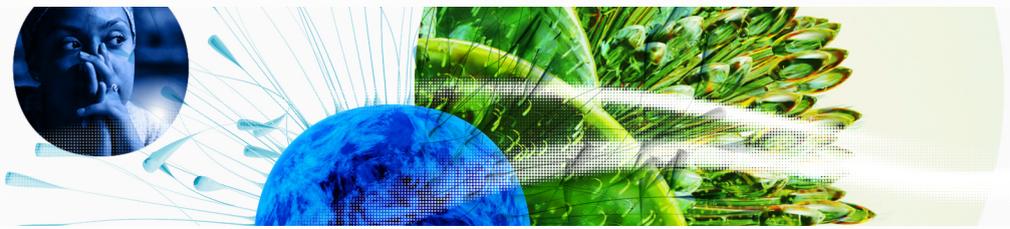
> 2.3.4 QS university ranking of Azerbaijan's top universities

Rank	University	Score
1001-1200	BAKU STATE UNIVERSITY	9.60
1001-1200	AZERBAIJAN STATE UNIVERSITY OF ECONOMICS	8.20

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2023>).

Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100]. Ranks can represent a single value "x", a tie "x=" or a range "x-y".

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GII 2023 rank

89

Azerbaijan

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
104	76	Upper middle	NAWA	10.4	178.7	17,448.2
Score / Value Rank				Score / Value Rank		
Institutions				61.2	42	◆◆
1.1 Institutional environment				49.6	54	◆◆
1.1.1 Operational stability for businesses*				55.6	56	
1.1.2 Government effectiveness*				43.6	58	◆◆
1.2 Regulatory environment				60.1	71	
1.2.1 Regulatory quality*				40.6	74	
1.2.2 Rule of law*				22.6	98	
1.2.3 Cost of redundancy dismissal				13.7	51	◆◆
1.3 Business environment				73.9	[17]	
1.3.1 Policies for doing business†				73.9	22	◆◆
1.3.2 Entrepreneurship policies and culture†				n/a	n/a	
Human capital and research				25.5	87	
2.1 Education				46.8	76	
2.1.1 Expenditure on education, % GDP				3.5	89	
2.1.2 Government funding/pupil, secondary, % GDP/cap				23.6	28	◆◆
2.1.3 School life expectancy, years				13.5	77	
2.1.4 PISA scales in reading, maths and science				402.2	65	
2.1.5 Pupil-teacher ratio, secondary				8.5	17	◆◆
2.2 Tertiary education				24.3	82	
2.2.1 Tertiary enrolment, % gross				38.2	79	
2.2.2 Graduates in science and engineering, %				24.2	47	◆◆
2.2.3 Tertiary inbound mobility, %				2.3	75	
2.3 Research and development (R&D)				5.4	73	
2.3.1 Researchers, FTE/mn pop.				1,741.1	44	◆◆
2.3.2 Gross expenditure on R&D, % GDP				0.2	87	
2.3.3 Global corporate R&D investors, top 3, mn US\$				0.0	40	◇◇
2.3.4 QS university ranking, top 3*				0.0	71	◇◇
Infrastructure				29.5	95	◇
3.1 Information and communication technologies (ICTs)				60.3	81	
3.1.1 ICT access*				81.0	71	
3.1.2 ICT use*				65.8	81	
3.1.3 Government's online service*				57.1	81	
3.1.4 E-participation*				37.2	91	◇
3.2 General infrastructure				9.2	125	◇◇
3.2.1 Electricity output, GWh/mn pop.				2,749.1	67	
3.2.2 Logistics performance*				n/a	n/a	
3.2.3 Gross capital formation, % GDP				14.6	122	◇◇
3.3 Ecological sustainability				19.0	84	
3.3.1 GDP/unit of energy use				9.0	81	
3.3.2 Environmental performance*				33.4	77	
3.3.3 ISO 14001 environment/bn PPP\$ GDP				0.5	83	
Market sophistication				28.8	[85]	
4.1 Credit				8.1	[117]	
4.1.1 Finance for startups and scaleups†				n/a	n/a	
4.1.2 Domestic credit to private sector, % GDP				26.0	106	◇
4.1.3 Loans from microfinance institutions, % GDP				n/a	n/a	
4.2 Investment				n/a	[n/a]	
4.2.1 Market capitalization, % GDP				n/a	n/a	
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP				n/a	n/a	
4.2.3 VC recipients, deals/bn PPP\$ GDP				n/a	n/a	
4.2.4 VC received, value, % GDP				n/a	n/a	
4.3 Trade, diversification, and market scale				49.5	88	
4.3.1 Applied tariff rate, weighted avg., %				5.9	96	◇
4.3.2 Domestic industry diversification				83.1	68	
4.3.3 Domestic market scale, bn PPP\$				178.7	74	
Business sophistication				28.4	64	
5.1 Knowledge workers				31.0	66	
5.1.1 Knowledge-intensive employment, %				23.2	62	●
5.1.2 Firms offering formal training, %				33.9	48	
5.1.3 GERD performed by business, % GDP				0.0	89	○
5.1.4 GERD financed by business, %				30.8	57	●
5.1.5 Females employed w/advanced degrees, %				13.5	55	◆◆
5.2 Innovation linkages				27.6	48	◆◆
5.2.1 University-industry R&D collaboration†				69.2	25	◆◆
5.2.2 State of cluster development†				66.9	28	◆◆
5.2.3 GERD financed by abroad, % GDP				0.0	96	◇◇
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP				0.0	115	○
5.2.5 Patent families/bn PPP\$ GDP				0.0	95	◇◇
5.3 Knowledge absorption				26.7	[97]	
5.3.1 Intellectual property payments, % total trade				n/a	n/a	
5.3.2 High-tech imports, % total trade				4.9	117	
5.3.3 ICT services imports, % total trade				0.4	114	◇
5.3.4 FDI net inflows, % GDP				0.4	118	◇
5.3.5 Research talent, % in businesses				n/a	n/a	
Knowledge and technology outputs				11.3	114	◇
6.1 Knowledge creation				6.4	103	
6.1.1 Patents by origin/bn PPP\$ GDP				0.9	63	
6.1.2 PCT patents by origin/bn PPP\$ GDP				0.0	87	
6.1.3 Utility models by origin/bn PPP\$ GDP				0.2	49	
6.1.4 Scientific and technical articles/bn PPP\$ GDP				n/a	n/a	
6.1.5 Citable documents H-index				5.9	95	
6.2 Knowledge impact				18.3	112	
6.2.1 Labor productivity growth, %				1.0	62	
6.2.2 Unicorn valuation, % GDP				0.0	48	◇◇
6.2.3 Software spending, % GDP				0.1	102	◇
6.2.4 High-tech manufacturing, %				12.3	85	
6.3 Knowledge diffusion				9.2	110	◇
6.3.1 Intellectual property receipts, % total trade				n/a	n/a	
6.3.2 Production and export complexity				26.5	114	◇◇
6.3.3 High-tech exports, % total trade				0.1	118	◇
6.3.4 ICT services exports, % total trade				0.5	104	
6.3.5 ISO 9001 quality/bn PPP\$ GDP				1.7	91	
Creative outputs				12.6	100	◇
7.1 Intangible assets				16.0	[96]	
7.1.1 Intangible asset intensity, top 15, %				n/a	n/a	
7.1.2 Trademarks by origin/bn PPP\$ GDP				35.2	66	
7.1.3 Global brand value, top 5,000				n/a	n/a	
7.1.4 Industrial designs by origin/bn PPP\$ GDP				0.4	88	
7.2 Creative goods and services				3.0	97	
7.2.1 Cultural and creative services exports, % total trade				0.1	83	
7.2.2 National feature films/mn pop. 15-69				1.1	60	
7.2.3 Entertainment and media market/th pop. 15-69				n/a	n/a	
7.2.4 Creative goods exports, % total trade				0.0	121	○
7.3 Online creativity				15.4	94	
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69				1.0	98	
7.3.2 Country-code TLDs/th pop. 15-69				1.6	76	
7.3.3 GitHub commits/mn pop. 15-69				4.0	76	
7.3.4 Mobile app creation/bn PPP\$ GDP				54.8	97	

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 appendices for details, including the year of the data, at <https://www.wipo.int/gii-ranking>. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.



→ Data availability

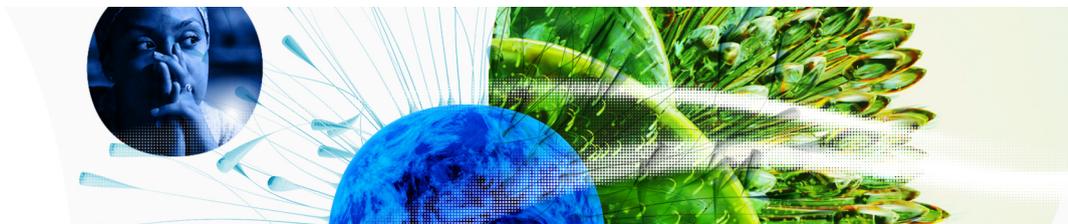
The following tables list indicators that are either missing or outdated for Azerbaijan.



> Azerbaijan has missing data for fourteen indicators and outdated data for eight indicators.

> Missing data for Azerbaijan

Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	n/a	2022	Global Entrepreneurship Monitor
3.2.2	Logistics performance	n/a	2023	World Bank, Logistics Performance Index 2023 (https://lpi.worldbank.org/); and World Bank 2023, Connecting to Compete 2023: Trade Logistics in the Global Economy ÖÇö The Logistics Performance Index and its Indicators.
4.1.1	Finance for startups and scaleups	n/a	2022	Global Entrepreneurship Monitor
4.1.3	Loans from microfinance institutions, % GDP	n/a	2021	International Monetary Fund, Financial Access Survey (FAS)
4.2.1	Market capitalization, % GDP	n/a	2020	World Federation of Exchanges; World Bank
4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP	n/a	2022	Refinitiv; International Monetary Fund
4.2.3	VC recipients, deals/bn PPP\$ GDP	n/a	2022	Refinitiv; International Monetary Fund
4.2.4	VC received, value, % GDP	n/a	2022	Refinitiv; International Monetary Fund
5.3.1	Intellectual property payments, % total trade	n/a	2021	World Trade Organization and United Nations Conference on Trade and Development
5.3.5	Research talent, % in businesses	n/a	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
6.3.1	Intellectual property receipts, % total trade	n/a	2021	World Trade Organization and United Nations Conference on Trade and Development
7.1.1	Intangible asset intensity, top 15, %	n/a	2022	Brand Finance
7.1.3	Global brand value, top 5,000	n/a	2023	Brand Finance; International Monetary Fund
7.2.3	Entertainment and media market/th pop. 15-69	n/a	2022	PwC, GEMO; United Nations, World Population Prospects; International Monetary Fund



> Outdated data for Azerbaijan

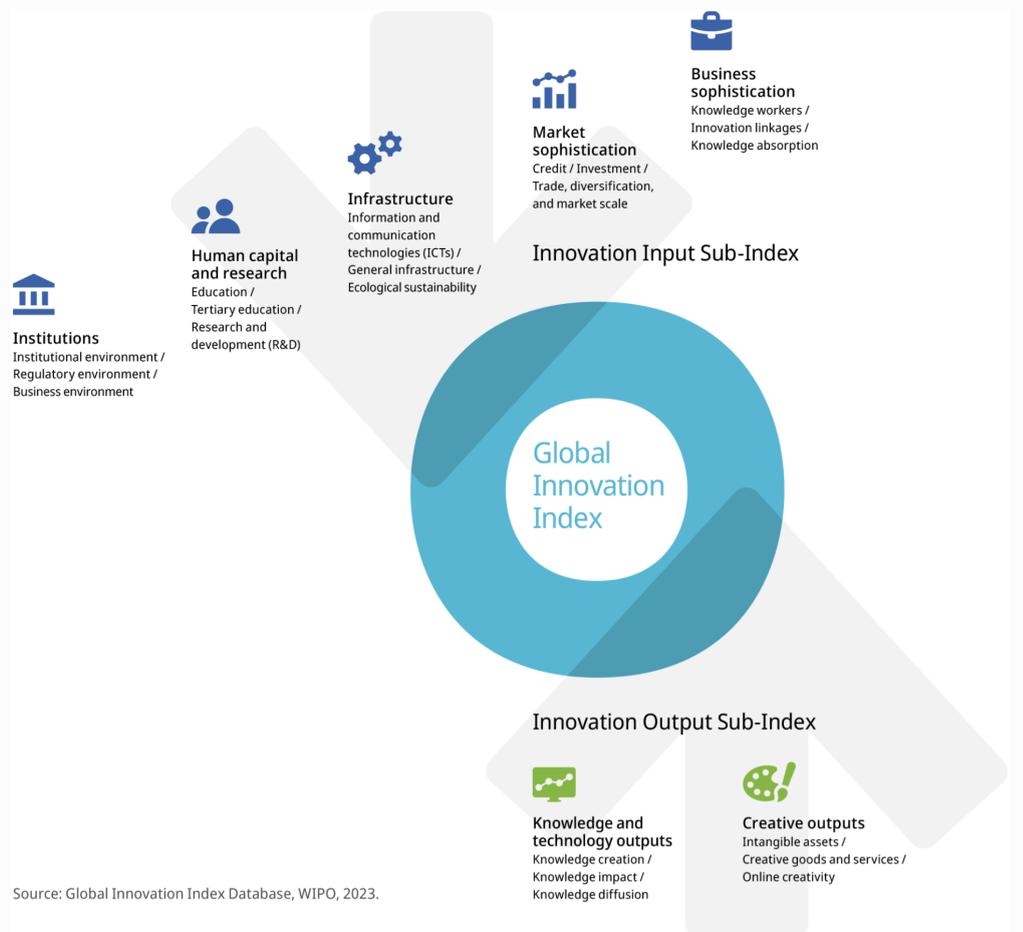
Code	Indicator name	Economy Year	Model Year	Source
1.3.1	Policies for doing business	2021	2022	World Economic Forum, Executive Opinion Survey (EOS)
5.1.1	Knowledge-intensive employment, %	2021	2022	International Labour Organization
5.1.3	GERD performed by business, % GDP	2018	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.4	GERD financed by business, %	2018	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.5	Females employed w/advanced degrees, %	2021	2022	International Labour Organization
5.2.1	University-industry R&D collaboration	2021	2022	World Economic Forum, Executive Opinion Survey (EOS)
5.2.2	State of cluster development	2021	2022	World Economic Forum, Executive Opinion Survey (EOS)
5.2.3	GERD financed by abroad, % GDP	2018	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT

Global Innovation Index 2023



→ 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.



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.