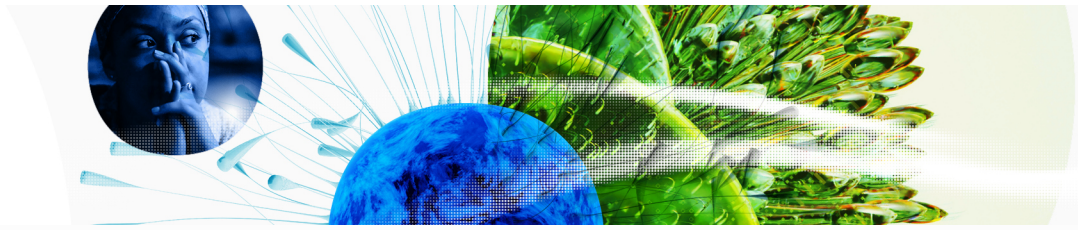
Global Innovation Index 2023



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

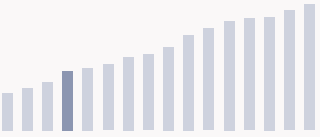
Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation**.

Mongolia ranking in the Global Innovation Index 2023

> Mongolia ranks 68th among the 132 economies featured in the GII 2023.

> Mongolia ranks 7th among the 37 lower-middle-income group economies.

> Mongolia ranks 13th among the 16 economies in South East Asia, East Asia, and Oceania.



> Mongolia GII Ranking (2020-2023)

The table shows the rankings of Mongolia 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 Mongolia in the GII 2023 is between ranks 58 and 75.

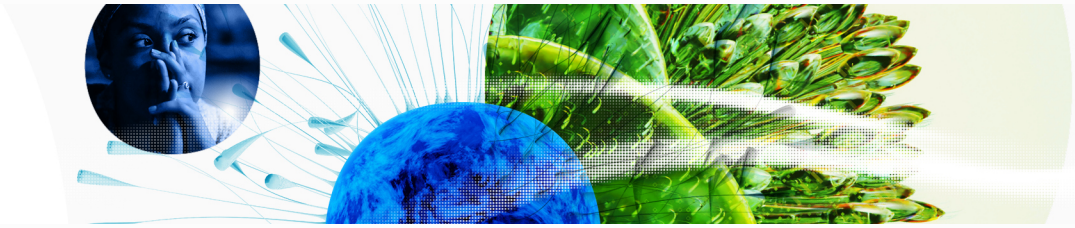
	GII Position	Innovation Inputs	Innovation Outputs
2020	58th	65th	54th
2021	58th	65th	55th
2022	71st	81st	64th
2023	68th	79th	60th

Mongolia performs better in innovation outputs than innovation inputs in 2023.

This year **Mongolia ranks 79th in innovation inputs.** This position is higher than last year.

Mongolia ranks 60th in innovation outputs. This position is higher than last year.

Global Innovation Index 2023

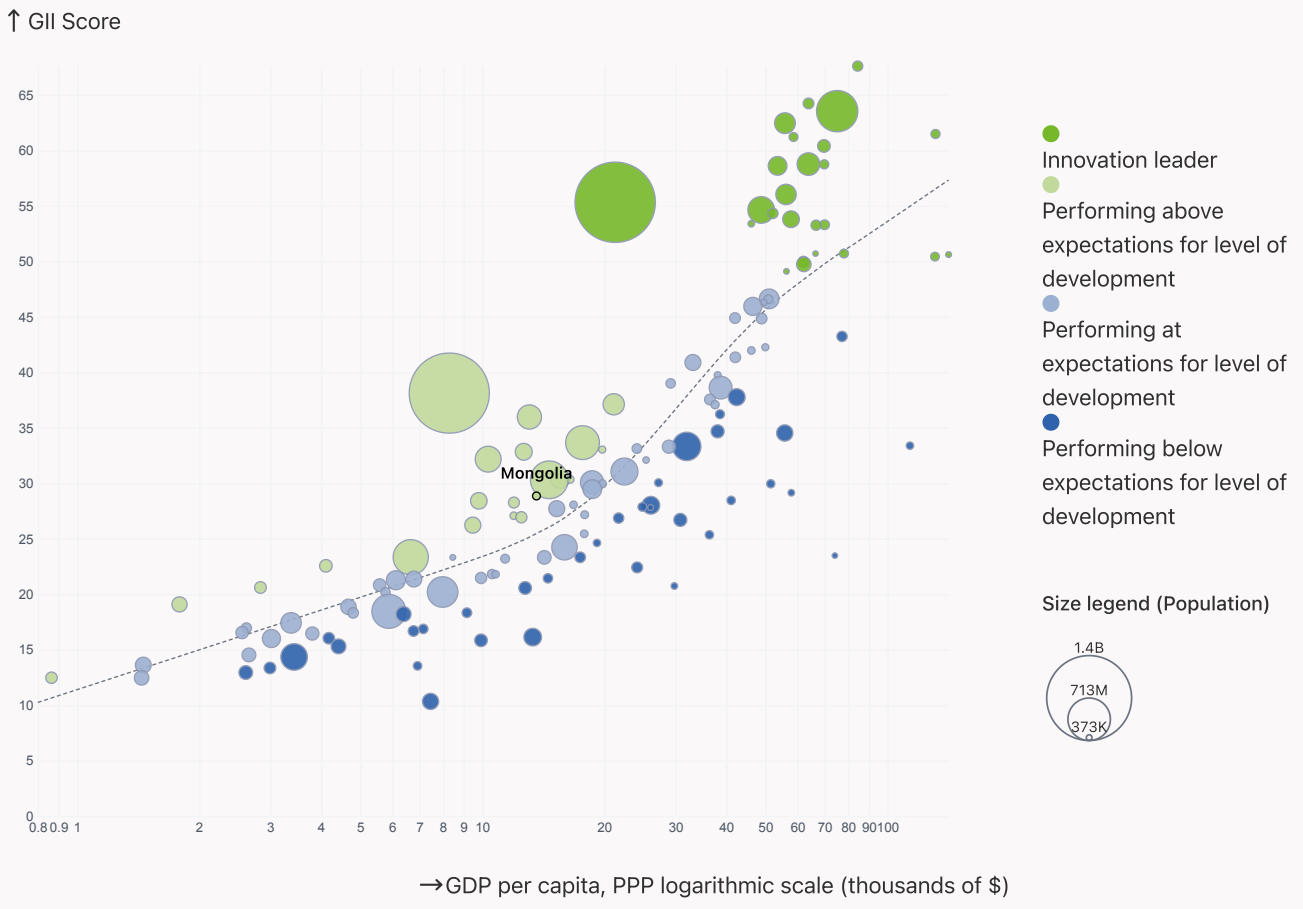


→ Expected vs. observed innovation performance

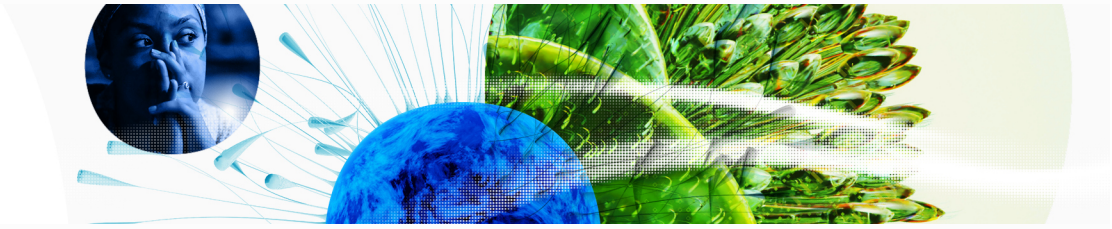
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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

> Relative to GDP, Mongolia is performing above expectations for its level of development.

> Innovation overperformers relative to their economic development



Global Innovation Index 2023

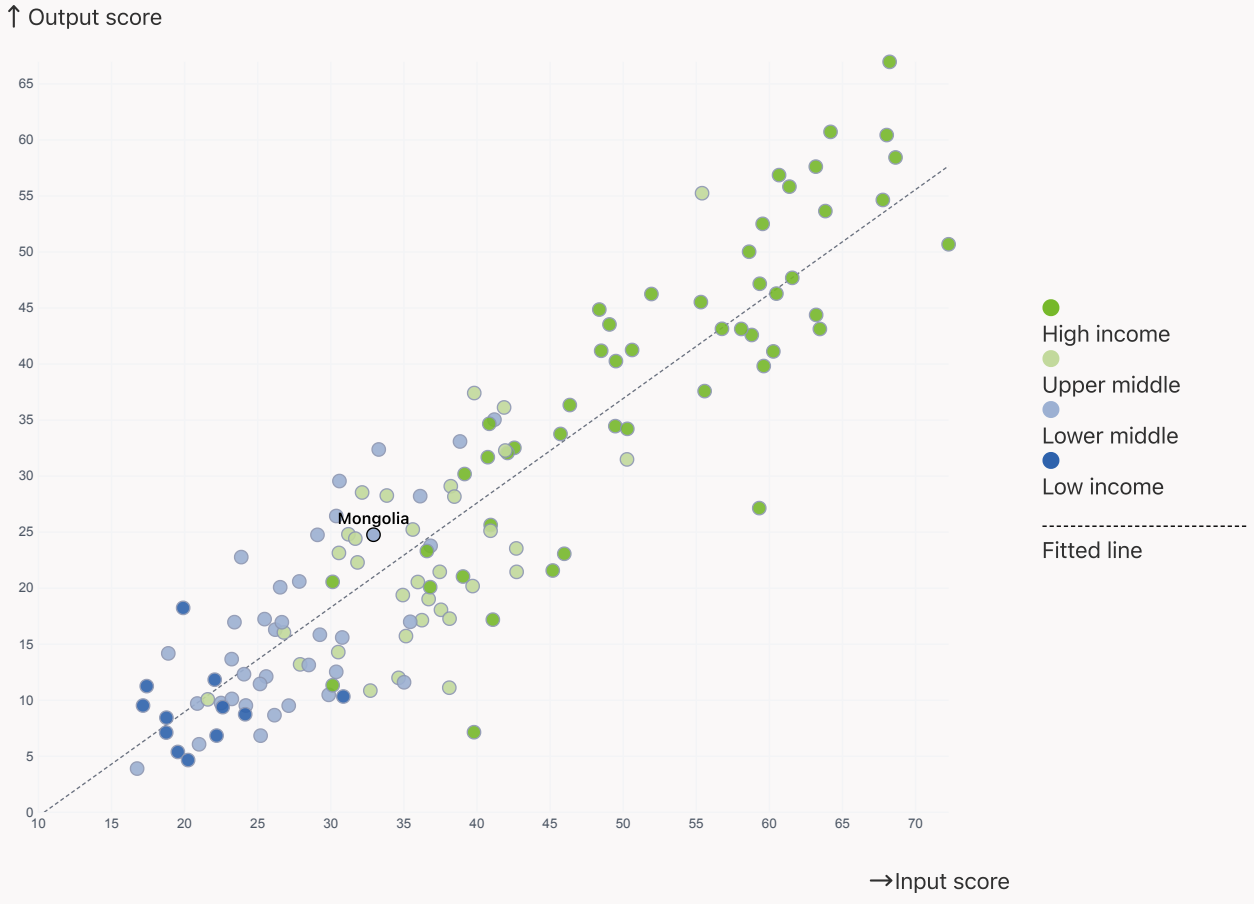


→ Effectively translating innovation investments into innovation outputs

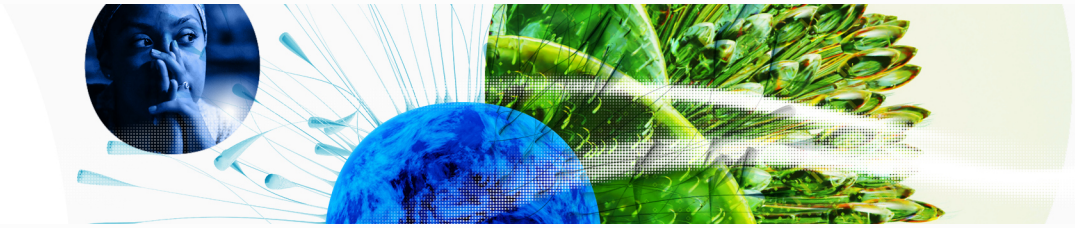
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

> Mongolia produces more innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

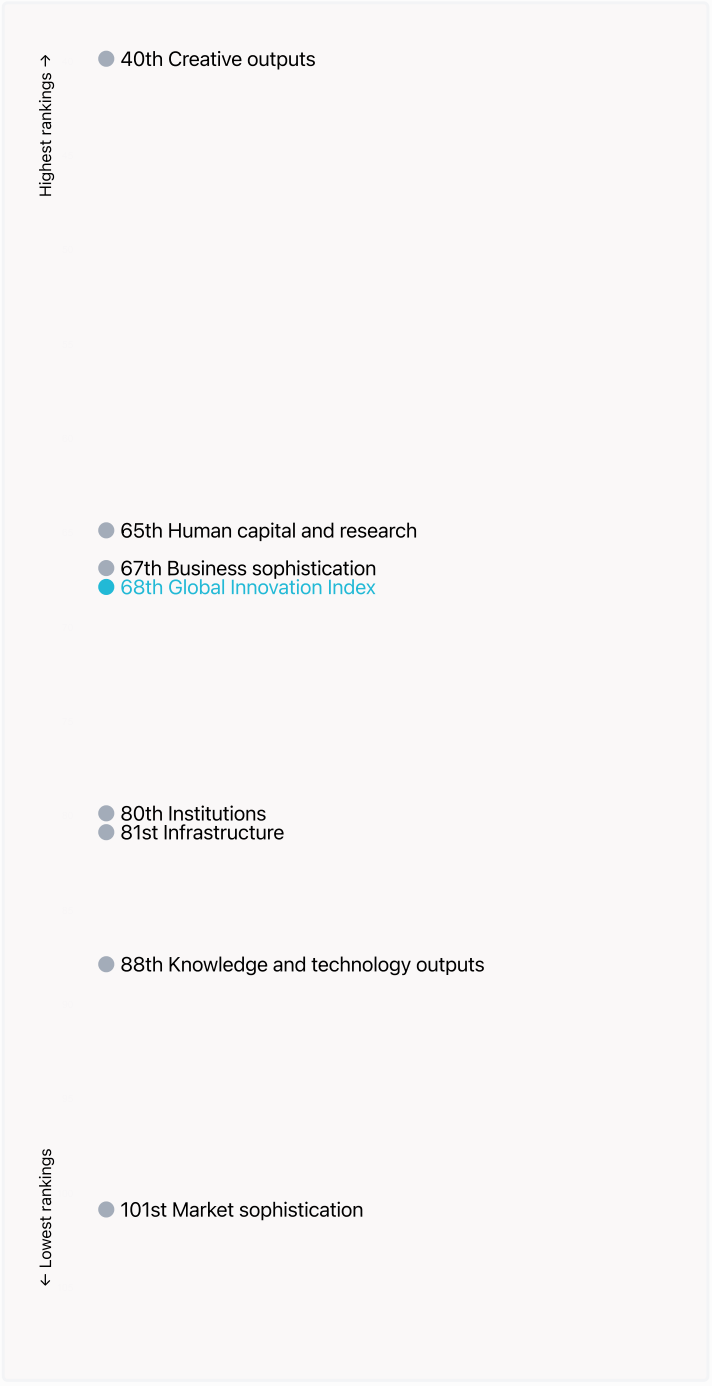


Global Innovation Index 2023



→ Overview of Mongolia'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 Mongolia are those that rank above the GII (shown in blue) and the weakest are those that rank below.



> Highest rankings

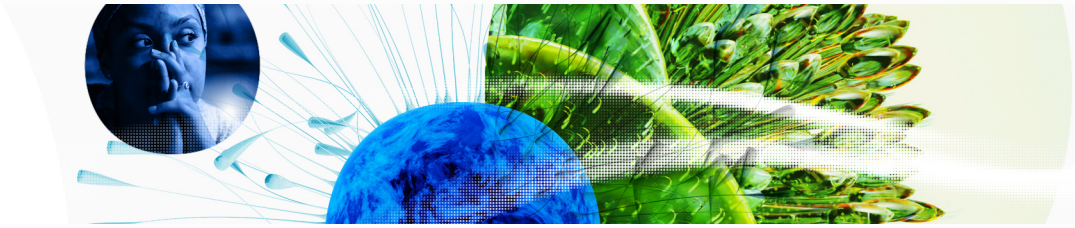
Mongolia ranks highest in Creative outputs (40th), Human capital and research (65th) and Business sophistication (67th).

> Lowest rankings

Mongolia ranks lowest in Market sophistication (101st), Knowledge and technology outputs (88th) and Infrastructure (81st).

The full WIPO Intellectual Property Statistics profile for Mongolia can be found on this link.

Global Innovation Index 2023



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

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

> Lower-Middle-Income economies

Mongolia performs above the lower-middle-income group average in Creative outputs, Business sophistication, Human capital and research, Infrastructure, Institutions.

> South East Asia, East Asia, And Oceania

Mongolia performs below the regional average in all the pillars.

Knowledge and technology outputs

- Top 10 | Score: 58.96
- SEAO | Score: 32.16
- Lower middle income | Score: 17.21
- Mongolia | Score: 15.77

* South East Asia, East Asia, and Oceania

Creative outputs

- Top 10 | 56.09
- SEAO | 34.40
- Mongolia | 33.66
- Lower middle income | 16.35

Business sophistication

- Top 10 | 64.39
- SEAO | 40.54
- Mongolia | 27.94
- Lower middle income | 22.71

Market sophistication

- Top 10 | 61.93
- SEAO | 47.18
- Lower middle income | 28.01
- Mongolia | 23.67

Human capital and research

- Top 10 | 60.28
- SEAO | 40.81
- Mongolia | 31.23
- Lower middle income | 21.73

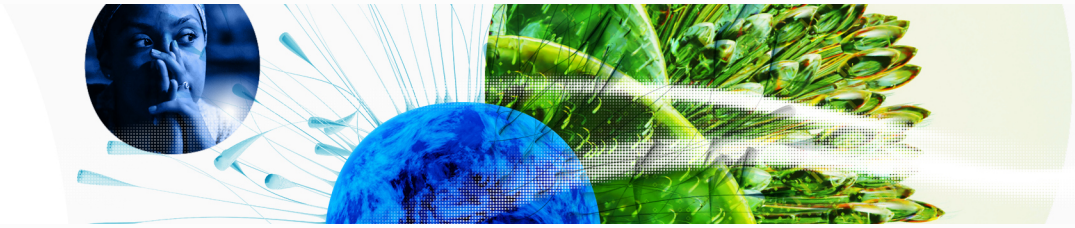
Infrastructure

- Top 10 | 62.83
- SEAO | 47.13
- Mongolia | 35.97
- Lower middle income | 27.83

Institutions

- Top 10 | 79.85
- SEAO | 62.54
- Mongolia | 46.01
- Lower middle income | 39.43

Global Innovation Index 2023



→ Innovation strengths and weaknesses in Mongolia

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

> Mongolia's main innovation strengths are **Industrial designs by origin/bn PPP$ GDP** (rank 1), **Trademarks by origin/bn PPP$ GDP** (rank 1) and **Utility models by origin/bn PPP$ GDP** (rank 1).

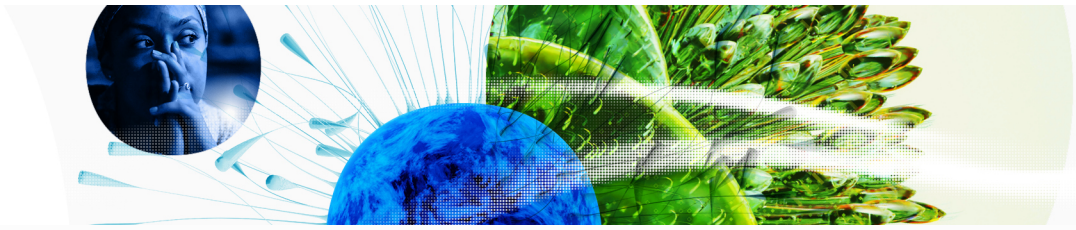
Strengths

Rank	Code	Indicator name
1	7.1.4	Industrial designs by origin/bn PPP$ GDP
1	7.1.2	Trademarks by origin/bn PPP$ GDP
1	6.1.3	Utility models by origin/bn PPP$ GDP
3	5.1.2	Firms offering formal training, %
4	3.2.3	Gross capital formation, % GDP
7	5.3.4	FDI net inflows, % GDP
12	2.1.1	Expenditure on education, % GDP
18	1.2.3	Cost of redundancy dismissal
23	5.1.5	Females employed w/advanced degrees, %
29	6.1.1	Patents by origin/bn PPP$ GDP

Weaknesses

Rank	Code	Indicator name
129	7.2.4	Creative goods exports, % total trade
107	4.3.2	Domestic industry diversification
106	6.2.4	High-tech manufacturing, %
95	5.2.5	Patent families/bn PPP$ GDP
85	5.1.3	GERD performed by business, % GDP
77	7.1.1	Intangible asset intensity, top 15, %
74	7.1.3	Global brand value, top 5,000
71	2.3.4	QS university ranking, top 3
48	6.2.2	Unicorn valuation, % GDP
40	2.3.3	Global corporate R&D investors, top 3, mn US$

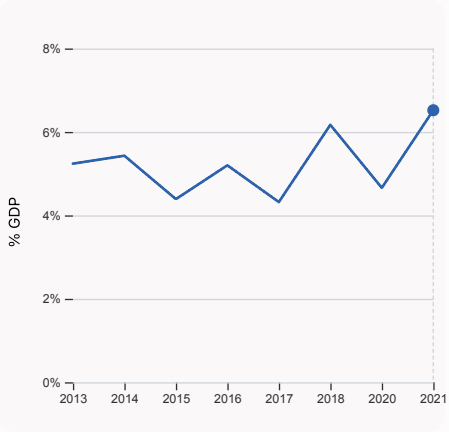
Global Innovation Index 2023



→ Mongolia's innovation system

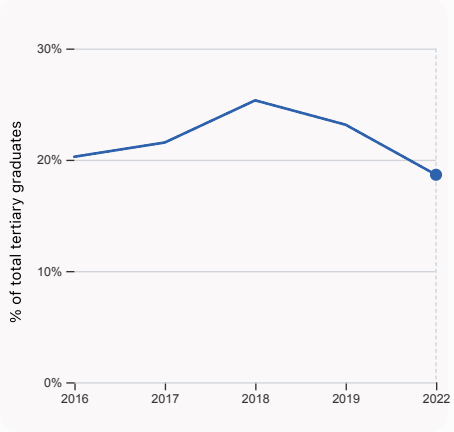
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Mongolia



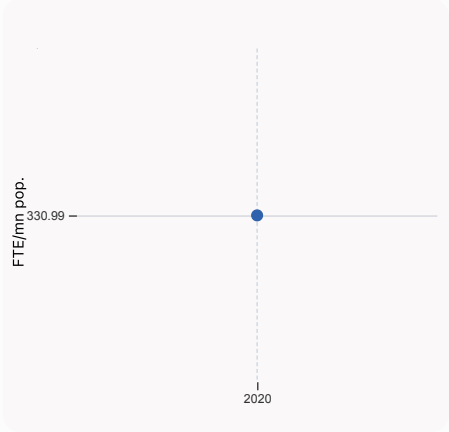
2.1.1 Expenditure on education, % GDP

was equal to 6.52% GDP in 2021, up by 1.86 percentage points from the year prior – and equivalent to an indicator rank of 12.



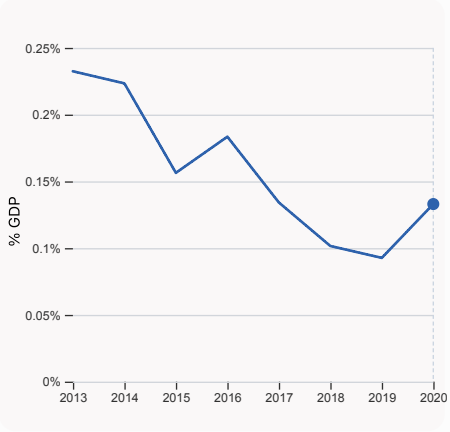
2.2.2 Graduates in science and engineering, %

was equal to 18.65% of total tertiary graduates in 2022, down by 4.5 percentage points from the year prior – and equivalent to an indicator rank of 84.



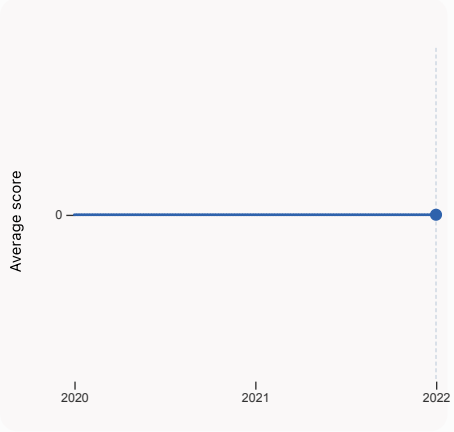
2.3.1 Researchers, FTE/mn pop.

was equal to 330.99 FTE/mn pop. in 2020, equivalent to an indicator rank of 79.



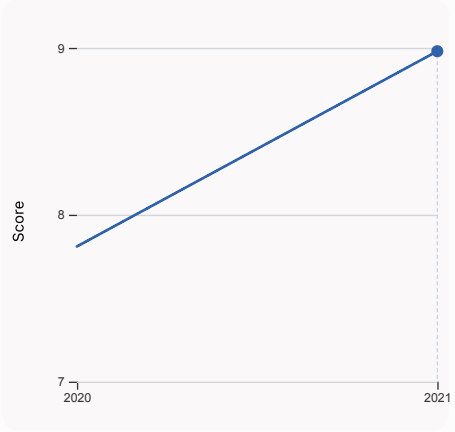
2.3.2 Gross expenditure on R&D, % GDP

was equal to 0.133% GDP in 2020, up by 0.04 percentage points from the year prior – and equivalent to an indicator rank of 98.



2.3.4 QS university ranking, top 3

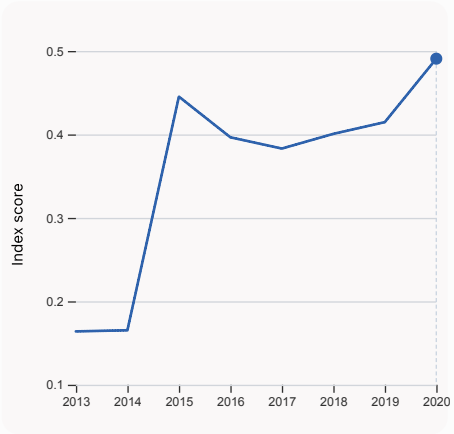
was equal to an average score of 0 for the top 3 universities in 2022, equivalent to an indicator rank of 71.

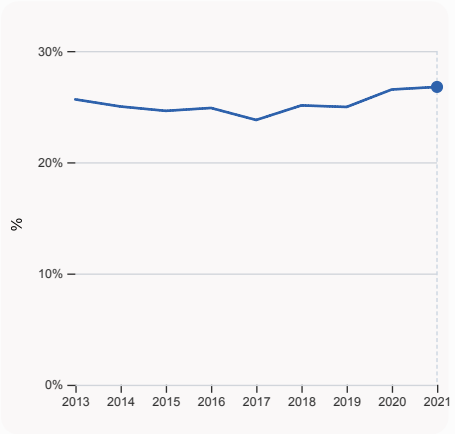


3.1.1 ICT access

was equal to a score of 8.98 in 2021, up by 14.98% from the year prior – and equivalent to an indicator rank of 52.

Global Innovation Index 2023





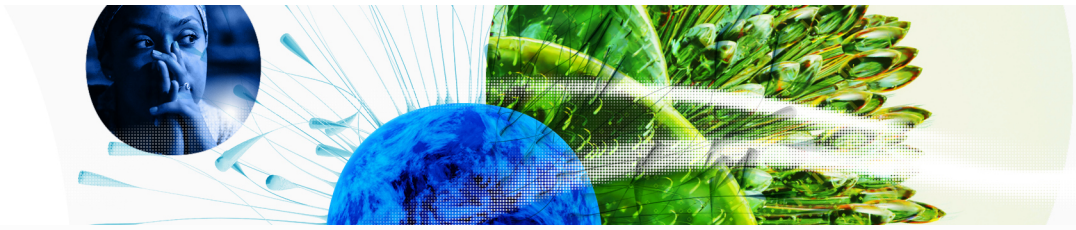
4.3.2 Domestic industry diversification

was equal to an index score of 0.491 in 2020, up by 18.34% from the year prior – and equivalent to an indicator rank of 107.

5.1.1 Knowledge-intensive employment, %

was equal to 26.77% in 2021, up by 0.23 percentage points from the year prior – and equivalent to an indicator rank of 53.

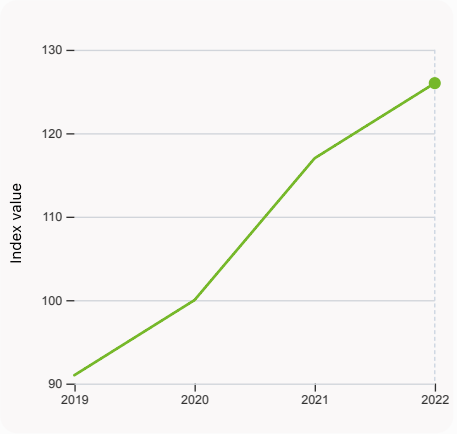
Global Innovation Index 2023



> Innovation outputs in Mongolia

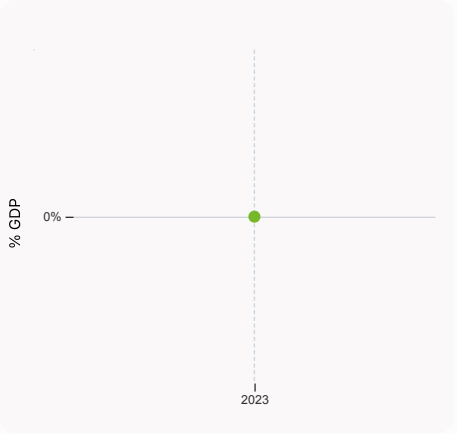
6.1.1 Patents by origin

was equal to 0.11 Thousands in 2021, up by 65.15% from the year prior – and equivalent to an indicator rank of 29.



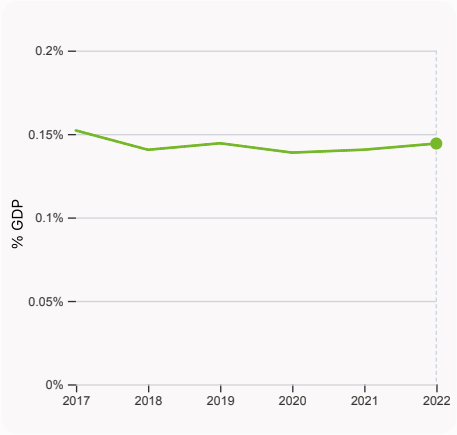
6.1.5 Citable documents H-index

was equal to an index value of 126 in 2022, up by 7.69% from the year prior – and equivalent to an indicator rank of 107.



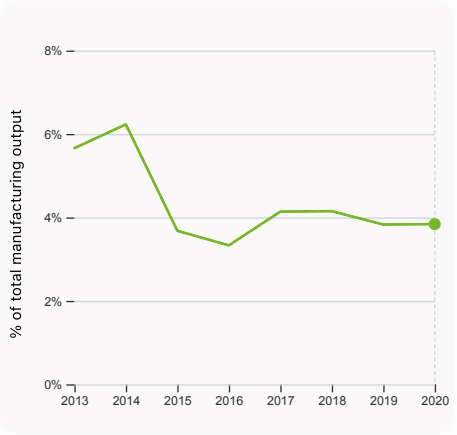
6.2.2 Unicorn valuation, % GDP

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



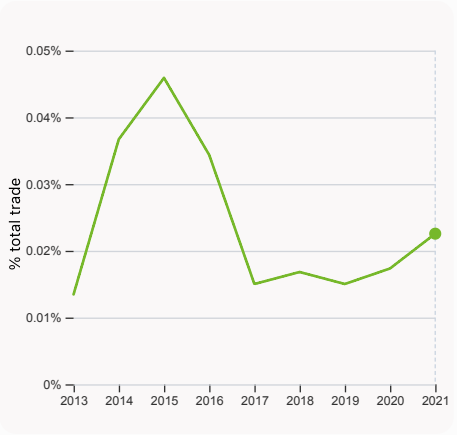
6.2.3 Software spending, % GDP

was equal to 0.144% GDP in 2022, up by 0.0037 percentage points from the year prior – and equivalent to an indicator rank of 82.



6.2.4 High-tech manufacturing, %

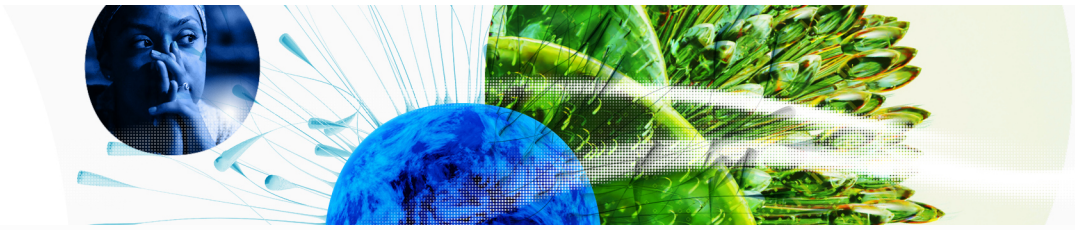
was equal to 3.84% of total manufacturing output in 2020, up by 0.01 percentage points from the year prior – and equivalent to an indicator rank of 106.



6.3.1 Intellectual property receipts, % total trade

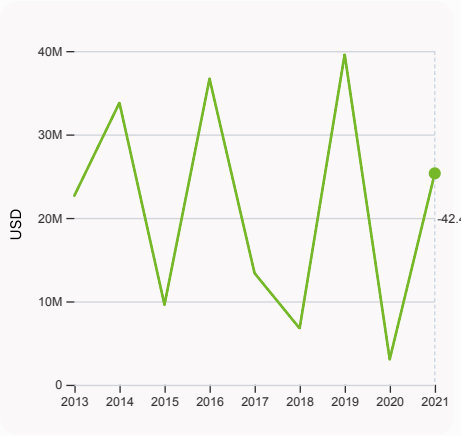
was equal to 0.023% total trade in 2021, up by 0.0052 percentage points from the year prior – and equivalent to an indicator rank of 85.

Global Innovation Index 2023



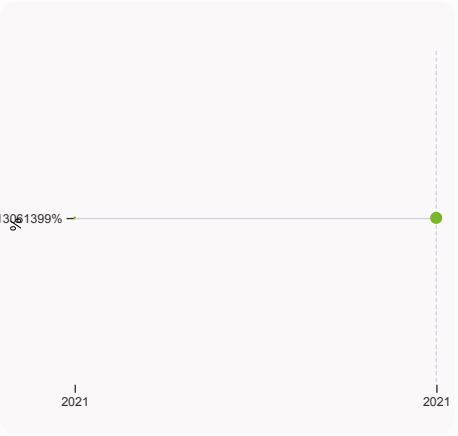
6.3.2 Production and export complexity

was equal to a score of -0.952 in 2020, up by 2.079% from the year prior – and equivalent to an indicator rank of 106.



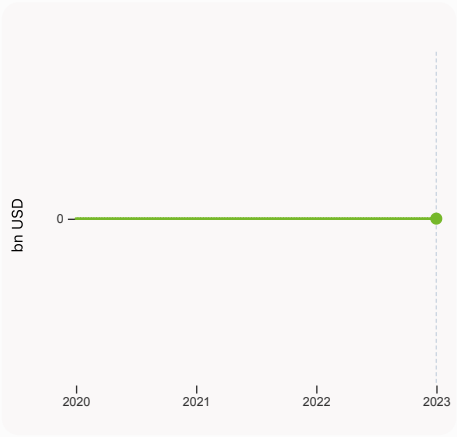
6.3.3 High-tech exports

was equal to 25,335,185 USD in 2021, up by 729.87% from the year prior – and equivalent to an indicator rank of 100.



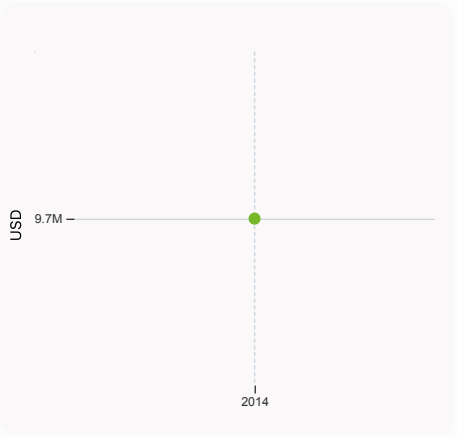
7.1.1 Intangible asset intensity, top 15, %

was equal to -42.486% in 2021, up by with no change from the year prior – and equivalent to an indicator rank of 77.



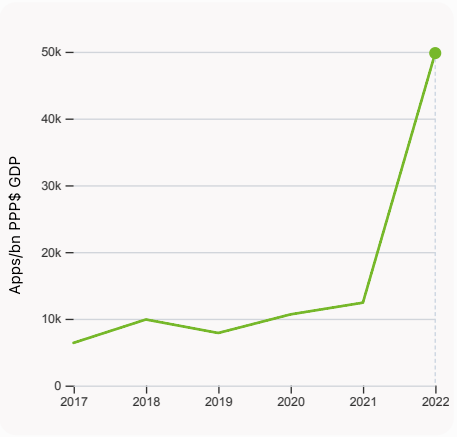
7.1.3 Global brand value, top 5,000

was equal to 0 bn USD in 2023 – and equivalent to an indicator rank of 74.



7.2.1 Cultural and creative services exports

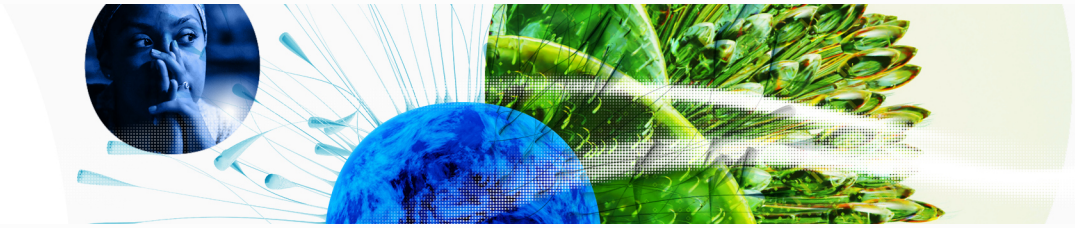
was equal to 9,705,000 USD in 2014 – and equivalent to an indicator rank of 76.



7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 49,800.34 Apps/bn PPP$ GDP in 2022, up by 301.22% from the year prior – and equivalent to an indicator rank of 90.

Global Innovation Index 2023



Mongolia

GII 2023 rank **68**

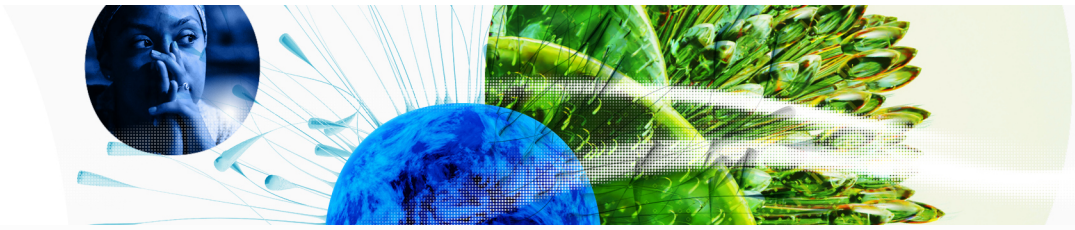
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
60	79	Lower middle	SEAO	3.4	47.1	13,611.4

	Score / Value	Rank
Institutions	**46.0**	**80**
1.1 Institutional environment	**41.1**	**75**
1.1.1 Operational stability for businesses*	58.3	49
1.1.2 Government effectiveness*	23.8	99
1.2 Regulatory environment	**66.8**	**52**
1.2.1 Regulatory quality*	36.7	84
1.2.2 Rule of law*	33.1	75
1.2.3 Cost of redundancy dismissal	8.7	18 ●
1.3 Business environment	**30.2**	**101**
1.3.1 Policies for doing business†	30.2	107
1.3.2 Entrepreneurship policies and culture†	n/a	n/a
Human capital and research	**31.2**	**65**
2.1 Education	**67.3**	**13**
2.1.1 Expenditure on education, % GDP	6.5	12 ●
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a
2.1.3 School life expectancy, years	15.0	54
2.1.4 PISA scales in reading, maths and science	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	13.3	63
2.2 Tertiary education	**25.0**	**80**
2.2.1 Tertiary enrolment, % gross	69.4	40
2.2.2 Graduates in science and engineering, %	18.7	84
2.2.3 Tertiary inbound mobility, %	1.0	88
2.3 Research and development (R&D)	**1.4**	**97**
2.3.1 Researchers, FTE/mn pop.	331.0	79
2.3.2 Gross expenditure on R&D, % GDP	0.1	98
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	**36.0**	**81**
3.1 Information and communication technologies (ICTs)	**69.7**	**68**
3.1.1 ICT access*	84.7	52
3.1.2 ICT use*	76.0	59
3.1.3 Government's online service*	58.7	78
3.1.4 E-participation*	59.3	57
3.2 General infrastructure	**26.3**	**65**
3.2.1 Electricity output, GWh/mn pop.	2,010.4	82
3.2.2 Logistics performance*	18.2	89
3.2.3 Gross capital formation, % GDP	42.8	4 ●
3.3 Ecological sustainability	**11.9**	**119**
3.3.1 GDP/unit of energy use	6.1	106
3.3.2 Environmental performance*	18.1	113
3.3.3 ISO 14001 environment/bn PPP$ GDP	0.8	71
Market sophistication	**23.7**	**101**
4.1 Credit	**10.9**	**109**
4.1.1 Finance for startups and scaleups†	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	45.8	78
4.1.3 Loans from microfinance institutions, % GDP	0.5	38
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	**36.5**	**111**
4.3.1 Applied tariff rate, weighted avg., %	5.3	93
4.3.2 Domestic industry diversification	42.8	107 ○ ◇
4.3.3 Domestic market scale, bn PPP$	47.1	111

	Score / Value	Rank
Business sophistication	**27.9**	**67**
5.1 Knowledge workers	**43.1**	**43**
5.1.1 Knowledge-intensive employment, %	26.8	53
5.1.2 Firms offering formal training, %	66.2	3 ●
5.1.3 GERD performed by business, % GDP	0.0	85 ○
5.1.4 GERD financed by business, %	8.1	77
5.1.5 Females employed w/advanced degrees, %	23.9	23 ●
5.2 Innovation linkages	**9.1**	**121** ◇
5.2.1 University-industry R&D collaboration†	21.7	114
5.2.2 State of cluster development†	17.5	116
5.2.3 GERD financed by abroad, % GDP	0.0	83
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	74
5.2.5 Patent families/bn PPP$ GDP	0.0	95 ○ ◇
5.3 Knowledge absorption	**31.7**	**72**
5.3.1 Intellectual property payments, % total trade	0.3	83
5.3.2 High-tech imports, % total trade	5.9	105
5.3.3 ICT services imports, % total trade	1.4	64
5.3.4 FDI net inflows, % GDP	14.8	7 ●
5.3.5 Research talent, % in businesses	n/a	n/a
Knowledge and technology outputs	**15.8**	**88**
6.1 Knowledge creation	**31.2**	**31**
6.1.1 Patents by origin/bn PPP$ GDP	2.5	29 ●
6.1.2 PCT patents by origin/bn PPP$ GDP	0.1	69
6.1.3 Utility models by origin/bn PPP$ GDP	4.0	1 ●
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a
6.1.5 Citable documents H-index	4.6	107
6.2 Knowledge impact	**5.3**	**130** ◇
6.2.1 Labor productivity growth, %	n/a	n/a
6.2.2 Unicorn valuation, % GDP	0.0	48 ○ ◇
6.2.3 Software spending, % GDP	0.1	82
6.2.4 High-tech manufacturing, %	3.8	106 ○ ◇
6.3 Knowledge diffusion	**10.8**	**105**
6.3.1 Intellectual property receipts, % total trade	0.0	85
6.3.2 Production and export complexity	32.6	106
6.3.3 High-tech exports, % total trade	0.3	100
6.3.4 ICT services exports, % total trade	0.3	110
6.3.5 ISO 9001 quality/bn PPP$ GDP	4.7	57
Creative outputs	**33.7**	**40**
7.1 Intangible assets	**58.3**	**10**
7.1.1 Intangible asset intensity, top 15, %	-42.5	77 ○ ◇
7.1.2 Trademarks by origin/bn PPP$ GDP	445.2	1 ●
7.1.3 Global brand value, top 5,000	0.0	74 ○ ◇
7.1.4 Industrial designs by origin/bn PPP$ GDP	32.4	1 ●
7.2 Creative goods and services	**1.5**	**109**
7.2.1 Cultural and creative services exports, % total trade	0.1	76
7.2.2 National feature films/mn pop. 15-69	n/a	n/a
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	129 ○
7.3 Online creativity	**16.4**	**89**
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.7	103
7.3.2 Country-code TLDs/th pop. 15-69	2.9	65
7.3.3 GitHub commits/mn pop. 15-69	5.2	71
7.3.4 Mobile app creation/bn PPP$ GDP	57.0	90

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.

Global Innovation Index 2023



→ Data availability

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

> Mongolia has missing data for twelve indicators and outdated data for twelve indicators.

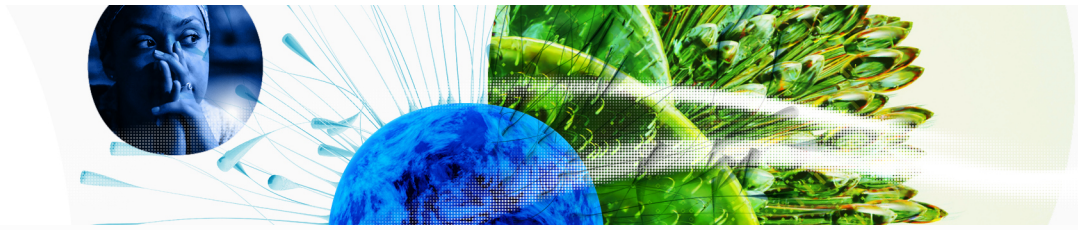
> Missing data for Mongolia

Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	n/a	2022	Global Entrepreneurship Monitor
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2019	UNESCO Institute for Statistics
2.1.4	PISA scales in reading, maths and science	n/a	2018	OECD, PISA
4.1.1	Finance for startups and scaleups	n/a	2022	Global Entrepreneurship Monitor
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
5.3.5	Research talent, % in businesses	n/a	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
6.2.1	Labor productivity growth, %	n/a	2022	The Conference Board
7.2.2	National feature films/mn pop. 15-69	n/a	2021	OMDIA; United Nations, World Population Prospects
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 Mongolia

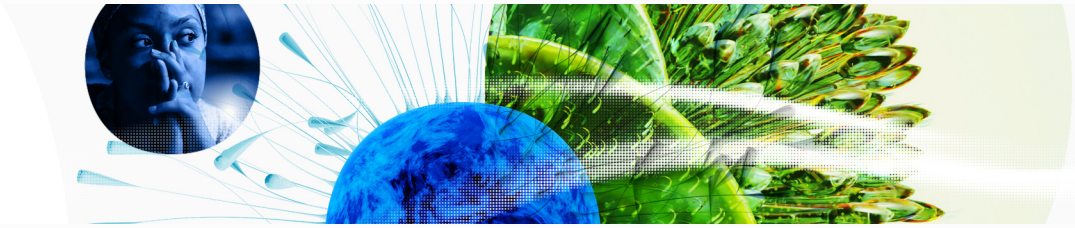
Code	Indicator name	Economy Year	Model Year	Source
2.1.3	School life expectancy, years	2019	2020	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2019	2020	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT

Global Innovation Index 2023



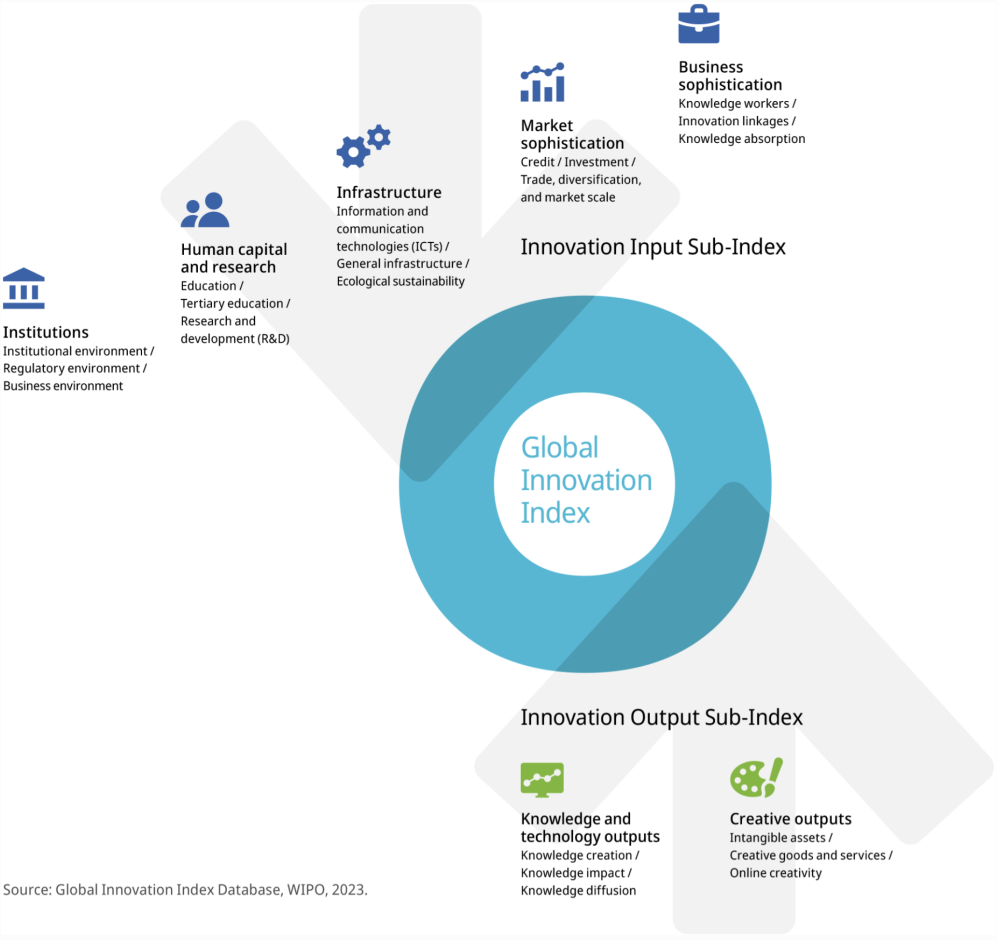
Code	Indicator name	Economy Year	Model Year	Source
2.3.2	Gross expenditure on R&D, % GDP	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
3.2.1	Electricity output, GWh/mn pop.	2020	2021	International Energy Agency
5.1.1	Knowledge-intensive employment, %	2021	2022	International Labour 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
5.2.3	GERD financed by abroad, % GDP	2018	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
7.1.1	Intangible asset intensity, top 15, %	2021	2022	Brand Finance
7.2.1	Cultural and creative services exports, % total trade	2014	2021	World Trade Organization and United Nations Conference on Trade and Development

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.



Source: Global Innovation Index Database, WIPO, 2023.

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.