Global Innovation Index 2022

MONGOLIA

71st Mongolia ranks 71st among the 132 economies featured in the GII 2022.

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 Mongolia 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 Mongolia in the GII 2022 is between ranks 67 and 76.

Rankings for Mongolia (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	58	65	54
2021	58	65	55
2022	71	81	64

- Mongolia performs better in innovation outputs than innovation inputs in 2022.
- This year Mongolia ranks 81st in innovation inputs, lower than both 2021 and 2020.
- As for innovation outputs, Mongolia ranks 64th. This position is lower than both 2021 and 2020.

7th Mongolia ranks 7th among the 36 lower-middle-income group economies.

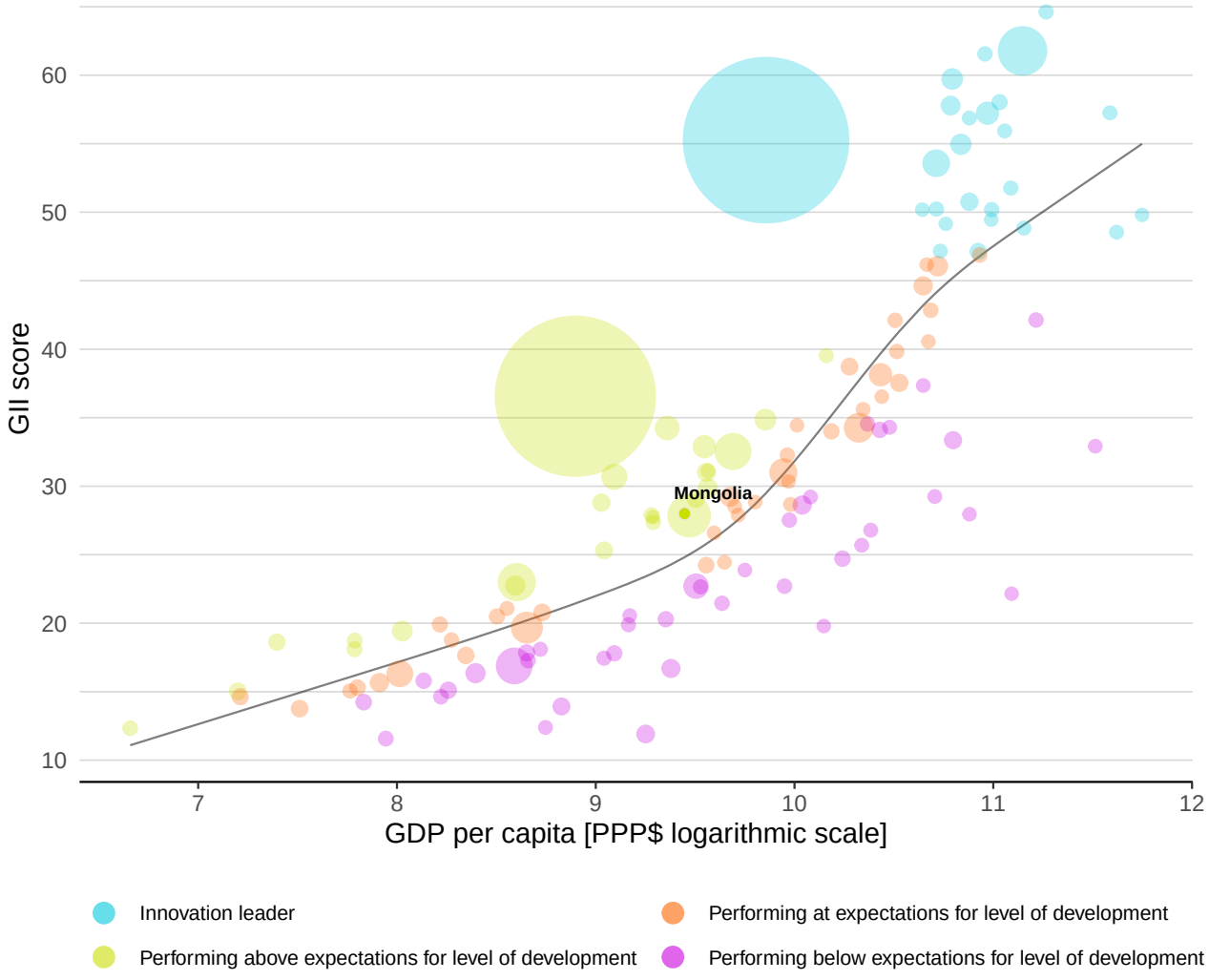
12th Mongolia ranks 12th among the 17 economies in South East Asia, East Asia, and Oceania.

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's performance is above expectations for its level of development.

The positive relationship between innovation and development

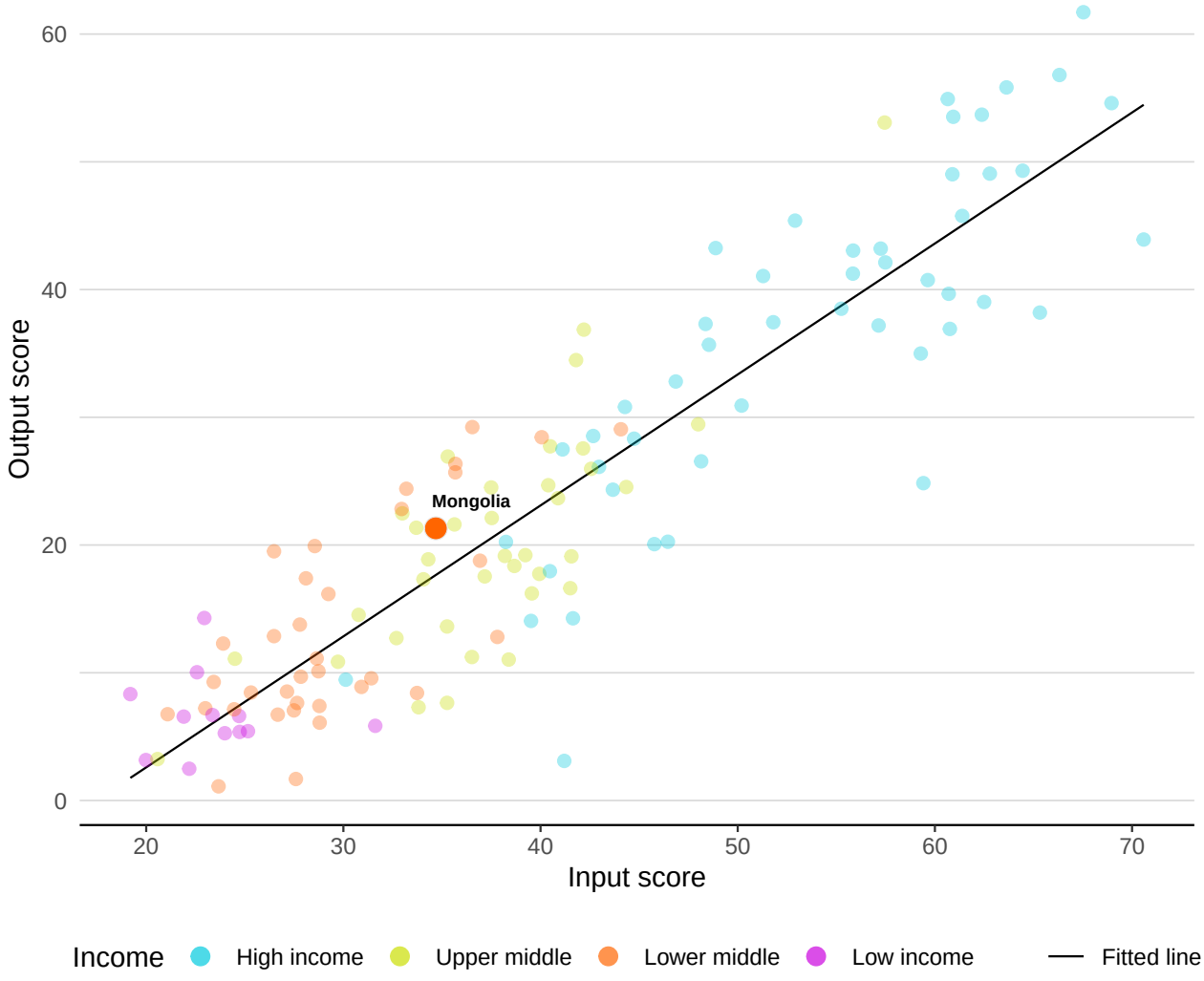


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

Innovation input to output performance



BENCHMARKING AGAINST OTHER LOWER MIDDLE-INCOME GROUP ECONOMIES AND SOUTH EAST ASIA, EAST ASIA, AND OCEANIA

The seven GII pillar scores for Mongolia

Lower-middle-income group economies

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

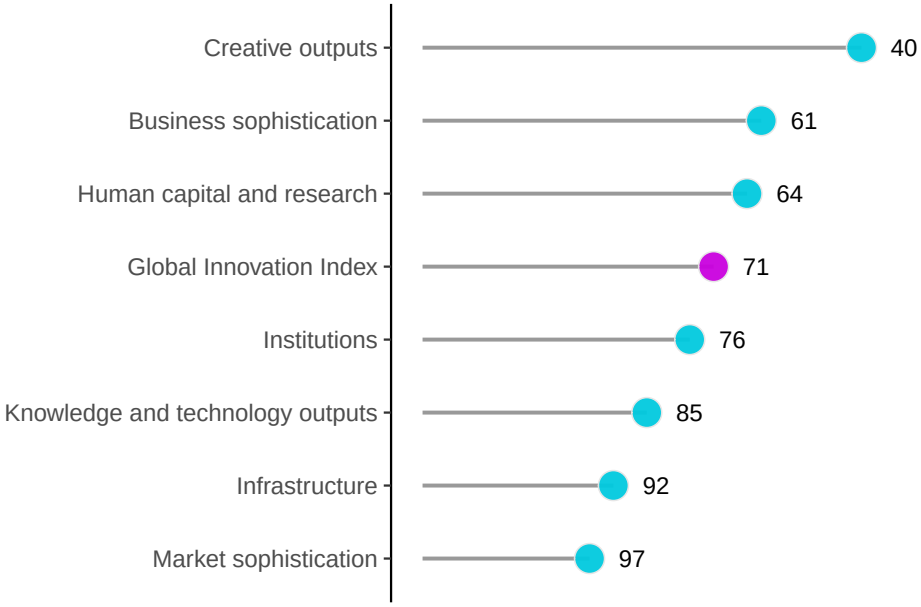
South East Asia, East Asia, and Oceania

Mongolia performs below the regional average in all GII pillars.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Mongolia performs best in Creative outputs and its weakest performance is in Market sophistication.

The seven GII pillar ranks for Mongolia



Note: The highest possible ranking in each pillar is 1.

The full WIPO Intellectual Property Statistics profile for Mongolia can be found at:

https://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=MN.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the indicator strengths and weaknesses of Mongolia in the GII 2022.

Strengths and weaknesses for Mongolia

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
1.2.3	Cost of redundancy dismissal	18	2.3.3	Global corporate R&D investors, top 3, mn USD	38
3.2.3	Gross capital formation, % GDP	7	2.3.4	QS university ranking, top 3	72
5.1.2	Firms offering formal training, %	4	4.3.2	Domestic industry diversification	104
5.1.5	Females employed w/advanced degrees, %	23	5.2.5	Patent families/bn PPP$ GDP	101
5.3.4	FDI net inflows, % GDP	8	5.3.2	High-tech imports, % total trade	120
6.1.3	Utility models by origin/bn PPP$ GDP	1	6.2.5	High-tech manufacturing, %	104
6.2.2	New businesses/th pop. 15–64	25	6.3.3	High-tech exports, % total trade	125
7.1.2	Trademarks by origin/bn PPP$ GDP	1	7.1.1	Intangible asset intensity, top 15, %	78
7.1.4	Industrial designs by origin/bn PPP$ GDP	4	7.1.3	Global brand value, top 5,000, % GDP	77
7.2.4	Printing and other media, % manufacturing	25	7.2.5	Creative goods exports, % total trade	128

GII 2022 rank

Mongolia

71

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
64	81	Lower middle	SEAO	3.3	43.2	12,671

		Score/ Value	Rank	
Institutions		**54.1**	**76**	◆
1.1	**Political environment**	**57.5**	**73**	◆
1.1.1	Political and operational stability*	72.7	46	◆
1.1.2	Government effectiveness*	42.3	88	
1.2	**Regulatory environment**	**69.8**	**51**	◆
1.2.1	Regulatory quality*	42.6	78	◆
1.2.2	Rule of law*	39.2	75	◆
1.2.3	Cost of redundancy dismissal	8.7	18 ●	◆
1.3	**Business environment**	**34.9**	**[95]**	
1.3.1	Policies for doing business†	34.9	105	
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	
Human capital and research		**31.2**	**64**	◆
2.1	**Education**	**61.0**	**[32]**	
2.1.1	Expenditure on education, % GDP ◴	4.9	42	
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	58	◆
2.2	**Tertiary education**	**31.6**	**65**	
2.2.1	Tertiary enrolment, % gross	68.8	36	◆
2.2.2	Graduates in science and engineering, % ◴	23.1	48	
2.2.3	Tertiary inbound mobility, %	1.4	84	
2.3	**Research and development (R&D)**	**1.0**	**96**	
2.3.1	Researchers, FTE/mn pop.	331.0	81	
2.3.2	Gross expenditure on R&D, % GDP	0.1	100	
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○	◇
2.3.4	QS university ranking, top 3*	0.0	72 ○	◇
Infrastructure		**35.6**	**92**	
3.1	**Information and communication technologies (ICTs)**	**63.5**	**89**	
3.1.1	ICT access*	78.1	88	
3.1.2	ICT use*	62.3	67	◆
3.1.3	Government's online service*	52.9	98	
3.1.4	E-participation*	60.7	85	
3.2	**General infrastructure**	**28.7**	**67**	
3.2.1	Electricity output, GWh/mn pop. ◴	2,136.2	79	
3.2.2	Logistics performance*	14.9	114	
3.2.3	Gross capital formation, % GDP	39.0	7 ●	◆
3.3	**Ecological sustainability**	**14.5**	**126** ○	◇
3.3.1	GDP/unit of energy use	5.8	114	◇
3.3.2	Environmental performance*	29.6	110	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	99	
Market sophistication		**23.9**	**97**	
4.1	**Credit**	**11.2**	**107**	
4.1.1	Finance for startups and scaleups*	n/a	n/a	
4.1.2	Domestic credit to private sector, % GDP	45.8	74	
4.1.3	Loans from microfinance institutions, % GDP	0.5	39	
4.2	**Investment**	**n/a**	**[n/a]**	
4.2.1	Market capitalization, % GDP	n/a	n/a	
4.2.2	Venture capital investors, deals/bn PPP$ GDP	n/a	n/a	
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	n/a	n/a	
4.2.4	Venture capital received, value, % GDP	n/a	n/a	
4.3	**Trade, diversification, and market scale**	**36.5**	**107**	
4.3.1	Applied tariff rate, weighted avg., %	5.3	93	
4.3.2	Domestic industry diversification	43.1	104 ○	◇
4.3.3	Domestic market scale, bn PPP$	43.2	109	

		Score/ Value	Rank	
Business sophistication		**28.7**	**61**	◆
5.1	**Knowledge workers**	**42.2**	**44**	◆
5.1.1	Knowledge-intensive employment, % ◴	26.5	55	◆
5.1.2	Firms offering formal training, %	66.2	4 ●	◆
5.1.3	GERD performed by business, % GDP ◴	0.0	85	
5.1.4	GERD financed by business, % ◴	8.1	78	
5.1.5	Females employed w/advanced degrees, % ◴	24.0	23 ●	◆
5.2	**Innovation linkages**	**15.4**	**119**	◇
5.2.1	University-industry R&D collaboration†	31.5	114	
5.2.2	State of cluster development and depth†	37.3	111	
5.2.3	GERD financed by abroad, % GDP ◴	0.0	83	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP ◴	0.0	62	
5.2.5	Patent families/bn PPP$ GDP	0.0	101 ○	◇
5.3	**Knowledge absorption**	**28.5**	**73**	
5.3.1	Intellectual property payments, % total trade	0.3	83	
5.3.2	High-tech imports, % total trade	4.4	120 ○	
5.3.3	ICT services imports, % total trade	1.4	73	
5.3.4	FDI net inflows, % GDP	15.0	8 ●	◆
5.3.5	Research talent, % in businesses	n/a	n/a	
Knowledge and technology outputs		**14.7**	**85**	
6.1	**Knowledge creation**	**27.2**	**32** ●	◆
6.1.1	Patents by origin/bn PPP$ GDP	1.7	44	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	88	
6.1.3	Utility models by origin/bn PPP$ GDP	5.5	1 ●	◆
6.1.4	Scientific and technical articles/bn PPP$ GDP	13.5	72	
6.1.5	Citable documents H-index	4.0	105	
6.2	**Knowledge impact**	**11.1**	**118**	
6.2.1	Labor productivity growth, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	5.9	25 ●	◆
6.2.3	Software spending, % GDP	0.1	80	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.7	88	
6.2.5	High-tech manufacturing, %	3.8	104 ○	◇
6.3	**Knowledge diffusion**	**5.9**	**119**	
6.3.1	Intellectual property receipts, % total trade	0.0	88	
6.3.2	Production and export complexity	19.2	107	
6.3.3	High-tech exports, % total trade	0.0	125 ○	
6.3.4	ICT services exports, % total trade	0.4	105	
Creative outputs		**27.9**	**40**	◆
7.1	**Intangible assets**	**48.5**	**24** ●	◆
7.1.1	Intangible asset intensity, top 15, %	−42.5	78 ○	◇
7.1.2	Trademarks by origin/bn PPP$ GDP	338.0	1 ●	◆
7.1.3	Global brand value, top 5,000, % GDP	0.0	77 ○	◇
7.1.4	Industrial designs by origin/bn PPP$ GDP	15.6	4 ●	◆
7.2	**Creative goods and services**	**12.9**	**[73]**	
7.2.1	Cultural and creative services exports, % total trade ◴	0.1	78	
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	Printing and other media, % manufacturing	1.4	25 ●	
7.2.5	Creative goods exports, % total trade	0.0	128 ○	
7.3	**Online creativity**	**1.6**	**92**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.6	101	
7.3.2	Country-code TLDs/th pop. 15–69	2.1	69	
7.3.3	GitHub commit pushes received/mn pop. 15–69	3.3	69	
7.3.4	Mobile app creation/bn PPP$ GDP	0.3	89	

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/global_innovation_index/en/2022. 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 Mongolia.

Missing data for Mongolia

Code	Indicator name	Economy year	Model year	Source
1.3.2	Entrepreneurship policies and culture	n/a	2021	Global Entrepreneurship Monitor
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2018	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	2021	Global Entrepreneurship Monitor
4.2.1	Market capitalization, % GDP	n/a	2020	World Federation of Exchanges
4.2.2	Venture capital investors, deals/bn PPP$ GDP	n/a	2021	Refinitiv
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	n/a	2021	Refinitiv
4.2.4	Venture capital received, value, % GDP	n/a	2021	Refinitiv
5.3.5	Research talent, % in businesses	n/a	2020	UNESCO Institute for Statistics
6.2.1	Labor productivity growth, %	n/a	2021	The Conference Board
7.2.2	National feature films/mn pop. 15–69	n/a	2019	OMDIA
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2021	PwC, GEMO

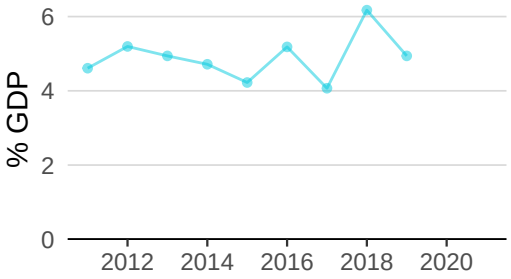
Outdated data for Mongolia

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2019	2020	UNESCO Institute for Statistics
2.2.2	Graduates in science and engineering, %	2019	2020	UNESCO Institute for Statistics
3.2.1	Electricity output, GWh/mn pop.	2019	2020	International Energy Agency
5.1.1	Knowledge-intensive employment, %	2020	2021	International Labour Organization
5.1.3	GERD performed by business, % GDP	2018	2020	UNESCO Institute for Statistics
5.1.4	GERD financed by business, %	2018	2019	UNESCO Institute for Statistics
5.1.5	Females employed w/advanced degrees, %	2020	2021	International Labour Organization
5.2.3	GERD financed by abroad, % GDP	2018	2019	UNESCO Institute for Statistics
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	2020	2021	Refinitiv
7.2.1	Cultural and creative services exports, % total trade	2014	2020	World Trade Organization and United Nations Conference on Trade and Development

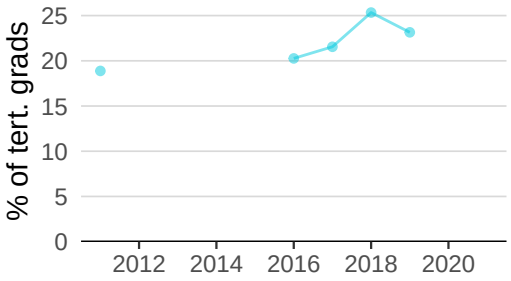
MONGOLIA'S INNOVATION SYSTEM

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

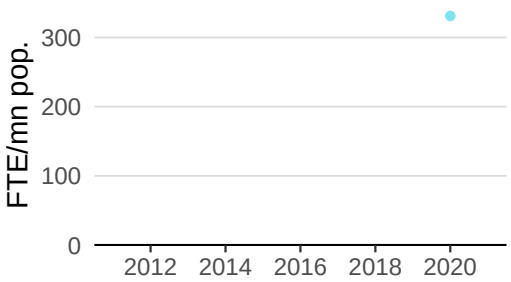
Innovation inputs



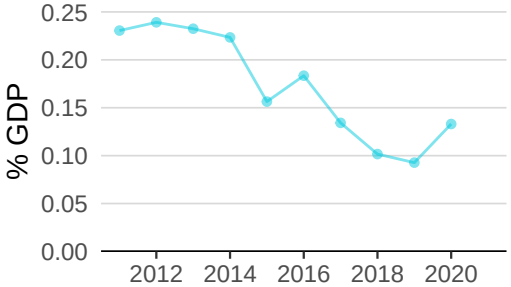
2.1.1 Expenditure on education was equal to 4.9% GDP in 2019–down by 20 percentage points from the year prior–and equivalent to an indicator rank of 42.



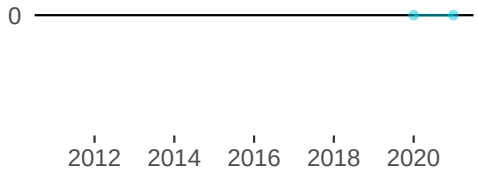
2.2.2 Graduates in science and engineering was equal to 23.1% of tert. grads in 2019–down by 9 percentage points from the year prior–and equivalent to an indicator rank of 48.



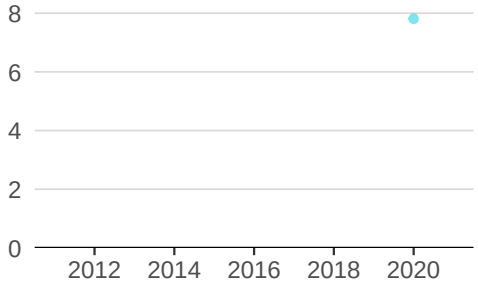
2.3.1 Researchers was equal to 331.0 FTE/mn pop. in 2020 and equivalent to an indicator rank of 81.



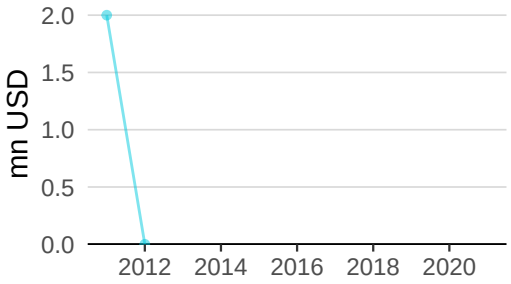
2.3.2 Gross expenditure on R&D was equal to 0.1% GDP in 2020–up by 43 percentage points from the year prior–and equivalent to an indicator rank of 100.



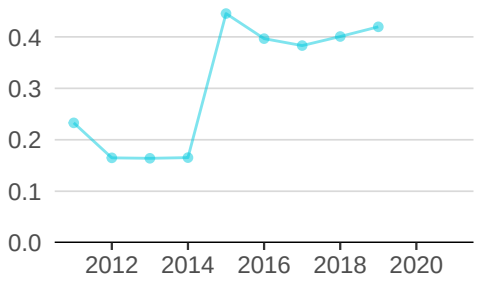
2.3.4 QS university ranking was equal to 0.0 in 2021–effectively unchanged from the year prior–and equivalent to an indicator rank of 72.



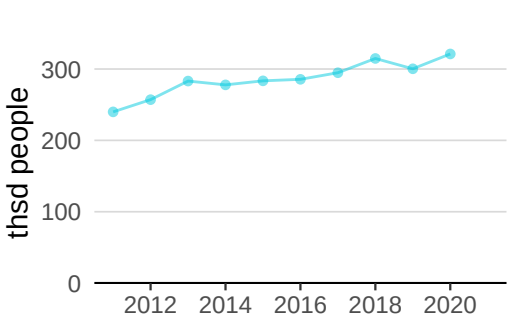
3.1.1 ICT access was equal to 7.8 in 2020 and equivalent to an indicator rank of 88.



4.2.4 Venture capital received was equal to 0.0 mn USD in 2012–down by 100 percentage points from the year prior.

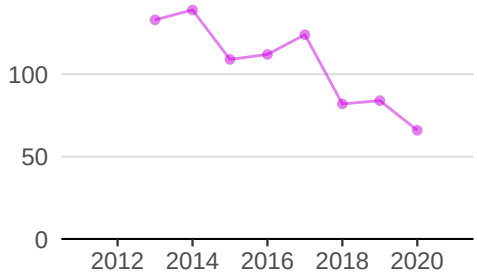


4.3.2 Domestic industry diversification was equal to 0.4 in 2019–up by 5 percentage points from the year prior–and equivalent to an indicator rank of 104.

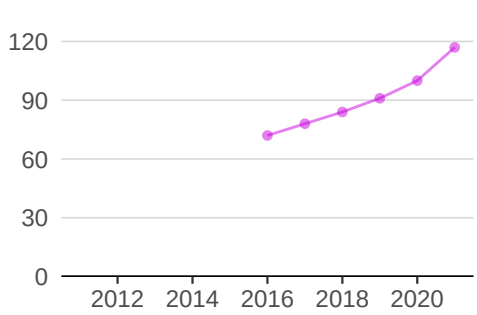


5.1.1 Knowledge-intensive employment was equal to 321.1 thsd people in 2020–up by 7 percentage points from the year prior–and equivalent to an indicator rank of 55.

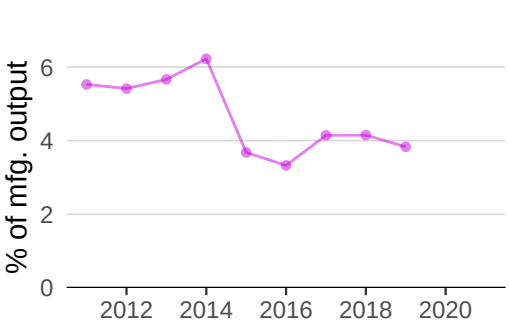
Innovation outputs



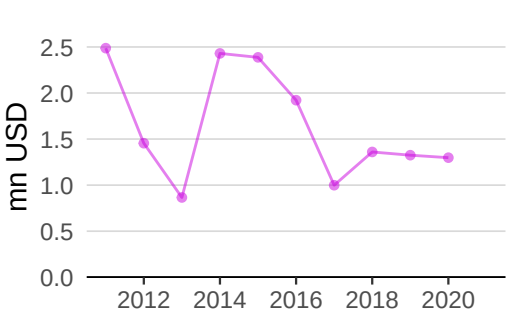
6.1.1 Patents by origin was equal to 66.0 in 2020–down by 21 percentage points from the year prior–and equivalent to an indicator rank of 44.



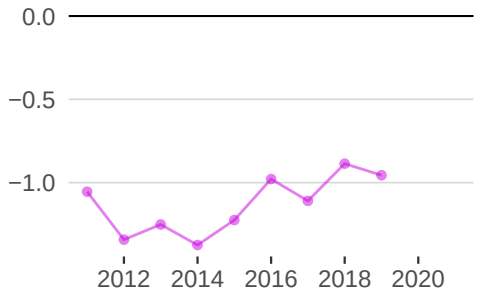
6.1.5 Citable documents H-index was equal to 117.0 in 2021–up by 17 percentage points from the year prior–and equivalent to an indicator rank of 105.



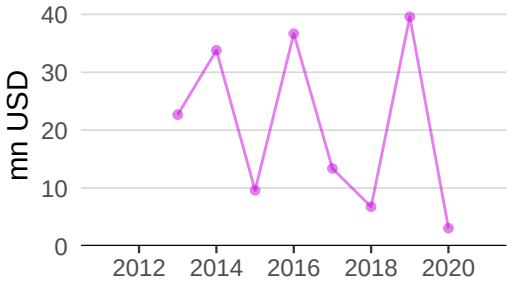
6.2.5 High-tech manufacturing was equal to 3.8% of mfg. output in 2019–down by 8 percentage points from the year prior–and equivalent to an indicator rank of 104.



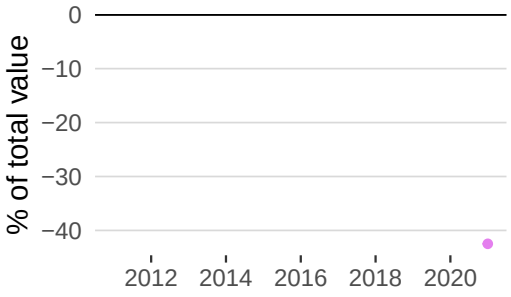
6.3.1 Intellectual property receipts was equal to 1.3 mn USD in 2020–down by 2 percentage points from the year prior–and equivalent to an indicator rank of 88.



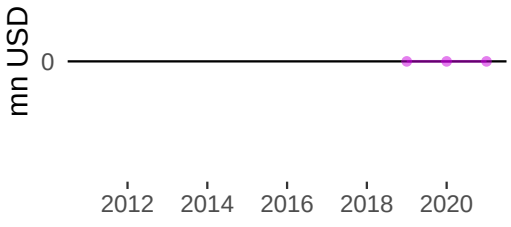
6.3.2 Production and export complexity was equal to -1.0 in 2019–down by 8 percentage points from the year prior–and equivalent to an indicator rank of 107.



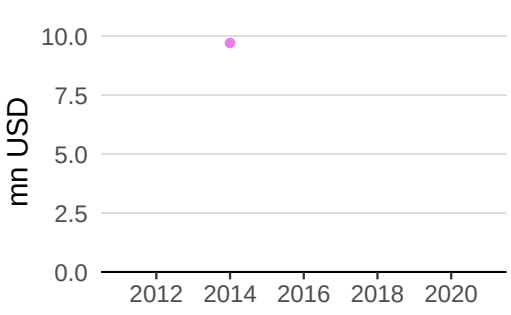
6.3.3 High-tech exports was equal to 3.1 mn USD in 2020–down by 92 percentage points from the year prior–and equivalent to an indicator rank of 125.



7.1.1 Intangible asset intensity was equal to -42.5% of total value in 2021 and equivalent to an indicator rank of 78.



7.1.3 Global brand value was equal to 0.0 mn USD in 2021–effectively unchanged from the year prior–and equivalent to an indicator rank of 77.



7.2.1 Cultural and creative services exports was equal to 9.7 mn USD in 2014 and equivalent to an indicator rank of 78.

MONGOLIA'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank

No observations

Source: European Commission's Joint Research Centre (https://iri.jrc.ec.europa.eu/scoreboard/2021-eu-industrial-rd-investment-scoreboard).

2.3.4 QS university ranking

University	Score	Rank

No observations

Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings/2022).

7.1.1 Intangible asset intensity, top 15

Firm	Rank
MONGOLIAN MORTGAGE	1
PETRO MATAD	2
APU	3

Source: Brand Finance (https://brandirectory.com/reports/gift-2021).
Note: Brand Finance only provides within economy ranks.

7.1.3 Global brand value, top 5,000

Brand	Industry	Rank

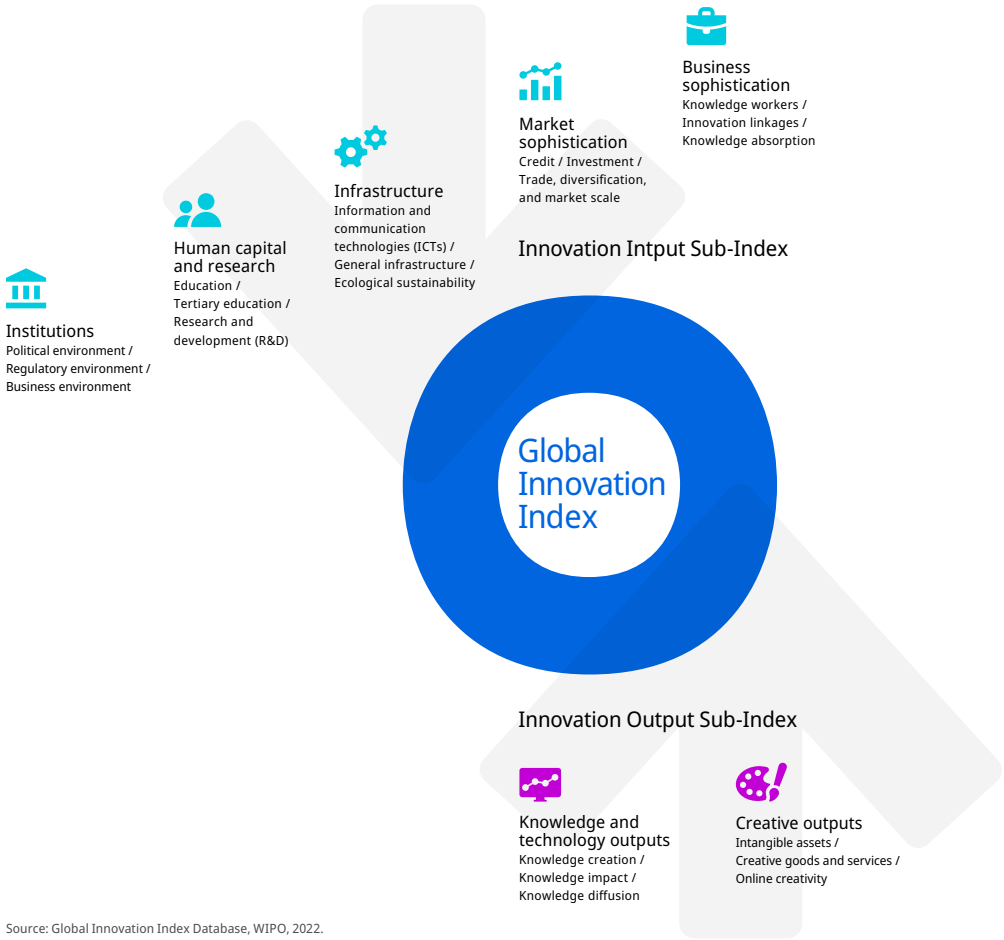
No observations

Source: Brand Finance (https://brandirectory.com).

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, 2022.

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.