Global Innovation Index 2022

TAJIKISTAN

104th Tajikistan ranks 104th 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 Tajikistan 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 Tajikistan in the GII 2022 is between ranks 103 and 108.

Rankings for Tajikistan (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	109	108	99
2021	103	104	96
2022	104	104	101

- Tajikistan performs better in innovation outputs than innovation inputs in 2022.
- This year Tajikistan ranks 104th in innovation inputs, the same as last year but higher than 2020.
- As for innovation outputs, Tajikistan ranks 101st. This position is lower than both 2021 and 2020.

22nd Tajikistan ranks 22nd among the 36 lower-middle-income group economies.

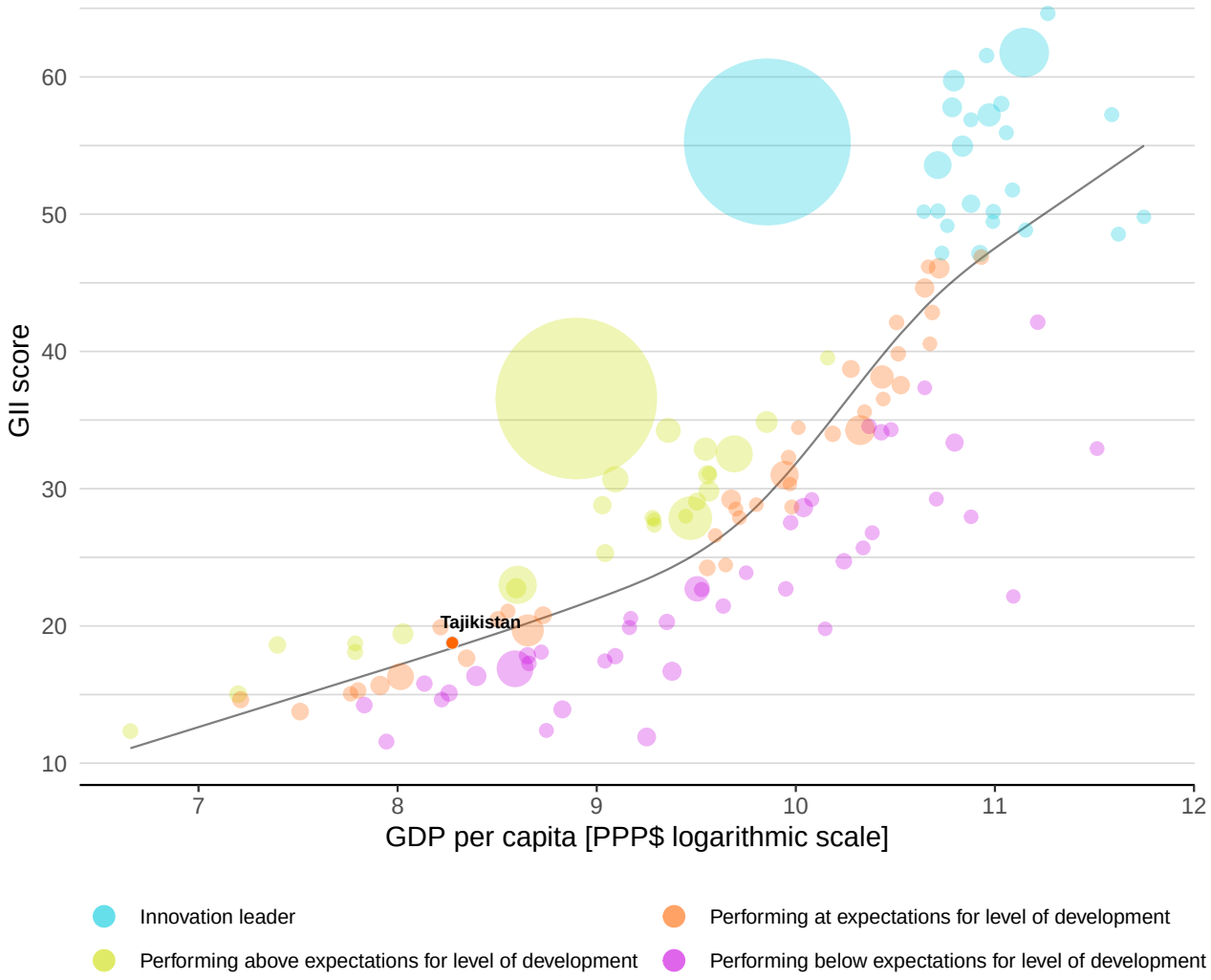
9th Tajikistan ranks 9th among the 10 economies in Central and Southern Asia.

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

The positive relationship between innovation and development

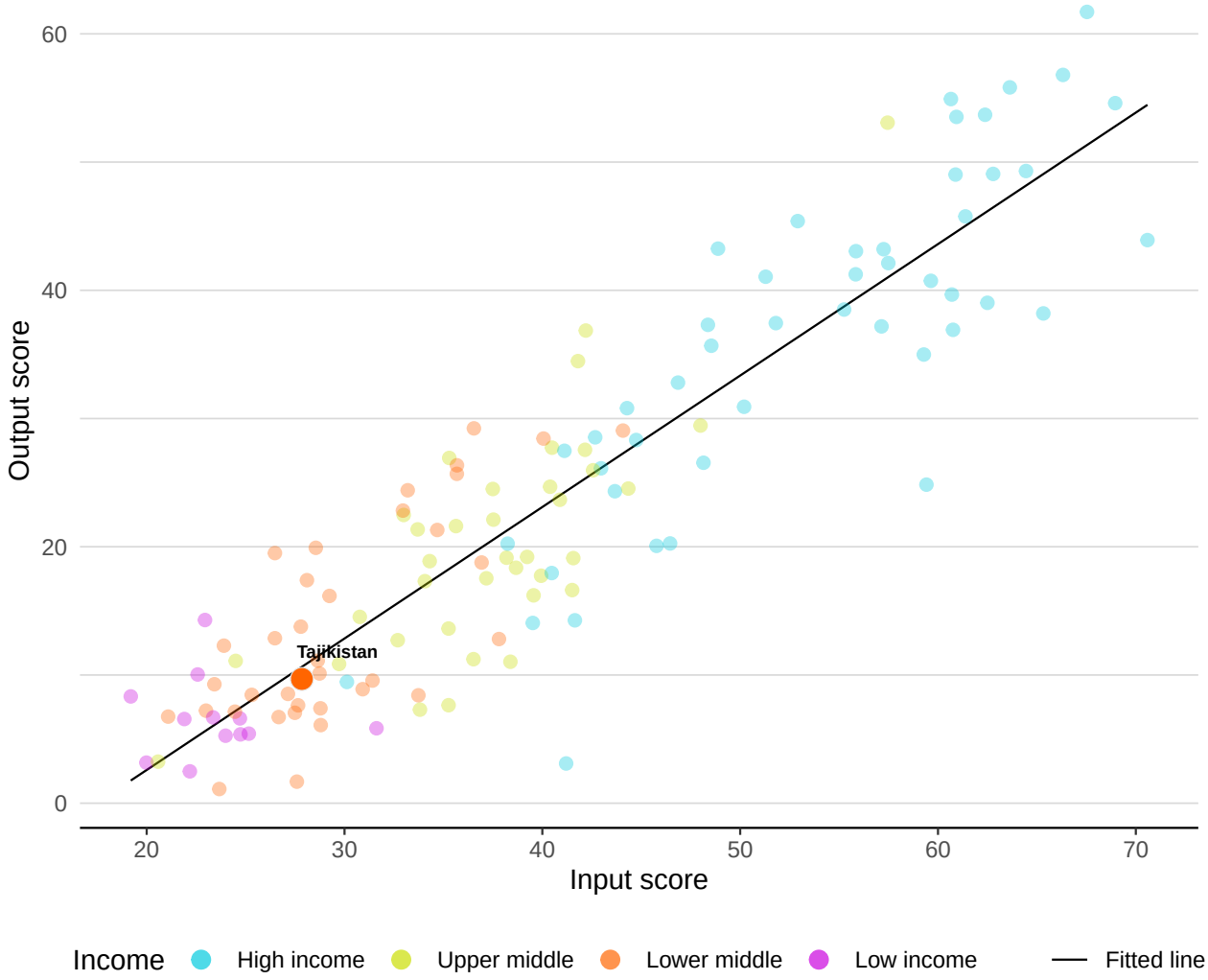


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

Innovation input to output performance



BENCHMARKING AGAINST OTHER LOWER MIDDLE-INCOME GROUP ECONOMIES AND CENTRAL AND SOUTHERN ASIA

The seven GII pillar scores for Tajikistan

Lower-middle-income group economies

Tajikistan performs above the lower-middle-income group average in three pillars, namely: Institutions; Human capital and research; and, Knowledge and technology outputs.

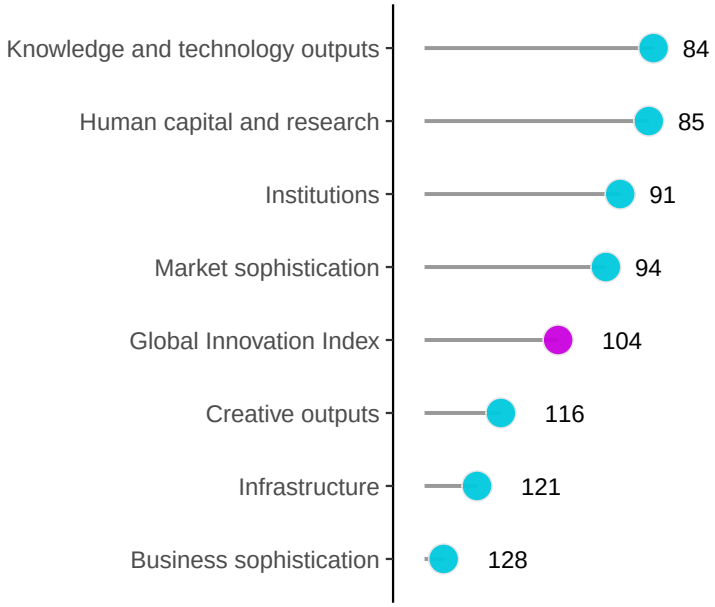
Central and Southern Asia

Tajikistan performs above the regional average in two pillars, namely: Institutions; and, Human capital and research.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Tajikistan performs best in Knowledge and technology outputs and its weakest performance is in Business sophistication.

The seven GII pillar ranks for Tajikistan



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

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

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

INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths and weaknesses for Tajikistan

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
1.3.1	Policies for doing business	48	2.3.3	Global corporate R&D investors, top 3, mn USD	38
2.1.1	Expenditure on education, % GDP	24	2.3.4	QS university ranking, top 3	72
2.2.2	Graduates in science and engineering, %	56	3.1.2	ICT use	129
4.1.3	Loans from microfinance institutions, % GDP	14	5.2.3	GERD financed by abroad, % GDP	97
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	53	5.2.5	Patent families/bn PPP$ GDP	101
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	74	6.1.2	PCT patents by origin/bn PPP$ GDP	101
5.3.4	FDI net inflows, % GDP	68	6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	132
6.1.3	Utility models by origin/bn PPP$ GDP	5	6.2.5	High-tech manufacturing, %	108
6.2.1	Labor productivity growth, %	2	7.1.3	Global brand value, top 5,000, % GDP	77
7.2.4	Printing and other media, % manufacturing	24	7.1.4	Industrial designs by origin/bn PPP$ GDP	121

GII 2022 rank

Tajikistan

104

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
101	104	Lower middle	CSA	9.7	37.9	3,923

		Score/ Value	Rank	
Institutions		**48.6**	**91**	
1.1	**Political environment**	45.4	113	
1.1.1	Political and operational stability*	56.4	108	
1.1.2	Government effectiveness*	34.4	110	
1.2	**Regulatory environment**	45.0	117	
1.2.1	Regulatory quality*	19.5	126	◇
1.2.2	Rule of law*	14.5	126	◇
1.2.3	Cost of redundancy dismissal	21.7	95	
1.3	**Business environment**	55.6	[45]	
1.3.1	Policies for doing business†	55.6	48	●
1.3.2	Entrepreneurship policies and culture*	n/a	n/a	
Human capital and research		**25.2**	**85**	
2.1	**Education**	54.1	[59]	
2.1.1	Expenditure on education, % GDP	5.7	24	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	11.4	93	
2.1.4	PISA scales in reading, maths and science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	15.4	76	
2.2	**Tertiary education**	21.1	88	
2.2.1	Tertiary enrolment, % gross	31.3	84	
2.2.2	Graduates in science and engineering, %	22.0	56	●
2.2.3	Tertiary inbound mobility, %	0.8	91	
2.3	**Research and development (R&D)**	0.3	111	
2.3.1	Researchers, FTE/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.1	107	
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		**24.8**	**121**	◇
3.1	**Information and communication technologies (ICTs)**	37.2	123	◇
3.1.1	ICT access*	66.7	103	
3.1.2	ICT use*	15.6	129	○ ◇
3.1.3	Government's online service*	31.8	123	◇
3.1.4	E-participation*	34.5	117	
3.2	**General infrastructure**	17.5	114	
3.2.1	Electricity output, GWh/mn pop.	2,218.9	77	
3.2.2	Logistics performance*	13.5	115	
3.2.3	Gross capital formation, % GDP	21.6	82	
3.3	**Ecological sustainability**	19.7	96	
3.3.1	GDP/unit of energy use	8.7	85	
3.3.2	Environmental performance*	37.1	85	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	126	
Market sophistication		**25.1**	**94**	
4.1	**Credit**	19.2	86	
4.1.1	Finance for startups and scaleups*	n/a	n/a	
4.1.2	Domestic credit to private sector, % GDP	12.9	121	
4.1.3	Loans from microfinance institutions, % GDP	2.4	14	●
4.2	**Investment**	5.4	[71]	
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	0.0	53	●
4.2.4	Venture capital received, value, % GDP	0.0	66	
4.3	**Trade, diversification, and market scale**	50.6	81	
4.3.1	Applied tariff rate, weighted avg., %	3.9	82	
4.3.2	Domestic industry diversification	76.6	73	
4.3.3	Domestic market scale, bn PPP$	37.9	115	

		Score/ Value	Rank	
Business sophistication		**15.6**	**128**	◇
5.1	**Knowledge workers**	13.6	[113]	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, %	24.3	66	
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, %	1.6	91	
5.1.5	Females employed w/advanced degrees, %	n/a	n/a	
5.2	**Innovation linkages**	16.1	117	
5.2.1	University-industry R&D collaboration†	38.3	89	
5.2.2	State of cluster development and depth†	36.4	113	
5.2.3	GERD financed by abroad, % GDP	0.0	97	○ ◇
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	74	●
5.2.5	Patent families/bn PPP$ GDP	0.0	101	○ ◇
5.3	**Knowledge absorption**	17.0	128	◇
5.3.1	Intellectual property payments, % total trade	0.0	119	◇
5.3.2	High-tech imports, % total trade	5.8	111	
5.3.3	ICT services imports, % total trade	0.3	126	◇
5.3.4	FDI net inflows, % GDP	2.2	68	●
5.3.5	Research talent, % in businesses	n/a	n/a	
Knowledge and technology outputs		**14.9**	**84**	
6.1	**Knowledge creation**	17.2	53	●
6.1.1	Patents by origin/bn PPP$ GDP	0.1	110	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	101	○ ◇
6.1.3	Utility models by origin/bn PPP$ GDP	3.6	5	● ◆
6.1.4	Scientific and technical articles/bn PPP$ GDP	4.0	116	
6.1.5	Citable documents H-index	0.5	129	◇
6.2	**Knowledge impact**	20.6	89	
6.2.1	Labor productivity growth, %	5.7	2	● ◆
6.2.2	New businesses/th pop. 15–64	0.2	115	
6.2.3	Software spending, % GDP	0.1	94	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.1	132	○ ◇
6.2.5	High-tech manufacturing, %	2.6	108	○ ◇
6.3	**Knowledge diffusion**	6.9	115	
6.3.1	Intellectual property receipts, % total trade	0.0	107	
6.3.2	Production and export complexity	24.3	93	
6.3.3	High-tech exports, % total trade	0.1	122	
6.3.4	ICT services exports, % total trade	0.3	121	
Creative outputs		**4.5**	**116**	
7.1	**Intangible assets**	2.8	120	◇
7.1.1	Intangible asset intensity, top 15, %	n/a	n/a	
7.1.2	Trademarks by origin/bn PPP$ GDP	14.0	101	
7.1.3	Global brand value, top 5,000, % GDP	0.0	77	○ ◇
7.1.4	Industrial designs by origin/bn PPP$ GDP	0.0	121	○ ◇
7.2	**Creative goods and services**	12.0	[77]	
7.2.1	Cultural and creative services exports, % total trade	0.0	105	
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	24	●
7.2.5	Creative goods exports, % total trade	0.0	119	
7.3	**Online creativity**	0.2	121	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	128	
7.3.2	Country-code TLDs/th pop. 15–69	0.3	103	
7.3.3	GitHub commit pushes received/mn pop. 15–69	0.2	118	
7.3.4	Mobile app creation/bn PPP$ GDP	0.2	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/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 Tajikistan.

Missing data for Tajikistan

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
2.3.1	Researchers, FTE/mn pop.	n/a	2020	UNESCO Institute for Statistics
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
5.1.1	Knowledge-intensive employment, %	n/a	2021	International Labour Organization
5.1.3	GERD performed by business, % GDP	n/a	2020	UNESCO Institute for Statistics
5.1.5	Females employed w/advanced degrees, %	n/a	2021	International Labour Organization
5.3.5	Research talent, % in businesses	n/a	2020	UNESCO Institute for Statistics
7.1.1	Intangible asset intensity, top 15, %	n/a	2021	Brand Finance
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 Tajikistan

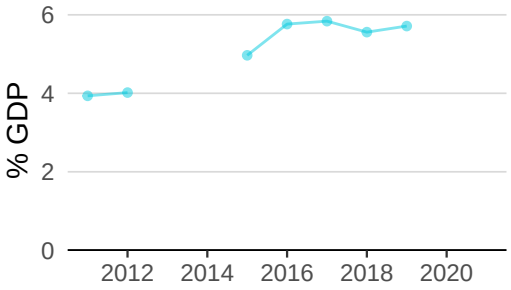
Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2019	2020	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2013	2019	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2011	2019	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2017	2019	UNESCO Institute for Statistics
2.2.2	Graduates in science and engineering, %	2017	2020	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	2017	2019	UNESCO Institute for Statistics
3.2.1	Electricity output, GWh/mn pop.	2019	2020	International Energy Agency
4.3.2	Domestic industry diversification	2018	2019	United Nations Industrial Development Organization
5.1.4	GERD financed by business, %	2011	2019	UNESCO Institute for Statistics

Code	Indicator name	Economy year	Model year	Source
5.2.3	GERD financed by abroad, % GDP	2018	2019	UNESCO Institute for Statistics
6.1.3	Utility models by origin/bn PPP$ GDP	2015	2020	World Intellectual Property Organization
6.2.2	New businesses/th pop. 15–64	2018	2020	World Bank, Enterpreneurship Database
6.2.5	High-tech manufacturing, %	2018	2019	United Nations Industrial Development Organization
7.1.4	Industrial designs by origin/bn PPP$ GDP	2015	2020	World Intellectual Property Organization

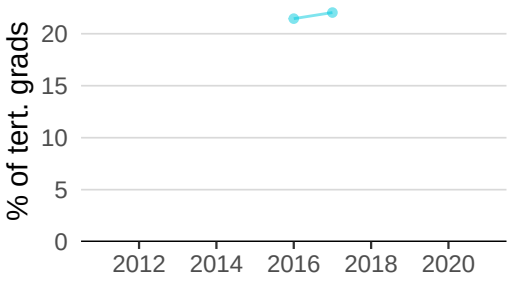
TAJIKISTAN'S INNOVATION SYSTEM

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

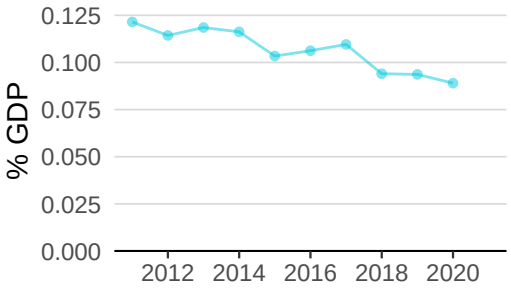
Innovation inputs



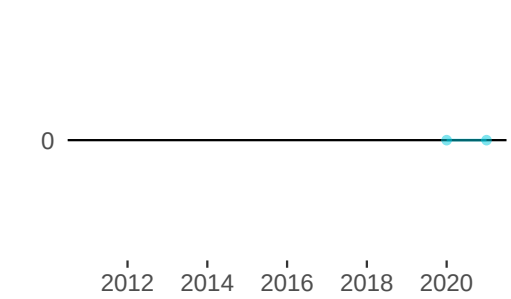
2.1.1 Expenditure on education was equal to 5.7% GDP in 2019–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 24.



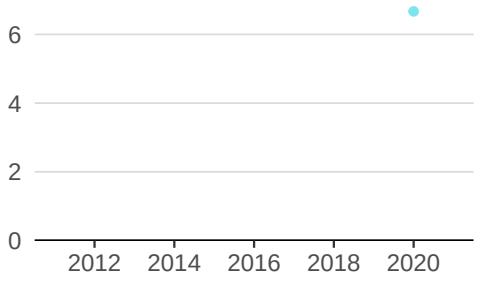
2.2.2 Graduates in science and engineering was equal to 22.0% of tert. grads in 2017–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 56.



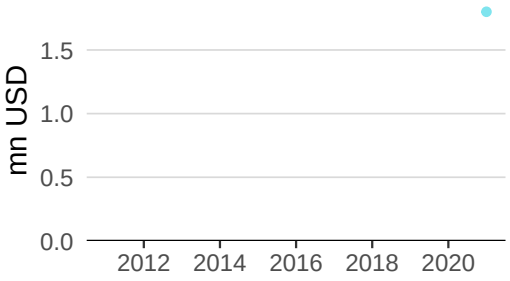
2.3.2 Gross expenditure on R&D was equal to 0.1% GDP in 2020–down by 5 percentage points from the year prior–and equivalent to an indicator rank of 107.



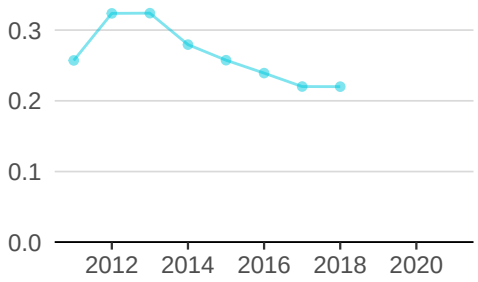
2.3.4 QS university ranking was equal to 0.0 in 2021–effectively unchanged from the year prior–and equivalent to an indicator rank of 72.



3.1.1 ICT access was equal to 6.7 in 2020 and equivalent to an indicator rank of 103.

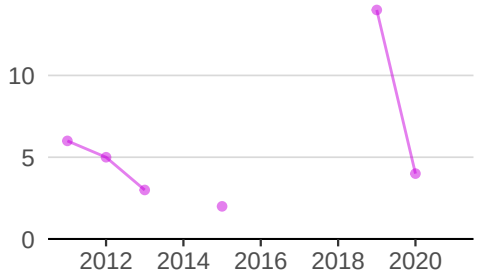


4.2.4 Venture capital received was equal to 1.8 mn USD in 2021 and equivalent to an indicator rank of 66.

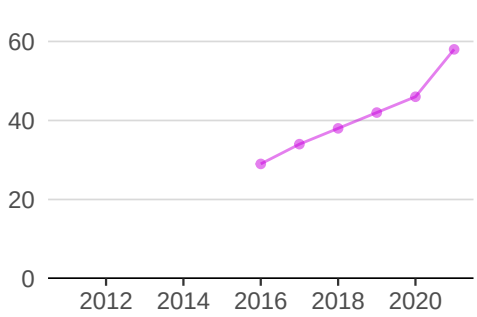


4.3.2 Domestic industry diversification was equal to 0.2 in 2018–effectively unchanged from the year prior–and equivalent to an indicator rank of 73.

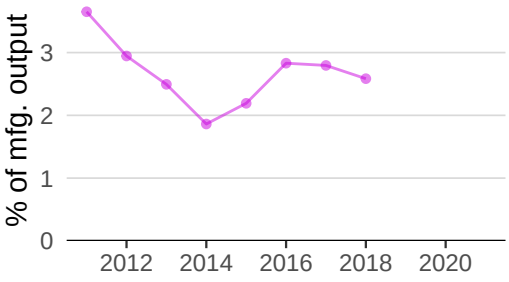
Innovation outputs



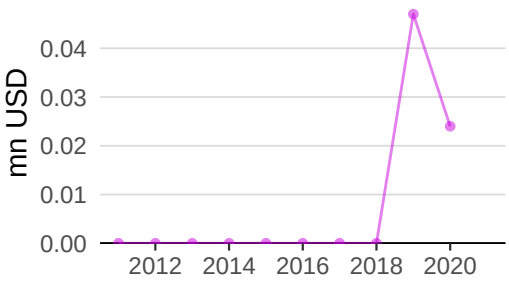
6.1.1 Patents by origin was equal to 4.0 in 2020–down by 71 percentage points from the year prior–and equivalent to an indicator rank of 110.



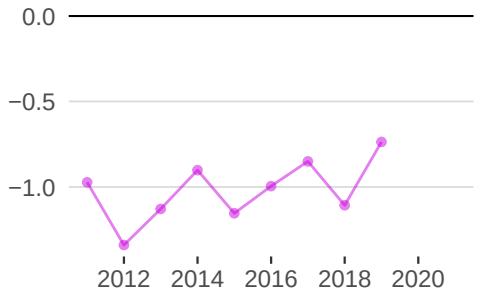
6.1.5 Citable documents H-index was equal to 58.0 in 2021–up by 26 percentage points from the year prior–and equivalent to an indicator rank of 129.



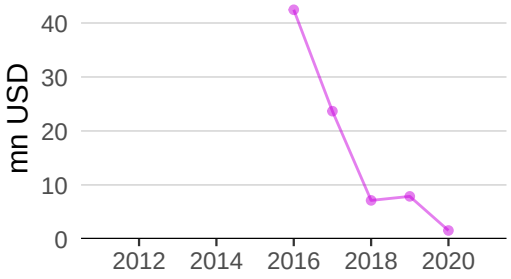
6.2.5 High-tech manufacturing was equal to 2.6% of mfg. output in 2018–down by 8 percentage points from the year prior–and equivalent to an indicator rank of 108.



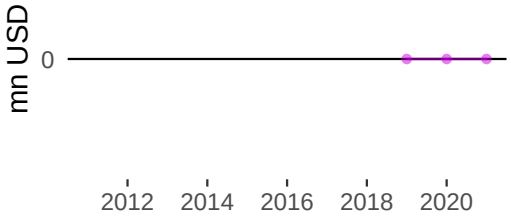
6.3.1 Intellectual property receipts was equal to 0.0 mn USD in 2020–down by 49 percentage points from the year prior–and equivalent to an indicator rank of 107.



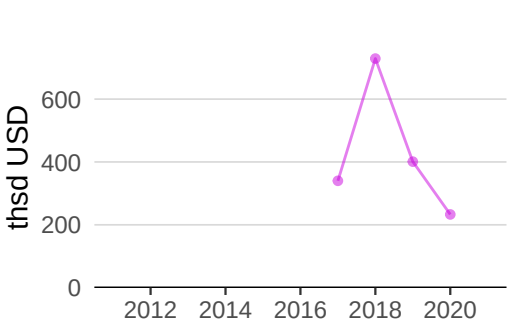
6.3.2 Production and export complexity was equal to -0.7 in 2019–up by 33 percentage points from the year prior–and equivalent to an indicator rank of 93.



6.3.3 High-tech exports was equal to 1.6 mn USD in 2020–down by 80 percentage points from the year prior–and equivalent to an indicator rank of 122.



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 233.0 thsd USD in 2020–down by 42 percentage points from the year prior–and equivalent to an indicator rank of 105.

TAJIKISTAN'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

No observations

Source: Brand Finance (https://brandirectory.com/reports/gift-2021).

7.1.3 Global brand value, top 5,000

Brand	Industry	Rank

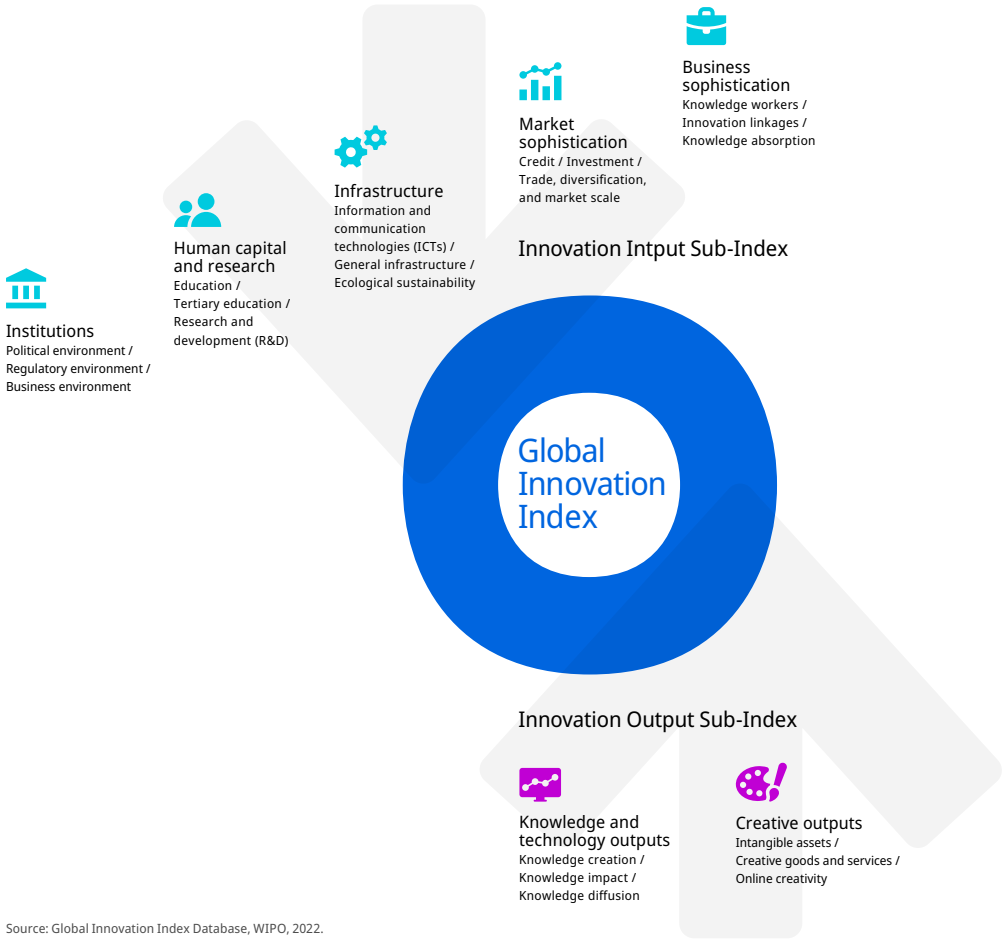
No observations

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.