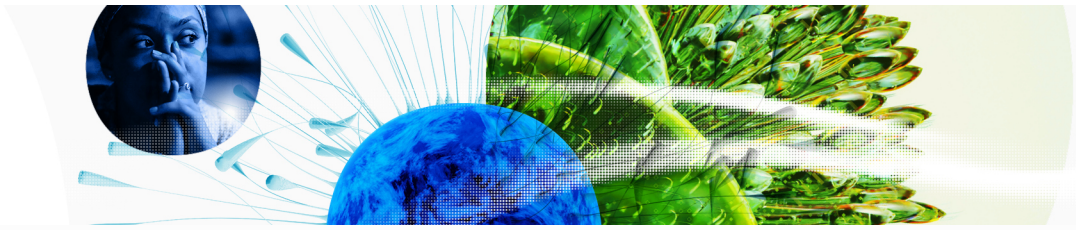
Global Innovation Index 2023



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

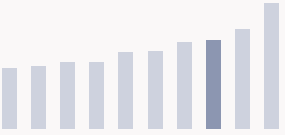
Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation**.

Kazakhstan ranking in the Global Innovation Index 2023

> Kazakhstan ranks 81st among the 132 economies featured in the GII 2023.

> Kazakhstan ranks 25th among the 33 upper-middle-income group economies.

> Kazakhstan ranks 3rd among the 10 economies in Central and Southern Asia.



> Kazakhstan GII Ranking (2020-2023)

The table shows the rankings of Kazakhstan 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 Kazakhstan in the GII 2023 is between ranks 78 and 84.

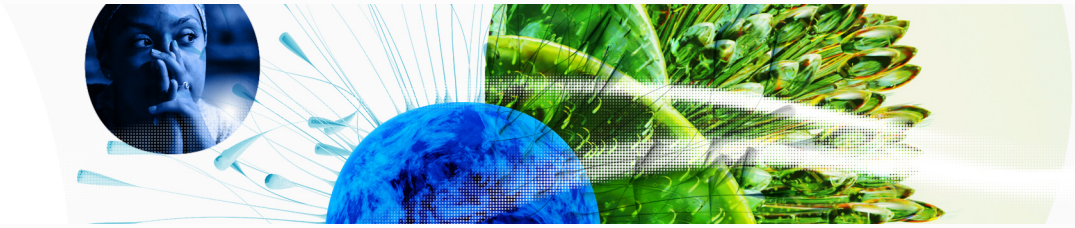
	GII Position	Innovation Inputs	Innovation Outputs
2020	77th	60th	94th
2021	79th	61st	101st
2022	83rd	65th	97th
2023	81st	68th	87th

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

This year **Kazakhstan ranks 68th in innovation inputs.** This position is lower than last year.

Kazakhstan ranks 87th in innovation outputs. This position is higher than last year.

Global Innovation Index 2023



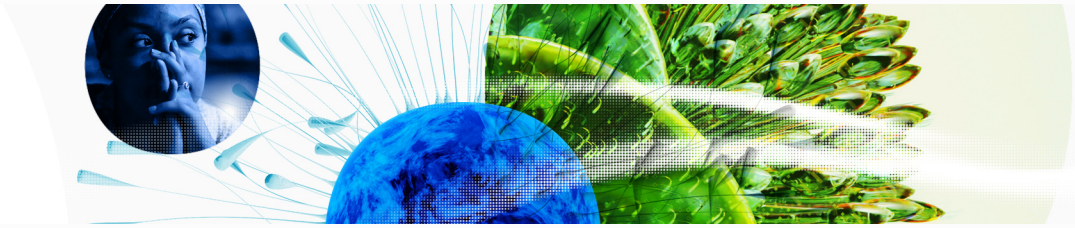
→ Expected vs. observed innovation performance

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, Kazakhstan's performance is below expectations for its level of development.

> Innovation overperformers relative to their economic development

Global Innovation Index 2023

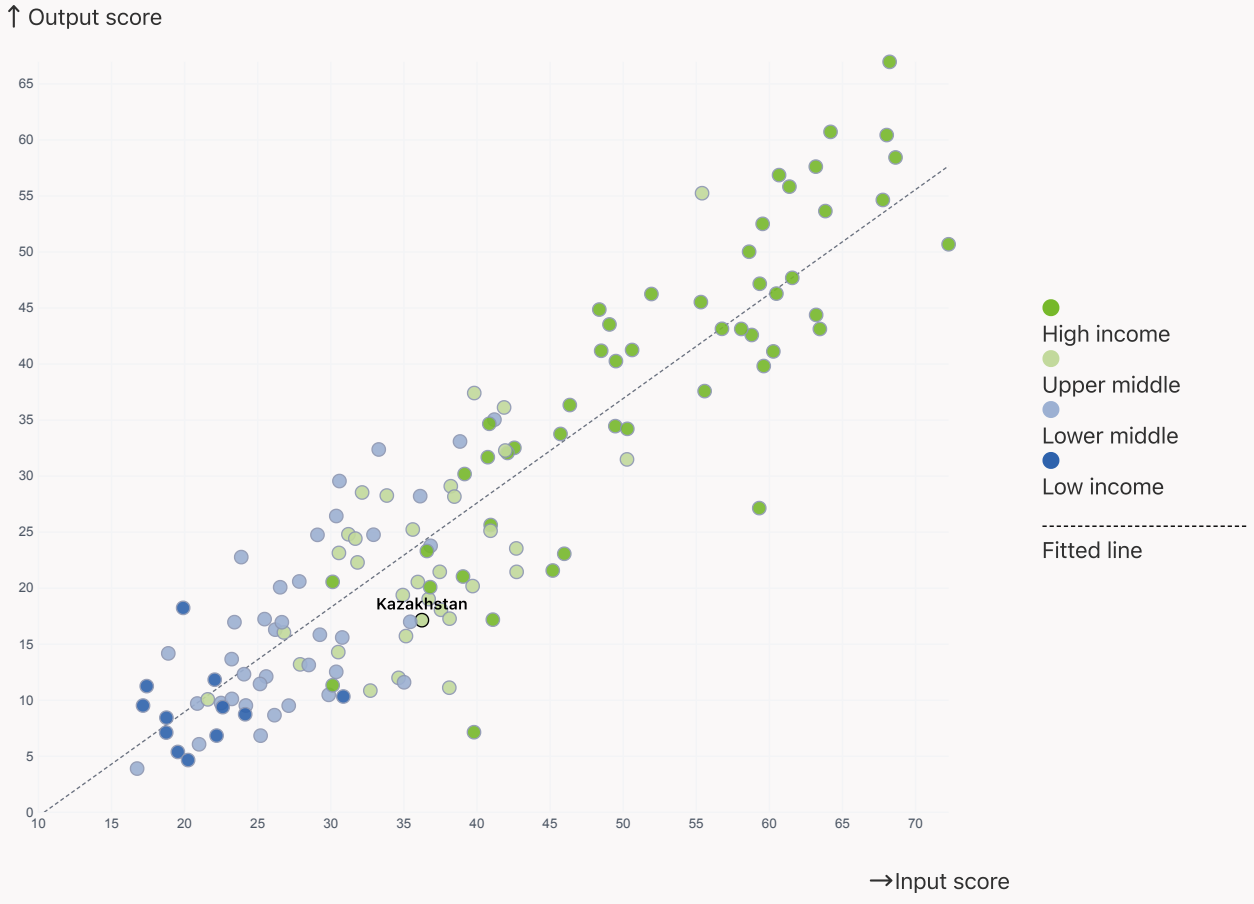


→ Effectively translating innovation investments into innovation outputs

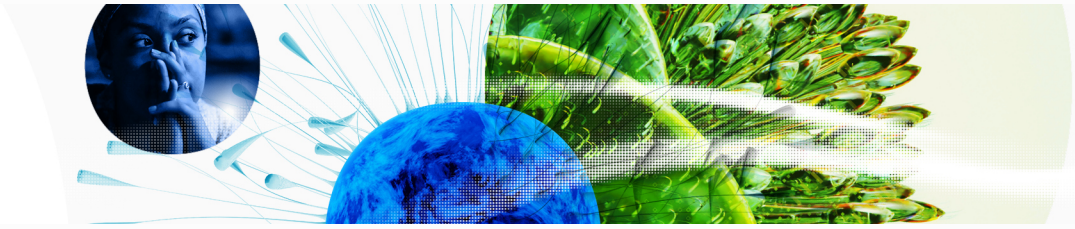
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

> Kazakhstan produces less innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs



Global Innovation Index 2023



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

> Highest rankings

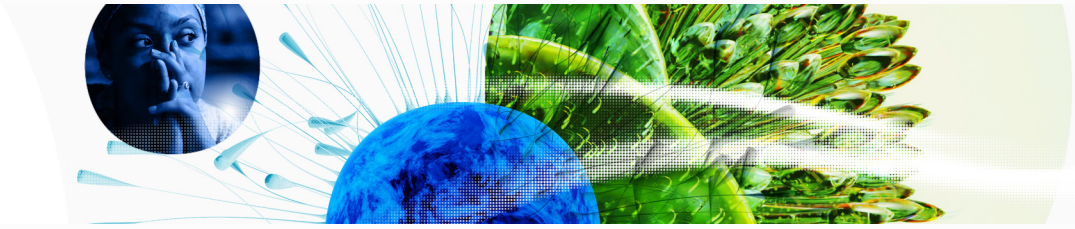
Kazakhstan ranks highest in Human capital and research, Infrastructure (59th), Institutions (61st) and Business sophistication (75th).

> Lowest rankings

Kazakhstan ranks lowest in Creative outputs (90th), Market sophistication (87th) and Knowledge and technology outputs (83rd).

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

Global Innovation Index 2023



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

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

> Upper-Middle-Income economies

Kazakhstan performs below the upper-middle-income group average in Knowledge and technology outputs, Creative outputs, Business sophistication, Market sophistication.

> Central And Southern Asia

Kazakhstan performs above the regional average in Business sophistication, Human capital and research, Infrastructure, Institutions.

Knowledge and technology outputs

- Top 10 | Score: 58.96
- Upper middle income | Score: 22.36
- Central and Southern Asia | Score: 20.48
- Kazakhstan | Score: 18.17

Creative outputs

- Top 10 | 56.09
- Upper middle income | 23.16
- Central and Southern Asia | 17.93
- Kazakhstan | 16.01

Business sophistication

- Top 10 | 64.39
- Upper middle income | 29.27
- Kazakhstan | 26.06
- Central and Southern Asia | 22.96

Market sophistication

- Top 10 | 61.93
- Upper middle income | 35.45
- Central and Southern Asia | 33.20
- Kazakhstan | 27.66

Human capital and research

- Top 10 | 60.28
- Kazakhstan | 32.62
- Upper middle income | 29.68
- Central and Southern Asia | 23.87

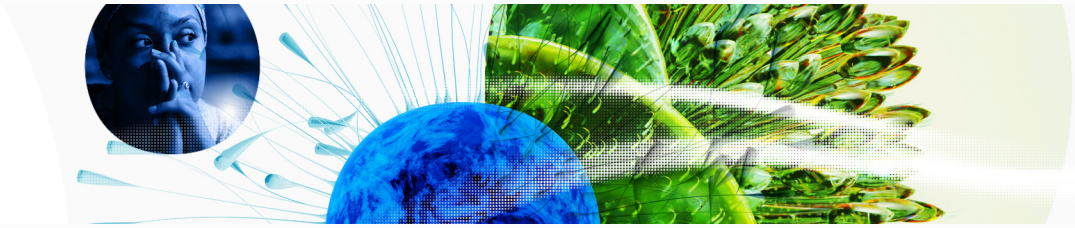
Infrastructure

- Top 10 | 62.83
- Kazakhstan | 43.13
- Upper middle income | 40.40
- Central and Southern Asia | 30.45

Institutions

- Top 10 | 79.85
- Kazakhstan | 51.92
- Upper middle income | 47.71
- Central and Southern Asia | 38.68

Global Innovation Index 2023



→ Innovation strengths and weaknesses in Kazakhstan

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

> Kazakhstan's main innovation strengths are **Government's online service** (rank 8), **Utility models by origin/bn PPP$ GDP** (rank 10) and **Pupil-teacher ratio, secondary** (rank 12).

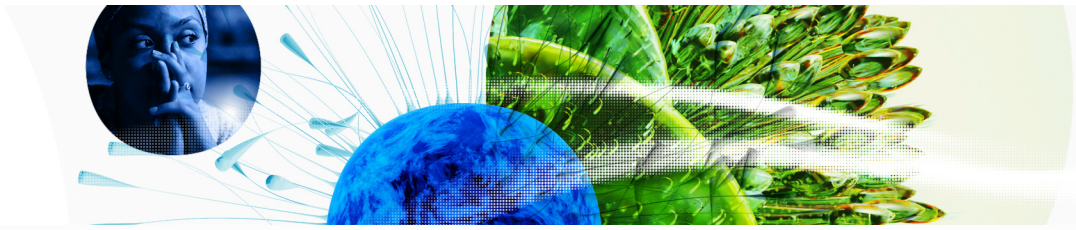
Strengths

Rank	Code	Indicator name
8	3.1.3	Government's online service
10	6.1.3	Utility models by origin/bn PPP$ GDP
12	2.1.5	Pupil-teacher ratio, secondary
15	3.1.4	E-participation
18	1.2.3	Cost of redundancy dismissal
32	5.1.5	Females employed w/advanced degrees, %
33	3.2.1	Electricity output, GWh/mn pop.
33	2.3.4	QS university ranking, top 3
35	2.2.1	Tertiary enrolment, % gross
36	6.3.3	High-tech exports, % total trade

Weaknesses

Rank	Code	Indicator name
124	6.2.3	Software spending, % GDP
118	5.2.2	State of cluster development
117	5.2.1	University-industry R&D collaboration
100	2.3.2	Gross expenditure on R&D, % GDP
99	4.2.4	VC received, value, % GDP
98	4.2.3	VC recipients, deals/bn PPP$ GDP
95	4.2.2	Venture capital (VC) investors, deals/bn PPP$ GDP
88	5.2.3	GERD financed by abroad, % GDP
48	6.2.2	Unicorn valuation, % GDP
40	2.3.3	Global corporate R&D investors, top 3, mn US$

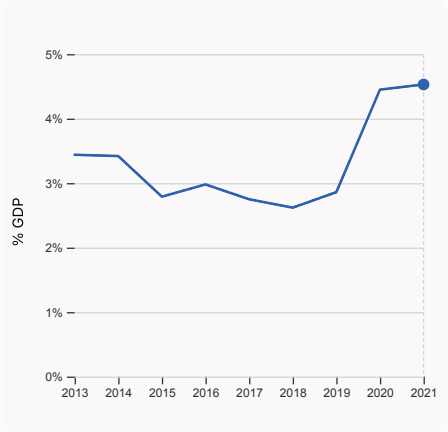
Global Innovation Index 2023



→ Kazakhstan's innovation system

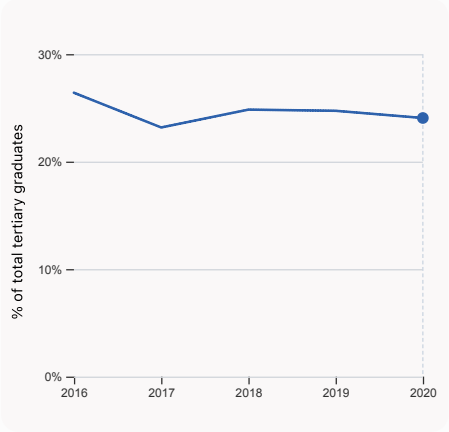
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Kazakhstan



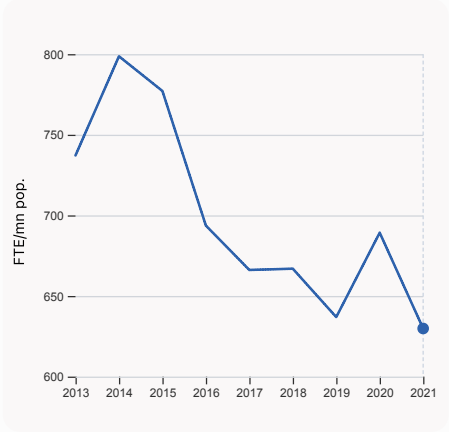
2.1.1 Expenditure on education, % GDP

was equal to 4.53% GDP in 2021, up by 0.08 percentage points from the year prior – and equivalent to an indicator rank of 54.



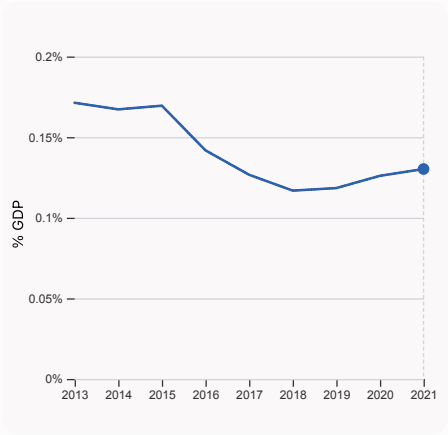
2.2.2 Graduates in science and engineering, %

was equal to 24.06% of total tertiary graduates in 2020, down by 0.67 percentage points from the year prior – and equivalent to an indicator rank of 49.



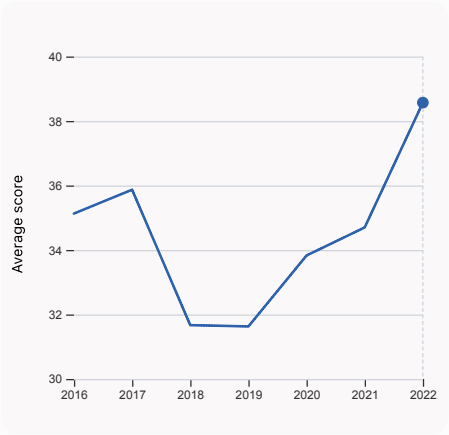
2.3.1 Researchers, FTE/mn pop.

was equal to 629.85 FTE/mn pop. in 2021, down by 8.62% from the year prior – and equivalent to an indicator rank of 64.



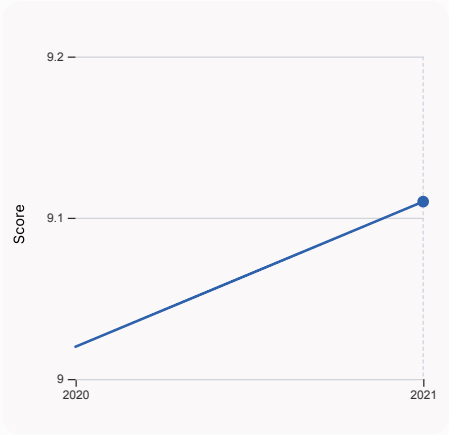
2.3.2 Gross expenditure on R&D, % GDP

was equal to 0.13% GDP in 2021, up by 0.0042 percentage points from the year prior – and equivalent to an indicator rank of 100.



2.3.4 QS university ranking, top 3

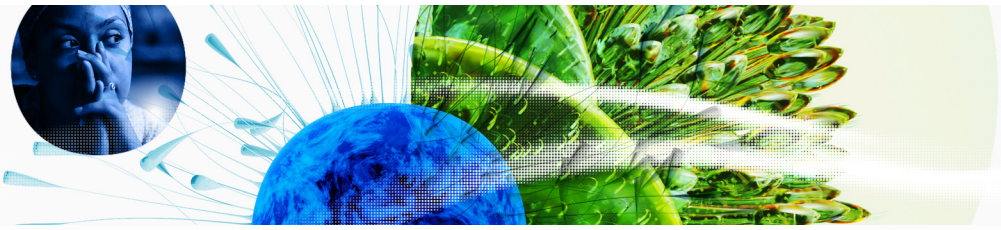
was equal to an average score of 38.57 for the top 3 universities in 2022, up by 11.15% from the year prior – and equivalent to an indicator rank of 33.

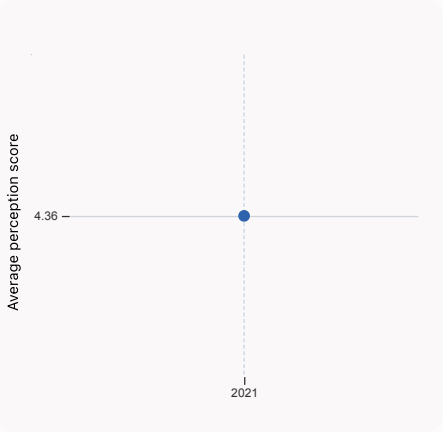


3.1.1 ICT access

was equal to a score of 9.11 in 2021, up by 1% from the year prior – and equivalent to an indicator rank of 41.

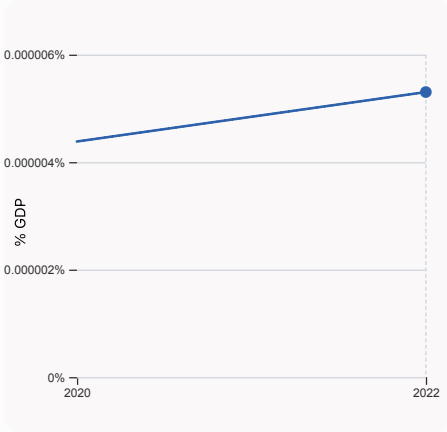
Global Innovation Index 2023





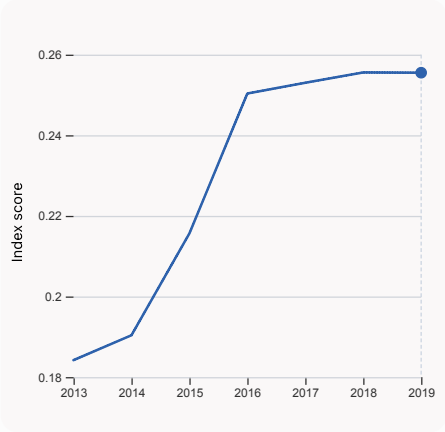
4.1.1 Finance for startups and scaleups

was equal to an average perception score of 4.36 in 2021, equivalent to an indicator rank of 53.



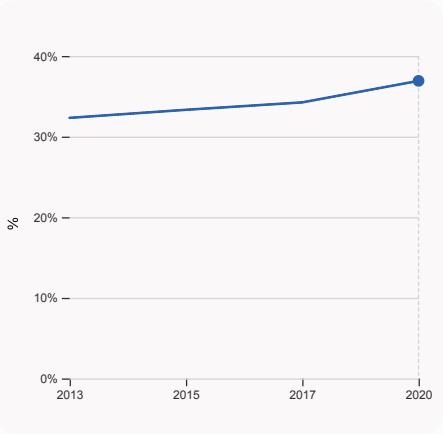
4.2.4 VC received, value, % GDP

was equal to 0.00001% GDP in 2022, up by 0 percentage points from the year prior – and equivalent to an indicator rank of 99.



4.3.2 Domestic industry diversification

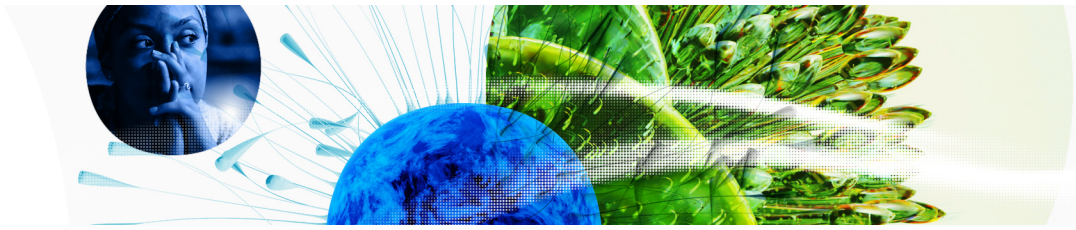
was equal to an index score of 0.256 in 2019, down by 0.027% from the year prior – and equivalent to an indicator rank of 87.



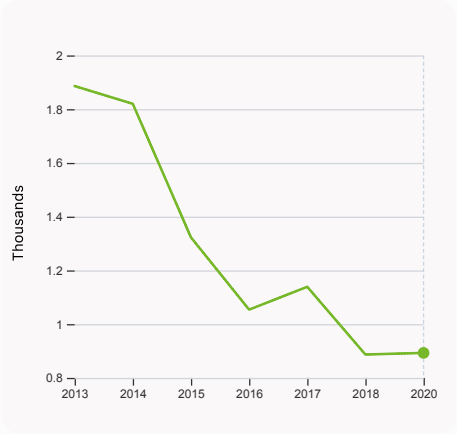
5.1.1 Knowledge-intensive employment, %

was equal to 36.92% in 2020, up by 2.67 percentage points from the year prior – and equivalent to an indicator rank of 37.

Global Innovation Index 2023

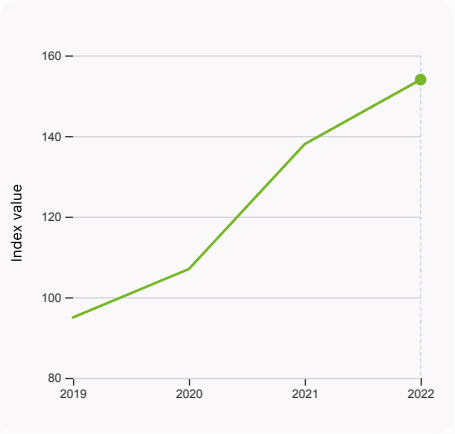


> Innovation outputs in Kazakhstan



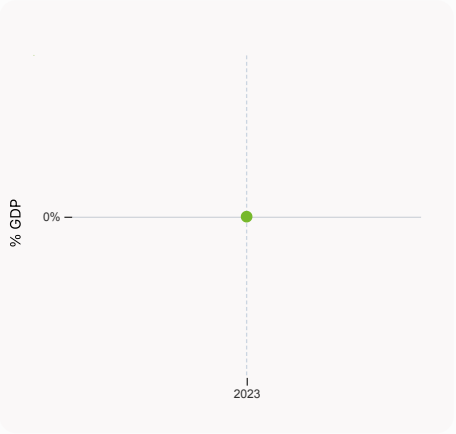
6.1.1 Patents by origin

was equal to 0.89 Thousands in 2020, up by 0.68% from the year prior – and equivalent to an indicator rank of 39.



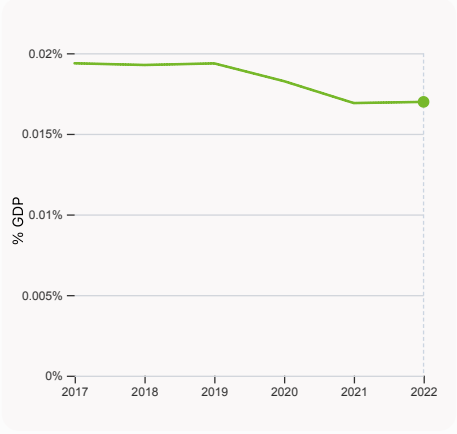
6.1.5 Citable documents H-index

was equal to an index value of 154 in 2022, up by 11.59% from the year prior – and equivalent to an indicator rank of 93.



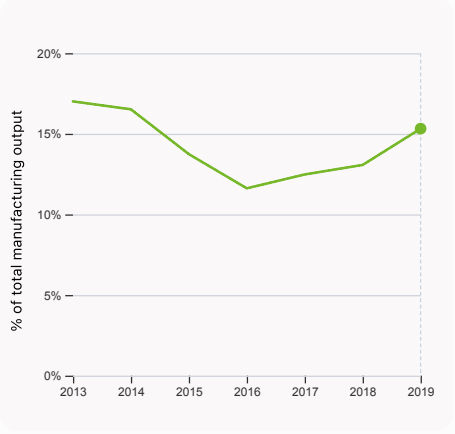
6.2.2 Unicorn valuation, % GDP

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



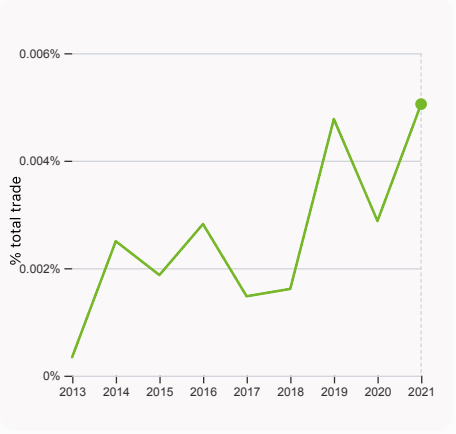
6.2.3 Software spending, % GDP

was equal to 0.017% GDP in 2022, up by 0.000073 percentage points from the year prior – and equivalent to an indicator rank of 124.



6.2.4 High-tech manufacturing, %

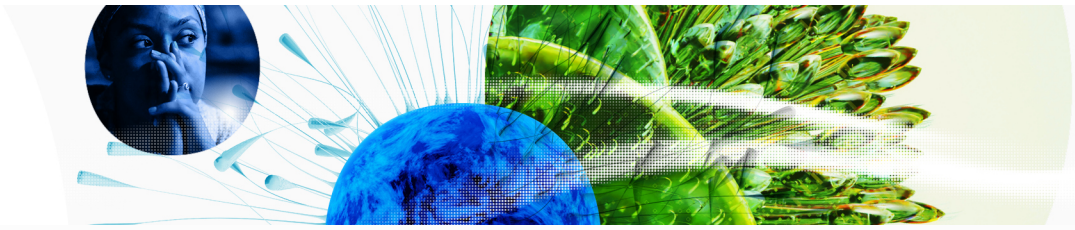
was equal to 15.32% of total manufacturing output in 2019, up by 2.25 percentage points from the year prior – and equivalent to an indicator rank of 76.



6.3.1 Intellectual property receipts, % total trade

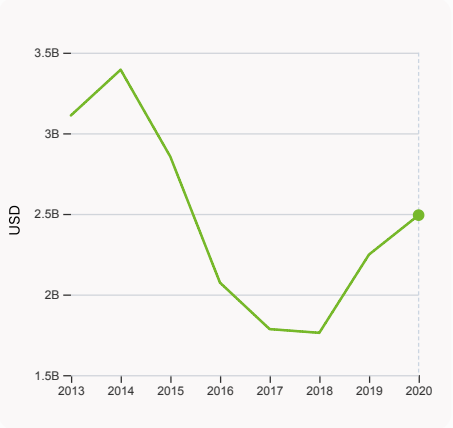
was equal to 0.005% total trade in 2021, up by 0.0022 percentage points from the year prior – and equivalent to an indicator rank of 98.

Global Innovation Index 2023



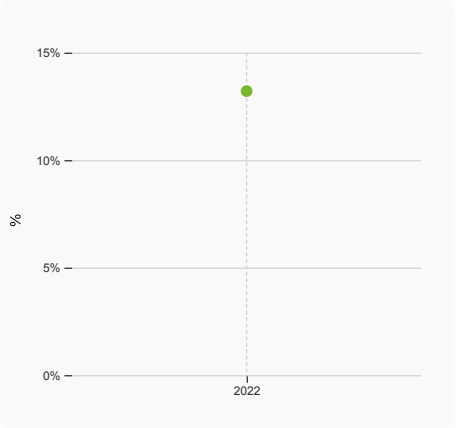
6.3.2 Production and export complexity

was equal to a score of -0.332 in 2020, up by 7.17% from the year prior – and equivalent to an indicator rank of 80.



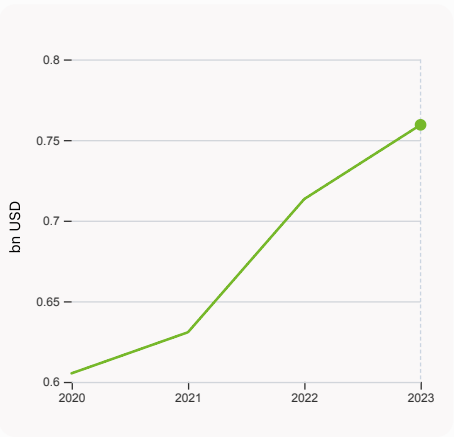
6.3.3 High-tech exports

was equal to 2,492,254,474 USD in 2020, up by 10.9% from the year prior – and equivalent to an indicator rank of 36.



7.1.1 Intangible asset intensity, top 15, %

was equal to 13.21 % in 2022 – and equivalent to an indicator rank of 68.

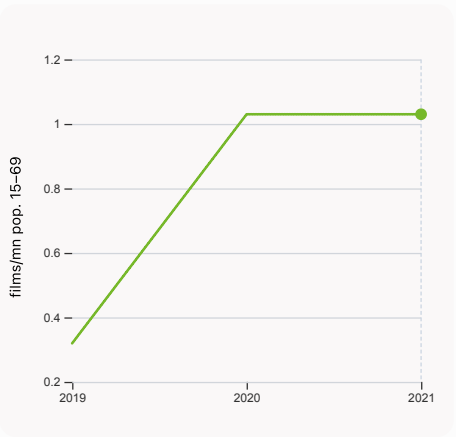


7.1.3 Global brand value, top 5,000

was equal to 0.759 bn USD in 2023, up by 6.45% from the year prior – and equivalent to an indicator rank of 69.

7.2.1 Cultural and creative services exports

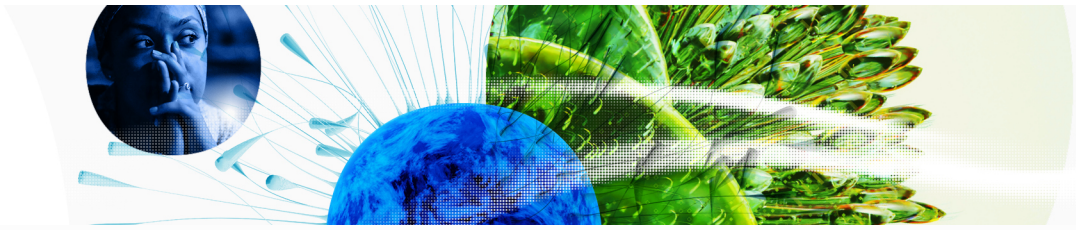
was equal to 42,515,000 USD in 2021, down by 3.54% from the year prior – and equivalent to an indicator rank of 90.

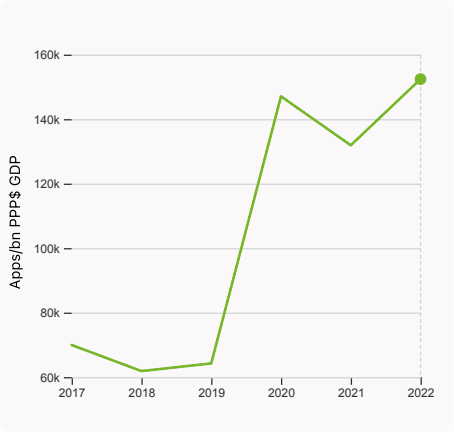


7.2.2 National feature films/mn pop. 15-69

was equal to 1.03 films/mn pop. 15–69 in 2021, up by with no change from the year prior – and equivalent to an indicator rank of 61.

Global Innovation Index 2023

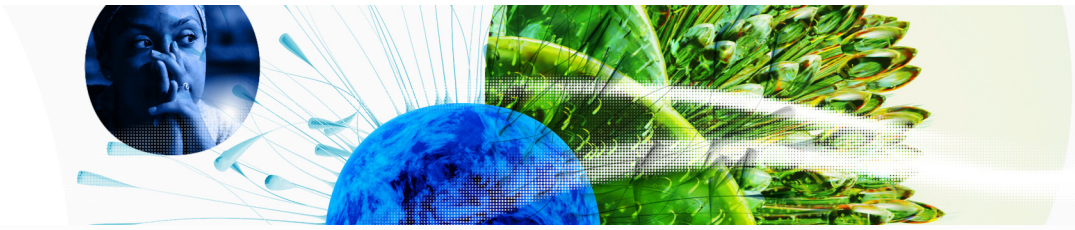




7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 152,426.81 Apps/bn PPP$ GDP in 2022, up by 15.57% from the year prior – and equivalent to an indicator rank of 63.

Global Innovation Index 2023



→ Kazakhstan's innovation top performers

> 2.3.4 QS university ranking of Kazakhstan’s top universities

Rank	University	Score
150	AL-FARABI KAZAKH NATIONAL UNIVERSITY	50.80
277	L.N. GUMILYOV EURASIAN NATIONAL UNIVERSITY (ENU)	36.80
405	SATBAYEV UNIVERSITY	28.10

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".

> 7.1.1 Top 15 intangible-asset intensive companies in Kazakhstan

Rank	Firm	Intensity, %
1	AKER BP ASA	94.39
2	KASPI.KZ JSC	82.39
3	NAC KAZATOMPROM JSC	80.23

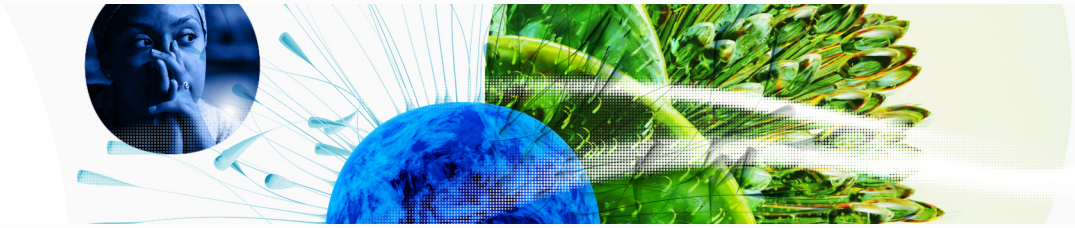
Source: Brand Finance (https://brandirectory.com/reports/gift-2022).
Note: Brand Finance only provides within economy ranks.

> 7.1.3 Top 5,000 companies in Kazakhstan with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	HALYK BANK	Banking	461.7
2	KAZAKHTELECOM	Telecoms	297.7

Source: Brand Finance (https://brandirectory.com).
Note: Rank corresponds to within economy ranks.

Global Innovation Index 2023



Kazakhstan

GII 2023 rank **81**

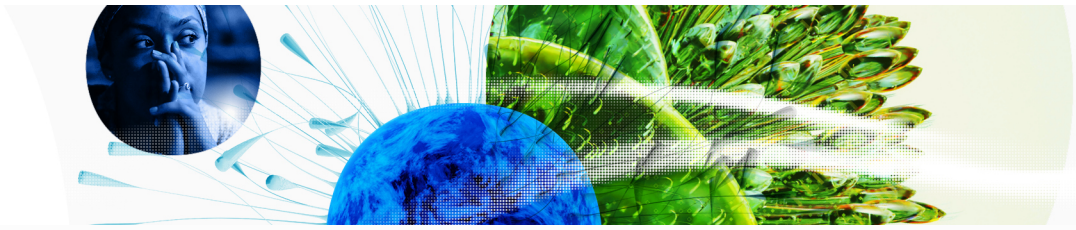
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
87	68	Upper middle	CSA	19.4	596.7	30,827.3

	Score / Value	Rank
Institutions	**51.9**	**61**
1.1 Institutional environment	**44.3**	**72**
1.1.1 Operational stability for businesses*	50.0	71
1.1.2 Government effectiveness*	38.5	63
1.2 Regulatory environment	**66.8**	**51**
1.2.1 Regulatory quality*	44.4	66
1.2.2 Rule of law*	25.5	93
1.2.3 Cost of redundancy dismissal	8.7	18 ●
1.3 Business environment	**44.7**	**70**
1.3.1 Policies for doing business†	35.5	99
1.3.2 Entrepreneurship policies and culture†	53.8	28
Human capital and research	**32.6**	**59**
2.1 Education	**51.5**	**65**
2.1.1 Expenditure on education, % GDP	4.5	54
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.2	45
2.1.3 School life expectancy, years	15.8	44
2.1.4 PISA scales in reading, maths and science	402.4	64
2.1.5 Pupil-teacher ratio, secondary	8.3	12 ●
2.2 Tertiary education	**34.5**	**50**
2.2.1 Tertiary enrolment, % gross	70.7	35 ●
2.2.2 Graduates in science and engineering, %	24.1	49
2.2.3 Tertiary inbound mobility, %	5.5	45
2.3 Research and development (R&D)	**11.9**	**54**
2.3.1 Researchers, FTE/mn pop.	629.9	64
2.3.2 Gross expenditure on R&D, % GDP	0.1	100 ○
2.3.3 Global corporate R&D investors, top 3, mn US$	0.0	40 ○ ◇
2.3.4 QS university ranking, top 3*	39.1	33 ●
Infrastructure	**43.1**	**59**
3.1 Information and communication technologies (ICTs)	**85.2**	**21**
3.1.1 ICT access*	86.7	41
3.1.2 ICT use*	80.9	55
3.1.3 Government's online service*	92.7	8 ●
3.1.4 E-participation*	80.2	15 ●
3.2 General infrastructure	**26.2**	**67**
3.2.1 Electricity output, GWh/mn pop.	5,912.2	33 ●
3.2.2 Logistics performance*	27.3	76
3.2.3 Gross capital formation, % GDP	24.8	57
3.3 Ecological sustainability	**18.1**	**90**
3.3.1 GDP/unit of energy use	6.9	98 ◇
3.3.2 Environmental performance*	37.3	69
3.3.3 ISO 14001 environment/bn PPP$ GDP	0.5	89
Market sophistication	**27.7**	**87**
4.1 Credit	**22.1**	**87**
4.1.1 Finance for startups and scaleups†	45.6	53
4.1.2 Domestic credit to private sector, % GDP	25.6	109 ◇
4.1.3 Loans from microfinance institutions, % GDP	1.1	26
4.2 Investment	**2.4**	**100**
4.2.1 Market capitalization, % GDP	23.9	54
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.0	95 ○ ◇
4.2.3 VC recipients, deals/bn PPP$ GDP	0.0	98 ○
4.2.4 VC received, value, % GDP	0.0	99 ○
4.3 Trade, diversification, and market scale	**58.5**	**66**
4.3.1 Applied tariff rate, weighted avg., %	2.0	60
4.3.2 Domestic industry diversification	75.6	87 ◇
4.3.3 Domestic market scale, bn PPP$	596.7	42

	Score / Value	Rank
Business sophistication	**26.1**	**75**
5.1 Knowledge workers	**40.8**	**46**
5.1.1 Knowledge-intensive employment, %	36.9	37
5.1.2 Firms offering formal training, %	21.8	74
5.1.3 GERD performed by business, % GDP	0.1	72
5.1.4 GERD financed by business, %	47.4	34
5.1.5 Females employed w/advanced degrees, %	20.7	32 ●
5.2 Innovation linkages	**8.4**	**123** ◇
5.2.1 University-industry R&D collaboration†	20.3	117 ○ ◇
5.2.2 State of cluster development†	16.6	118 ○ ◇
5.2.3 GERD financed by abroad, % GDP	0.0	88 ○
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	104
5.2.5 Patent families/bn PPP$ GDP	0.1	60
5.3 Knowledge absorption	**29.0**	**83**
5.3.1 Intellectual property payments, % total trade	0.3	82
5.3.2 High-tech imports, % total trade	9.9	39
5.3.3 ICT services imports, % total trade	0.8	93
5.3.4 FDI net inflows, % GDP	2.9	51
5.3.5 Research talent, % in businesses	n/a	n/a
Knowledge and technology outputs	**18.2**	**83**
6.1 Knowledge creation	**15.5**	**63**
6.1.1 Patents by origin/bn PPP$ GDP	1.8	39
6.1.2 PCT patents by origin/bn PPP$ GDP	0.0	78
6.1.3 Utility models by origin/bn PPP$ GDP	1.6	10 ●
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a
6.1.5 Citable documents H-index	6.2	93
6.2 Knowledge impact	**19.6**	**108**
6.2.1 Labor productivity growth, %	1.6	42
6.2.2 Unicorn valuation, % GDP	0.0	48 ○ ◇
6.2.3 Software spending, % GDP	0.0	124 ○ ◇
6.2.4 High-tech manufacturing, %	15.3	76
6.3 Knowledge diffusion	**19.5**	**77**
6.3.1 Intellectual property receipts, % total trade	0.0	98 ◇
6.3.2 Production and export complexity	45.6	80
6.3.3 High-tech exports, % total trade	5.1	36 ●
6.3.4 ICT services exports, % total trade	0.3	111
6.3.5 ISO 9001 quality/bn PPP$ GDP	0.9	112
Creative outputs	**16.0**	**90**
7.1 Intangible assets	**20.9**	**82**
7.1.1 Intangible asset intensity, top 15, %	13.2	68
7.1.2 Trademarks by origin/bn PPP$ GDP	24.0	85
7.1.3 Global brand value, top 5,000	0.3	69
7.1.4 Industrial designs by origin/bn PPP$ GDP	0.3	98
7.2 Creative goods and services	**3.3**	**93**
7.2.1 Cultural and creative services exports, % total trade	0.1	90
7.2.2 National feature films/mn pop. 15-69	1.0	61
7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
7.2.4 Creative goods exports, % total trade	0.2	82
7.3 Online creativity	**18.8**	**73**
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	0.4	115
7.3.2 Country-code TLDs/th pop. 15-69	4.0	59
7.3.3 GitHub commits/mn pop. 15-69	5.7	70
7.3.4 Mobile app creation/bn PPP$ GDP	65.3	63

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 Kazakhstan.

> Kazakhstan has missing data for two indicators and outdated data for sixteen indicators.

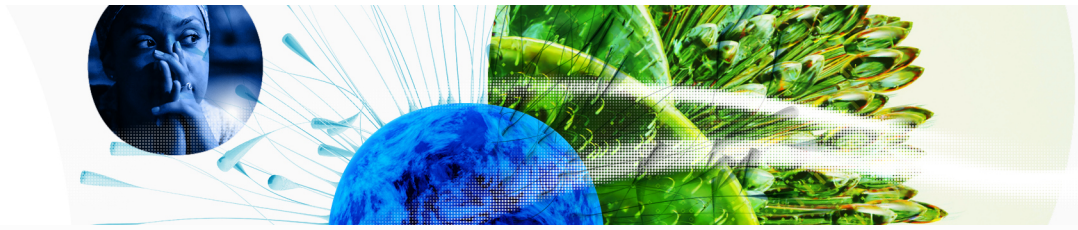
> Missing data for Kazakhstan

Code	Indicator name	Economy Year	Model Year	Source
5.3.5	Research talent, % in businesses	n/a	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
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 Kazakhstan

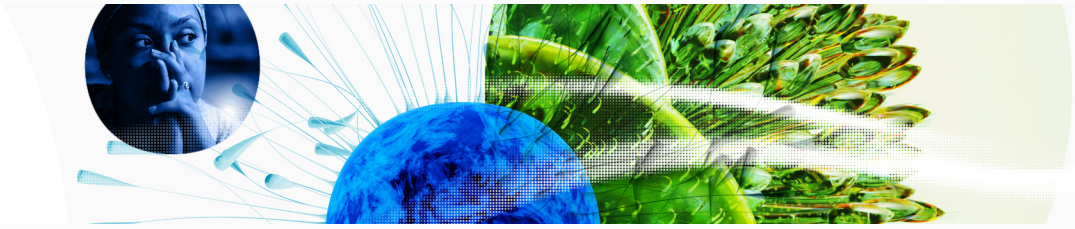
Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	2021	2022	Global Entrepreneurship Monitor
2.1.2	Government funding/pupil, secondary, % GDP/cap	2016	2019	UNESCO Institute for Statistics
3.2.1	Electricity output, GWh/mn pop.	2020	2021	International Energy Agency
4.1.1	Finance for startups and scaleups	2021	2022	Global Entrepreneurship Monitor
4.3.2	Domestic industry diversification	2019	2020	United Nations Industrial Development Organization
5.1.1	Knowledge-intensive employment, %	2020	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, %	2017	2022	International Labour Organization
5.2.3	GERD financed by abroad, % GDP	2018	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.3.2	High-tech imports, % total trade	2020	2021	United Nations Comtrade Database; World Trade Organization and United Nations Conference on Trade and Development

Global Innovation Index 2023



Code	Indicator name	Economy Year	Model Year	Source
6.1.1	Patents by origin/bn PPP$ GDP	2020	2021	World Intellectual Property Organization; International Monetary Fund
6.1.3	Utility models by origin/bn PPP$ GDP	2018	2021	World Intellectual Property Organization; International Monetary Fund
6.2.4	High-tech manufacturing, %	2019	2020	United Nations Industrial Development Organization
6.3.3	High-tech exports, % total trade	2020	2021	United Nations Comtrade Database; World Trade Organization and United Nations Conference on Trade and Development; Trade Data Monitor.
7.2.4	Creative goods exports, % total trade	2020	2021	United Nations Comtrade Database; 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.