



## KAZAKHSTAN

**83rd**

Kazakhstan ranks 83rd 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 Kazakhstan 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 Kazakhstan in the GII 2022 is between ranks 79 and 93.

### Rankings for Kazakhstan (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	77	60	94
2021	79	61	101
2022	83	65	97

- Kazakhstan performs better in innovation inputs than innovation outputs in 2022.
- This year Kazakhstan ranks 65th in innovation inputs, lower than both 2021 and 2020.
- As for innovation outputs, Kazakhstan ranks 97th. This position is higher than last year but lower than 2020.

**27th**

Kazakhstan ranks 27th among the 36 upper-middle-income group economies.

**4th**

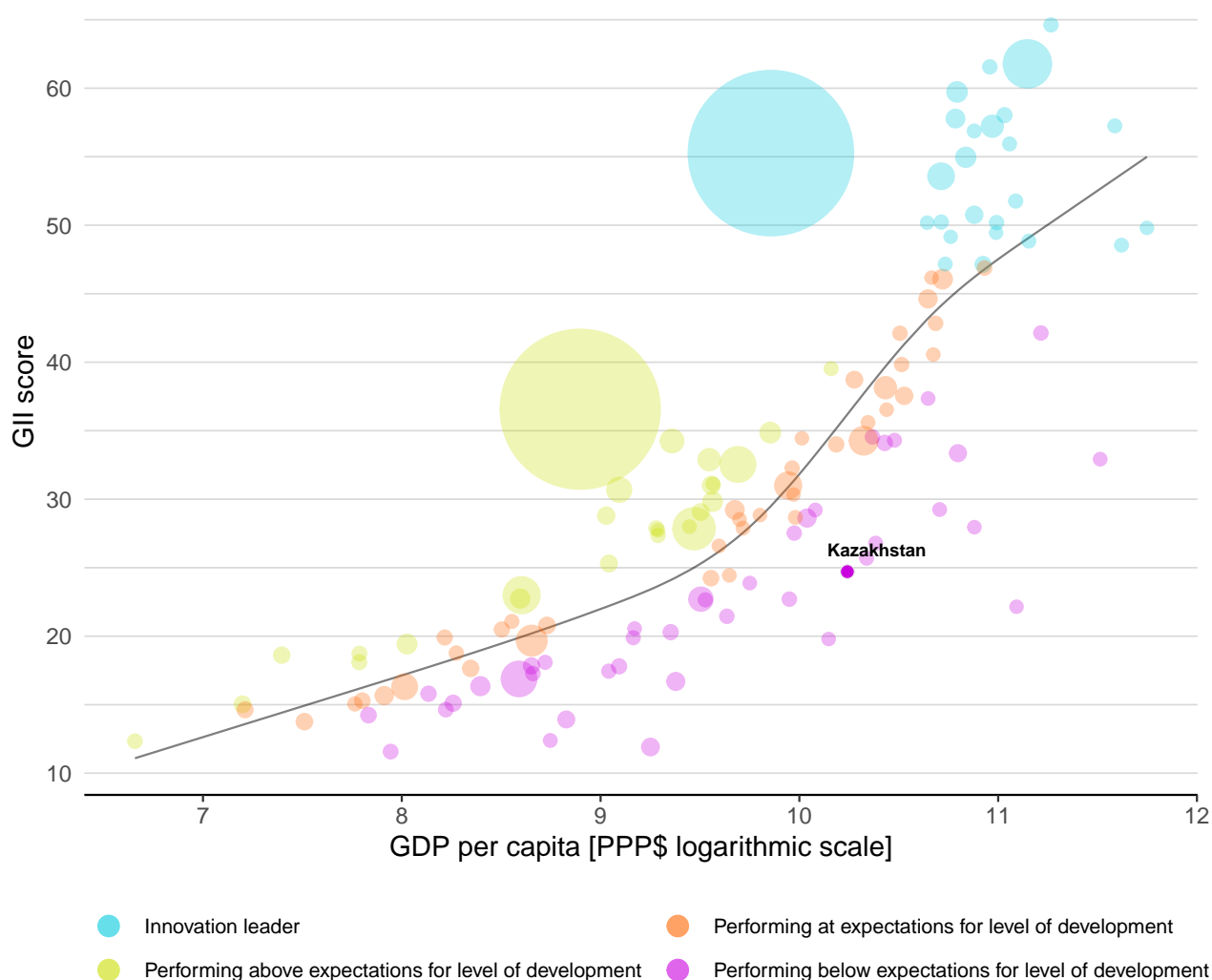
Kazakhstan ranks 4th among the 10 economies in Central and Southern Asia.

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

### The positive relationship between innovation and development

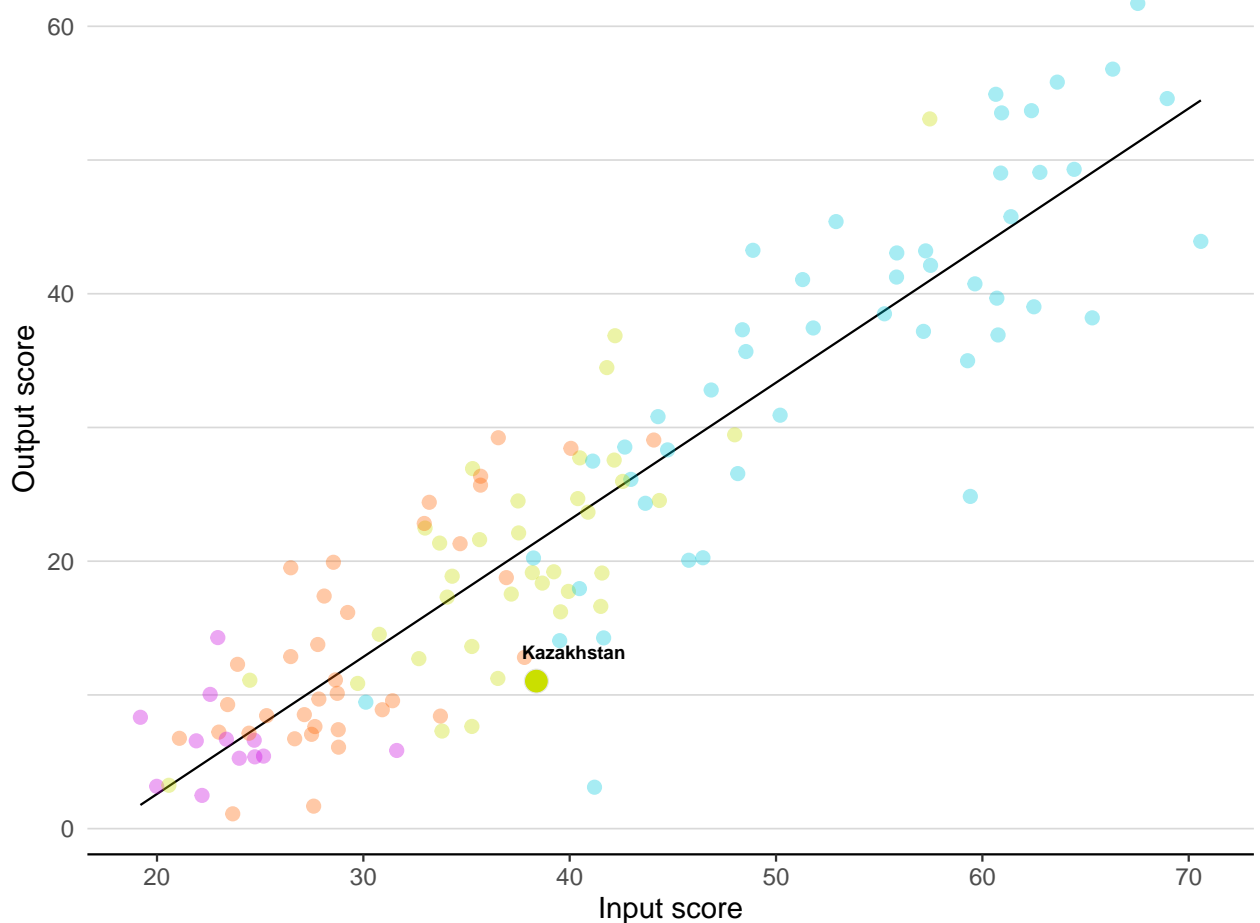


## EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

### Innovation input to output performance



Income    High income    Upper middle    Lower middle    Low income    — Fitted line

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

### The seven GII pillar scores for Kazakhstan



### Upper-middle-income group economies

Kazakhstan performs above the upper-middle-income group average in three pillars, namely: Institutions; Human capital and research; and, Infrastructure.

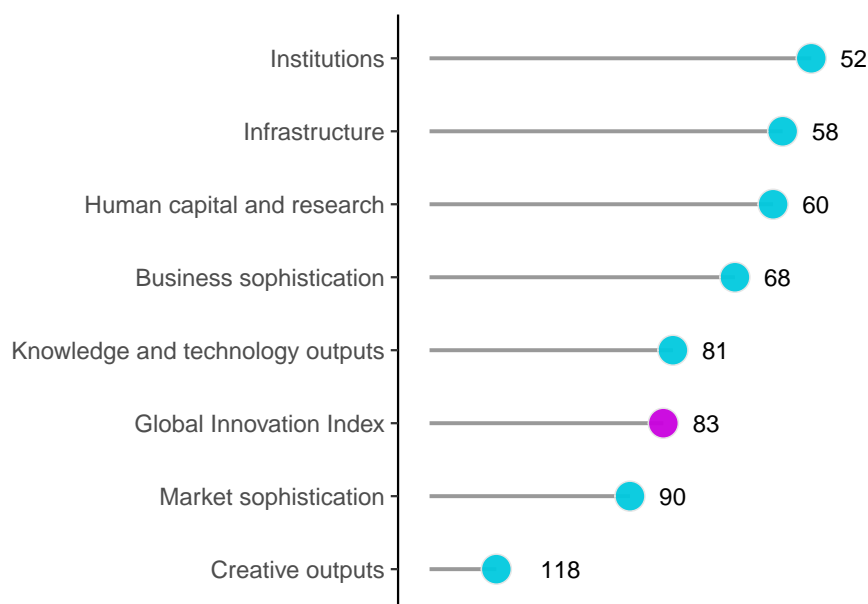
### Central and Southern Asia

Kazakhstan performs above the regional average in four pillars, namely: Institutions; Human capital and research; Infrastructure; and, Business sophistication.

## OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Kazakhstan performs best in Institutions and its weakest performance is in Creative outputs.

### The seven GII pillar ranks for Kazakhstan



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

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

[https://www.wipo.int/ipstats/en/statistics/country\\_profile/profile.jsp?code=KZ](https://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=KZ).

## INNOVATION STRENGTHS AND WEAKNESSES

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







### Strengths and weaknesses for Kazakhstan

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal	18	2.3.2	Gross expenditure on R&D, % GDP	101
2.1.5	Pupil-teacher ratio, secondary	12	2.3.3	Global corporate R&D investors, top 3, mn USD	38
2.2.1	Tertiary enrolment, % gross	33	4.2.2	Venture capital investors, deals/bn PPP\$ GDP	93
2.3.4	QS university ranking, top 3	36	4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	102
3.1.3	Government's online service	11	4.2.4	Venture capital received, value, % GDP	99
3.1.4	E-participation	26	5.2.1	University-industry R&D collaboration	117
3.2.1	Electricity output, GWh/mn pop.	33	5.2.2	State of cluster development and depth	120
5.1.5	Females employed w/advanced degrees, %	31	6.1.4	Scientific and technical articles/bn PPP\$ GDP	117
6.1.3	Utility models by origin/bn PPP\$ GDP	14	6.2.3	Software spending, % GDP	119
6.2.1	Labor productivity growth, %	31	7.2.2	National feature films/mn pop. 15–69	73

## Kazakhstan

83

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
97	65	Upper middle	CSA	19.0	536.3	28,043

	Score/Value	Rank		Score/Value	Rank
 <b>Institutions</b>	60.5	52	 <b>Business sophistication</b>	26.9	68
<b>1.1 Political environment</b>	61.1	61	<b>5.1 Knowledge workers</b>	41.2	45
1.1.1 Political and operational stability*	69.1	63	5.1.1 Knowledge-intensive employment, %	36.9	39 ◆
1.1.2 Government effectiveness*	53.1	59	5.1.2 Firms offering formal training, %	21.8	73
<b>1.2 Regulatory environment</b>	70.4	49	5.1.3 GERD performed by business, % GDP	0.1	72
1.2.1 Regulatory quality*	48.4	66	5.1.4 GERD financed by business, %	47.4	34
1.2.2 Rule of law*	35.8	85	5.1.5 Females employed w/advanced degrees, %	20.7	31 ● ◆
1.2.3 Cost of redundancy dismissal	8.7	18 ● ◆	<b>5.2 Innovation linkages</b>	14.3	123 ○ ◇
<b>1.3 Business environment</b>	50.1	57	5.2.1 University-industry R&D collaboration†	29.6	117 ○ ◇
1.3.1 Policies for doing business†	41.0	93	5.2.2 State of cluster development and depth†	33.9	120 ○ ◇
1.3.2 Entrepreneurship policies and culture*	59.2	23 ◆	5.2.3 GERD financed by abroad, % GDP	0.0	88
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	97
			5.2.5 Patent families/bn PPP\$ GDP	0.1	51
 <b>Human capital and research</b>	32.7	60	<b>5.3 Knowledge absorption</b>	25.2	89
<b>2.1 Education</b>	48.2	73	5.3.1 Intellectual property payments, % total trade	0.3	81
2.1.1 Expenditure on education, % GDP	2.9	111 ◇	5.3.2 High-tech imports, % total trade	10.1	40
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.2	46	5.3.3 ICT services imports, % total trade	0.9	88
2.1.3 School life expectancy, years	15.8	41	5.3.4 FDI net inflows, % GDP	2.1	70
2.1.4 PISA scales in reading, maths and science	402.4	64	5.3.5 Research talent, % in businesses	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary	8.3	12 ● ◆			
<b>2.2 Tertiary education</b>	36.7	42	 <b>Knowledge and technology outputs</b>	17.8	81
2.2.1 Tertiary enrolment, % gross	70.7	33 ●	<b>6.1 Knowledge creation</b>	12.3	66
2.2.2 Graduates in science and engineering, %	24.1	43	6.1.1 Patents by origin/bn PPP\$ GDP	1.8	39
2.2.3 Tertiary inbound mobility, %	5.5	45	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	73
<b>2.3 Research and development (R&amp;D)</b>	13.1	51	6.1.3 Utility models by origin/bn PPP\$ GDP	1.6	14 ●
2.3.1 Researchers, FTE/mn pop.	629.9	62	6.1.4 Scientific and technical articles/bn PPP\$ GDP	3.9	117 ○ ◇
2.3.2 Gross expenditure on R&D, % GDP	0.1	101 ○	6.1.5 Citable documents H-index	5.3	93
2.3.3 Global corporate R&D investors, top 3, mn USD	0.0	38 ○ ◇	<b>6.2 Knowledge impact</b>	20.3	93
2.3.4 QS university ranking, top 3*	34.7	36 ●	6.2.1 Labor productivity growth, %	2.2	31 ●
			6.2.2 New businesses/th pop. 15–64	3.5	39
 <b>Infrastructure</b>	46.2	58	6.2.3 Software spending, % GDP	0.0	119 ○ ◇
<b>3.1 Information and communication technologies (ICTs)</b>	85.7	25 ● ◆	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	0.9	109
3.1.1 ICT access*	90.2	43	6.2.5 High-tech manufacturing, %	15.3	75
3.1.2 ICT use*	72.2	51 ◆	<b>6.3 Knowledge diffusion</b>	20.8	71
3.1.3 Government's online service*	92.3	11 ● ◆	6.3.1 Intellectual property receipts, % total trade	0.0	99 ◇
3.1.4 E-participation*	88.1	26 ●	6.3.2 Production and export complexity	34.1	76
<b>3.2 General infrastructure</b>	33.8	52	6.3.3 High-tech exports, % total trade	5.2	36
3.2.1 Electricity output, GWh/mn pop.	5,774.2	33 ● ◆	6.3.4 ICT services exports, % total trade	0.3	115
3.2.2 Logistics performance*	35.3	67			
3.2.3 Gross capital formation, % GDP	26.6	41	 <b>Creative outputs</b>	4.3	118 ○ ◇
<b>3.3 Ecological sustainability</b>	19.2	98 ◇	<b>7.1 Intangible assets</b>	5.4	115 ◇
3.3.1 GDP/unit of energy use	6.4	109 ◇	7.1.1 Intangible asset intensity, top 15, %	n/a	n/a
3.3.2 Environmental performance*	40.9	68	7.1.2 Trademarks by origin/bn PPP\$ GDP	20.9	92
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	88	7.1.3 Global brand value, top 5,000, % GDP	3.7	70
			7.1.4 Industrial designs by origin/bn PPP\$ GDP	0.2	107
 <b>Market sophistication</b>	25.6	90	<b>7.2 Creative goods and services</b>	3.9	106 ◇
<b>4.1 Credit</b>	18.0	91	7.2.1 Cultural and creative services exports, % total trade	0.1	89
4.1.1 Finance for startups and scaleups*	37.3	44	7.2.2 National feature films/mn pop. 15–69	0.3	73 ○
4.1.2 Domestic credit to private sector, % GDP	25.6	107	7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a
4.1.3 Loans from microfinance institutions, % GDP	0.6	35	7.2.4 Printing and other media, % manufacturing	0.5	80
<b>4.2 Investment</b>	2.3	102 ○	7.2.5 Creative goods exports, % total trade	0.2	79
4.2.1 Market capitalization, % GDP	23.9	56	<b>7.3 Online creativity</b>	2.3	82
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.0	93 ○	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.3	113
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.0	102 ○	7.3.2 Country-code TLDs/th pop. 15–69	3.7	60
4.2.4 Venture capital received, value, % GDP	0.0	99 ○	7.3.3 GitHub commit pushes received/mn pop. 15–69	2.2	82
<b>4.3 Trade, diversification, and market scale</b>	56.6	66	7.3.4 Mobile app creation/bn PPP\$ GDP	3.0	65
4.3.1 Applied tariff rate, weighted avg., %	2.0	61			
4.3.2 Domestic industry diversification	70.6	86			
4.3.3 Domestic market scale, bn PPP\$	536.3	41			

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](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 Kazakhstan.

### Missing data for Kazakhstan

Code	Indicator name	Economy year	Model year	Source
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
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2021	PwC, GEMO

### Outdated data for Kazakhstan

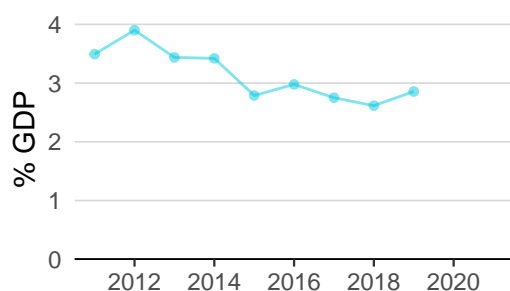
Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2019	2020	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	2016	2018	UNESCO Institute for Statistics
3.2.1	Electricity output, GWh/mn pop.	2019	2020	International Energy Agency
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	2020	2021	Refinitiv
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	2020	2021	Refinitiv
4.2.4	Venture capital received, value, % GDP	2020	2021	Refinitiv
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, %	2017	2021	International Labour Organization
5.2.3	GERD financed by abroad, % GDP	2018	2019	UNESCO Institute for Statistics
6.1.3	Utility models by origin/bn PPP\$ GDP	2018	2020	World Intellectual Property Organization
7.1.4	Industrial designs by origin/bn PPP\$ GDP	2018	2020	World Intellectual Property Organization



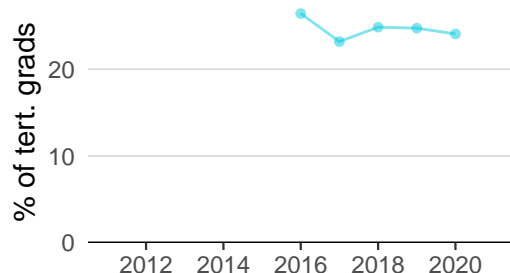
## KAZAKHSTAN'S INNOVATION SYSTEM

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

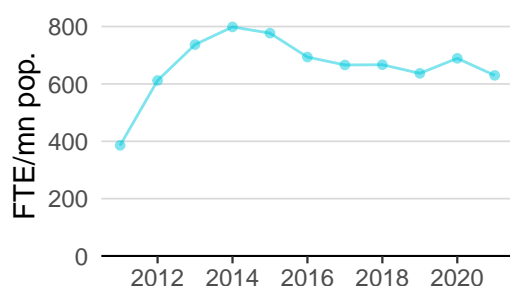
### Innovation inputs



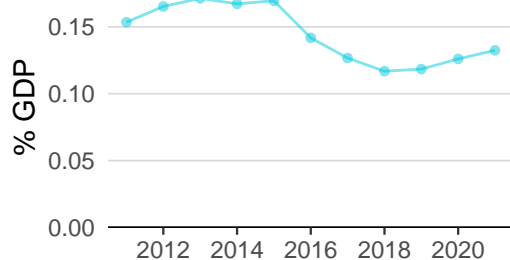
**2.1.1 Expenditure on education** was equal to 2.9% GDP in 2019—up by 9 percentage points from the year prior—and equivalent to an indicator rank of 111.



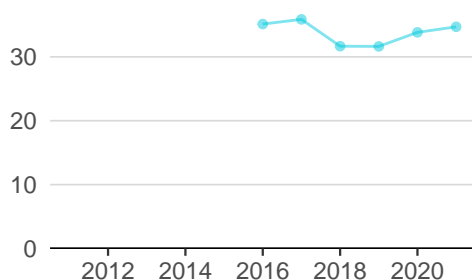
**2.2.2 Graduates in science and engineering** was equal to 24.1% of tert. grads in 2020—down by 3 percentage points from the year prior—and equivalent to an indicator rank of 43.



**2.3.1 Researchers** was equal to 629.9 FTE/mn pop. in 2021—down by 9 percentage points from the year prior—and equivalent to an indicator rank of 62.



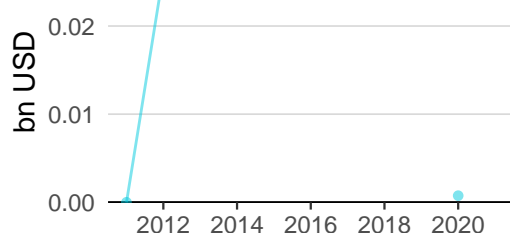
**2.3.2 Gross expenditure on R&D** was equal to 0.1% GDP in 2021—up by 5 percentage points from the year prior—and equivalent to an indicator rank of 101.



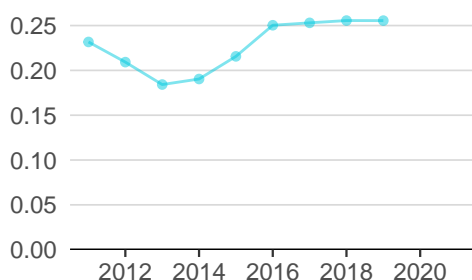
**2.3.4 QS university ranking** was equal to 34.7 in 2021—up by 3 percentage points from the year prior—and equivalent to an indicator rank of 36.



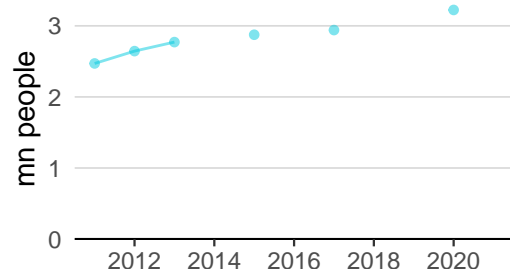
**3.1.1 ICT access** was equal to 9.0 in 2020 and equivalent to an indicator rank of 43.



**4.2.4 Venture capital received** was equal to 0.0 bn USD in 2020 and equivalent to an indicator rank of 99.

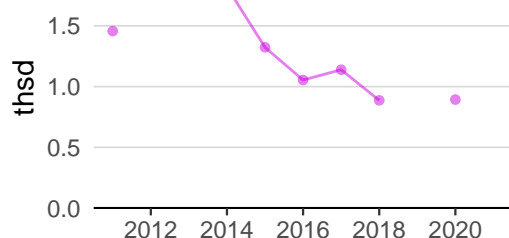


**4.3.2 Domestic industry diversification** was equal to 0.3 in 2019—effectively unchanged from the year prior—and equivalent to an indicator rank of 86.

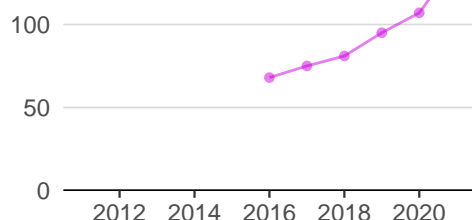


**5.1.1 Knowledge-intensive employment** was equal to 3.2 mn people in 2020 and equivalent to an indicator rank of 39.

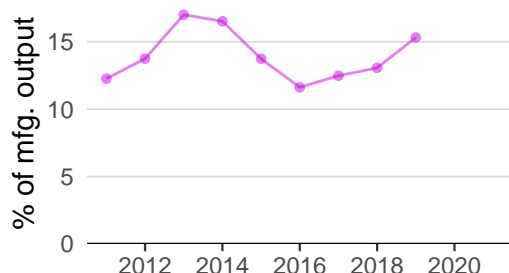
## Innovation outputs



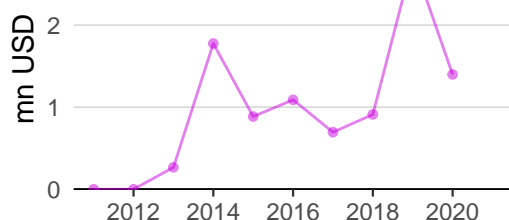
**6.1.1 Patents by origin** was equal to 0.9 thsd in 2020 and equivalent to an indicator rank of 39.



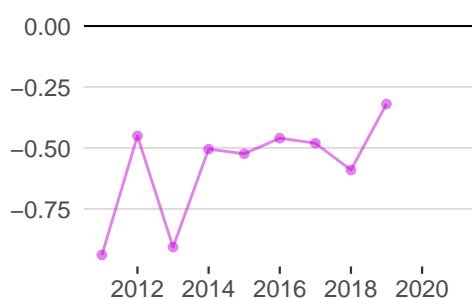
**6.1.5 Citable documents H-index** was equal to 138.0 in 2021—up by 29 percentage points from the year prior—and equivalent to an indicator rank of 93.



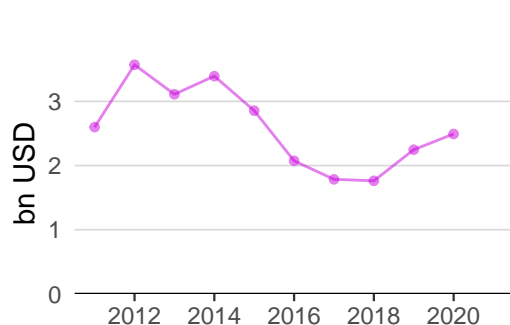
**6.2.5 High-tech manufacturing** was equal to 15.3% of mfg. output in 2019—up by 17 percentage points from the year prior—and equivalent to an indicator rank of 75.



**6.3.1 Intellectual property receipts** was equal to 1.4 mn USD in 2020—down by 50 percentage points from the year prior—and equivalent to an indicator rank of 99.



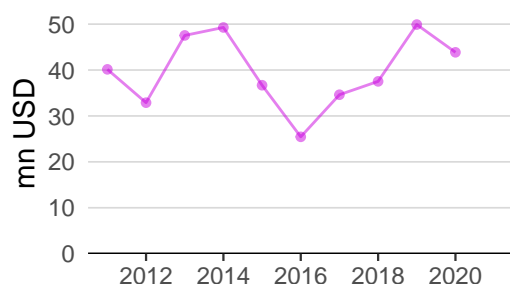
**6.3.2 Production and export complexity** was equal to -0.3 in 2019—up by 46 percentage points from the year prior—and equivalent to an indicator rank of 76.



**6.3.3 High-tech exports** was equal to 2.5 bn USD in 2020—up by 11 percentage points from the year prior—and equivalent to an indicator rank of 36.



**7.1.3 Global brand value** was equal to 713.4 mn USD in 2021—up by 13 percentage points from the year prior—and equivalent to an indicator rank of 70.



**7.2.1 Cultural and creative services exports** was equal to 43.9 mn USD in 2020—down by 12 percentage points from the year prior—and equivalent to an indicator rank of 89.

## KAZAKHSTAN'S INNOVATION TOP PERFORMERS

### 2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank
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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
AL-FARABI KAZAKH NATIONAL UNIVERSITY	46.8	175
L.N. GUMILYOV EURASIAN NATIONAL UNIVERSITY	32.7	328
M.O.AUEZOV SOUTH KAZAKHSTAN STATE UNIVERSITY	24.6	482=

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

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 Intangible asset intensity, top 15

Firm	Rank
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No observations

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

### 7.1.3 Global brand value, top 5,000

Brand	Industry	Rank
HALYK BANK	Banking	1
KAZAKHTELECOM	Telecoms	2

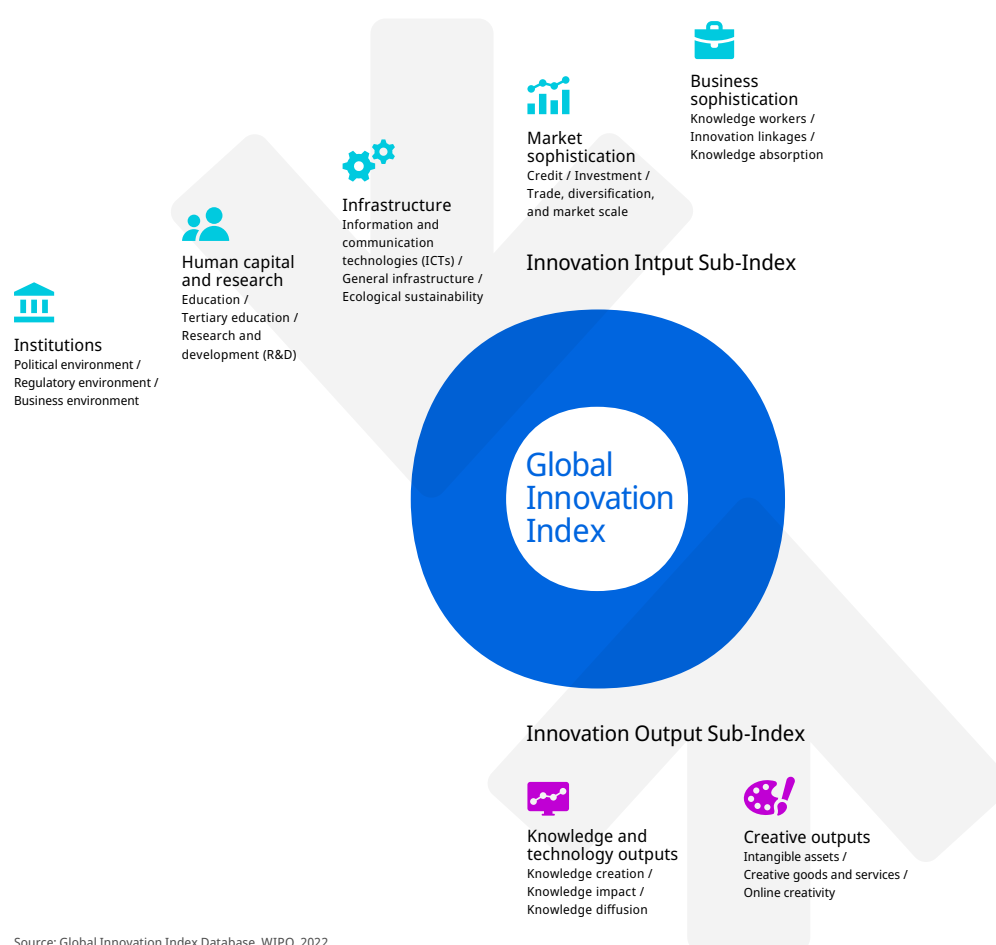
Source: Brand Finance (<https://brandirectory.com>).

Note: Rank corresponds to within economy ranks.

## ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.

Recognizing that innovation is a key driver of economic development, the GII aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a “tool for action” for economies that incorporate the GII into their innovation agendas.



The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs.

The GII has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each consisting of three sub-pillars.