

# GLOBAL INNOVATION INDEX 2019

## KAZAKHSTAN

**79th**

Kazakhstan ranks 79th among the 129 economies featured in the GII 2019.

The Global Innovation Index (GII) is a ranking of world economies based on 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 the GII model influence year-on-year comparisons of the GII ranks. The confidence interval for Kazakhstan's ranking in the GII 2019 is between 76 and 80.

### Kazakhstan's Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
<b>2019</b>	79	64	92
<b>2018</b>	74	55	91
<b>2017</b>	78	64	93

- Kazakhstan performs better in Innovation Inputs than Outputs.
- This year Kazakhstan ranks 64th in Innovation Inputs, worse than last year and the same compared to 2017.
- As for Innovation Outputs, Kazakhstan ranks 92nd. This position is worse than last year but better compared to 2017.

**21st**

Kazakhstan ranks 21st among the 34 upper middle-income economies.

**3rd**

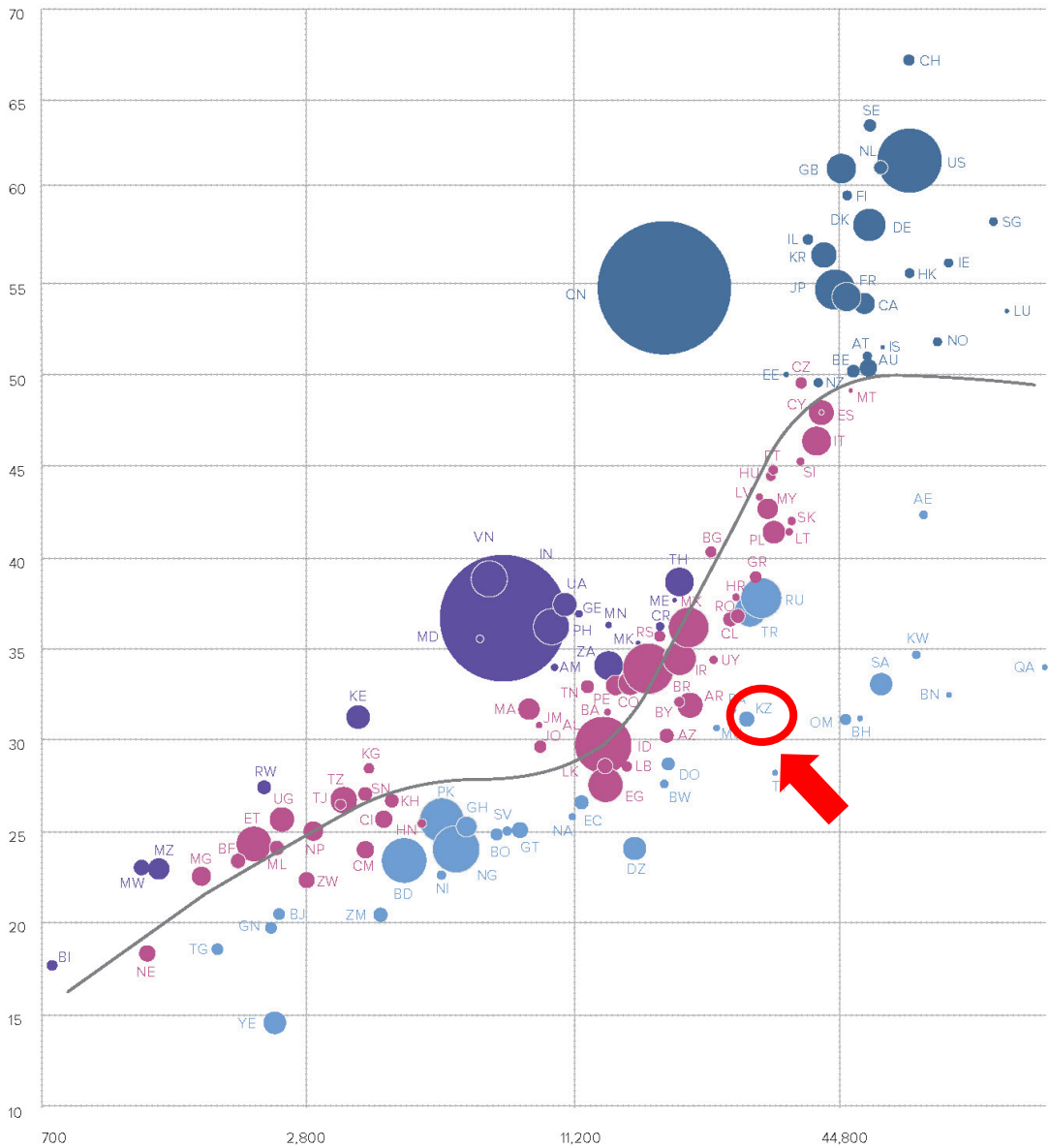
Kazakhstan ranks 3rd among the 9 economies in Central and Southern Asia.

# 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 considered Innovation under-performers relative to GDP.

Relative to GDP, Kazakhstan performs below its expected level of development.

## GII scores and GDP per capita in PPP US\$ (bubbles sized by population)



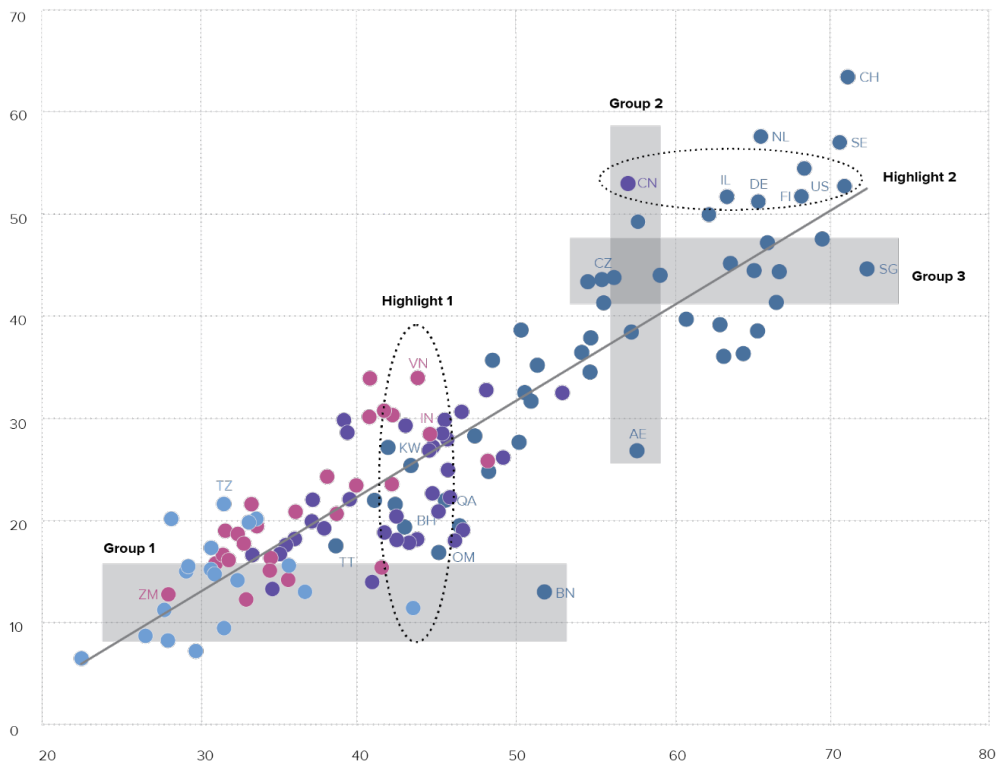
- ▲ GII score
- ▶ GDP per capita in PPP\$ (logarithmic scale)
- Innovation leaders
- Innovation achievers
- Performing at expectations for level of development
- Performing below expectations for level of development

# EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs, indicating which economies best translate innovation inputs into innovation outputs. Economies appearing above the line are effectively translating their costly innovation investments into more and higher-quality outputs. In contrast, those below the line are not effectively translating innovation inputs into outputs.

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

**Innovation input/output performance by income group, 2019**



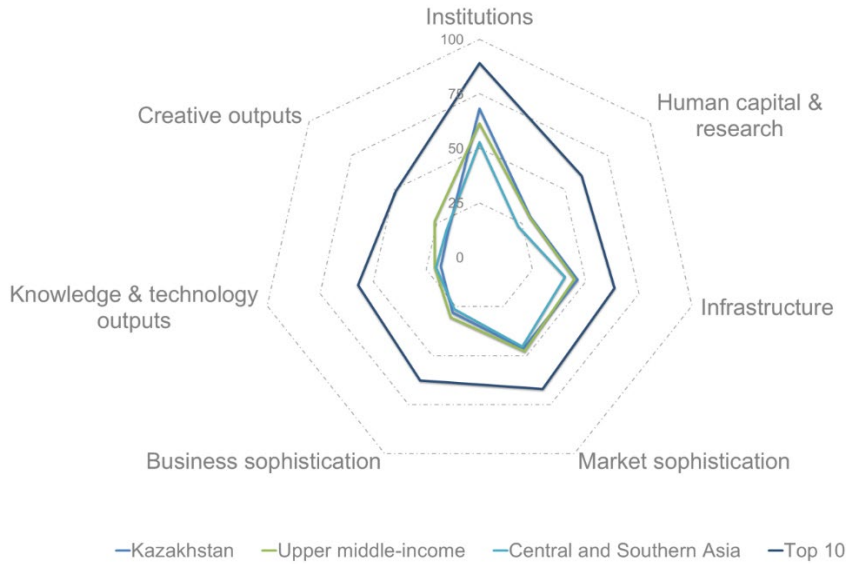
▲ Output score  
▶ Input score  
● High income  
● Upper-middle income  
● Lower-middle income  
● Low income  
— Fitted values

AE United Arab Emirates	CZ Czech Republic	NL Netherlands	TZ United Republic of Tanzania
BH Bahrain	DE Germany	OM Oman	US United States of America
BN Brunei Darussalam	FI Finland	QA Qatar	VN Viet Nam
CH Switzerland	IL Israel	SE Sweden	ZM Zambia
CN China	IN India	SG Singapore	
	KW Kuwait	TT Trinidad and Tobago	

Source: Global Innovation Index Database, Cornell, INSEAD, and WIPO, 2019.

# BENCHMARKING KAZAKHSTAN TO OTHER UPPER MIDDLE-INCOME ECONOMIES AND THE CENTRAL AND SOUTHERN ASIA REGION

**Kazakhstan's scores in the seven GII pillars**



## Upper middle-income economies

Kazakhstan has high scores in 3 out of the 7 GII pillars: Institutions, Human capital & research, and Infrastructure, which are above the average of the upper middle-income group.

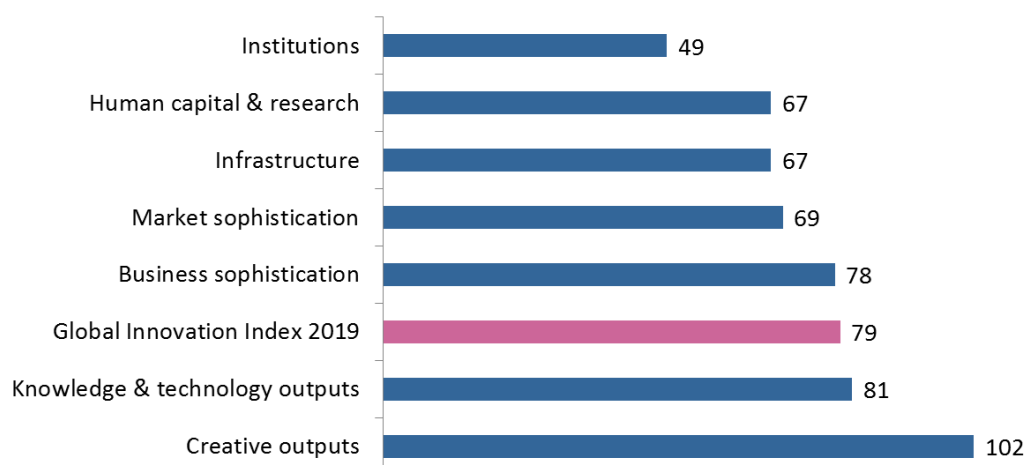
## Central and Southern Asia Region

Compared to other economies in Central and Southern Asia, Kazakhstan performs above average in 5 out of the 7 GII pillars: Institutions, Human capital & research, Infrastructure, Market sophistication, and Business sophistication.

Top ranks are found in areas such as Business environment, Information & communication technologies (ICTs), and Trade, competition, & market scale where the country ranks in the top 50 worldwide.

## OVERVIEW OF KAZAKHSTAN'S RANKINGS IN THE 7 GII AREAS

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



\*The highest possible ranking in each pillar is 1.

## KAZAKHSTAN'S INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of Kazakhstan's strengths and weaknesses in the GII 2019.

Strengths		
Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal, salary weeks	19
1.3	Business environment	31
1.3.1	Ease of starting a business*	33
1.3.2	Ease of resolving insolvency*	34
2.1.5	Pupil-teacher ratio, secondary	2
2.3.4	QS university ranking, average score top 3*	35
3.1.3	Government's online service*	32
4.2.1	Ease of protecting minority investors*	1
5.3.4	FDI net inflows, % GDP, 3-year average	22
6.1.3	Utility models by origin/bn PPP\$ GDP	16
6.2.1	Growth rate of PPP\$ GDP/worker, %, 3-year average	23

Weaknesses		
Code	Indicator name	Rank
2.3.3	Global R&D companies, top 3, in mn US\$	43
3.3.1	GDP/unit of energy use	109
4.2.3	Venture capital deals/bn PPP\$ GDP	75
5.2	Innovation linkages	118
6.1.4	Scientific & technical articles/bn PPP\$ GDP	116
6.2.3	Computer software spending, % GDP	120
6.3.1	Intellectual property receipts, % total trade	99
6.3.3	ICT services exports, % total trade	115
7.2.4	Printing & other media, % manufacturing	92
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	114
7.3.4	Mobile app creation/bn PPP\$ GDP	90

## **STRENGTHS**

- GII strengths for Kazakhstan are found in six of the seven GII pillars, and mostly on the innovation input side of the GII.
- Several of these strengths are in Institutions (49), the best ranked GII pillar for this country. Here Kazakhstan's strengths are sub-pillar Business environment (31) and indicators Cost of redundancy dismissal (19), Ease of starting a business (33), and Ease of resolving insolvency (34).
- In Human capital & research (67), Kazakhstan's strengths are indicators Quality of universities (35) and Pupil-teacher ratio, where it ranks 2nd globally.
- In Infrastructure (67), indicator Government's online service (32) is a GII strength for this country.
- In Market sophistication (69), Kazakhstan's strength is indicator Ease of protecting minority investors, where it takes the top spot in the world.
- In Business sophistication (78), indicator FDI inflows (22) is a strength for Kazakhstan.
- In Knowledge & technology outputs (81), Kazakhstan presents two strengths in indicators Utility models by origin (16) and Labor productivity growth (23).

## **WEAKNESSES**

- Kazakhstan's weaknesses in the GII are found in six of the seven GII pillars, and mostly on the innovation output side of the GII.
- Four of these weaknesses are in Knowledge & technology outputs (81), and in particular in indicators Scientific & technical articles (116), Computer software spending (120), Intellectual property receipts (99), and ICT services exports (115).
- Three weaknesses are in Creative outputs (102), notably in indicators Printing & other media (92), Generic top-level domains (TLDs) (114), and Mobile app creation (90).
- Four of the five input pillars present one weakness each. These are:
  - indicator Global R&D companies (43) in Human capital & research (67);
  - indicator GDP per unit of energy use (109) in Infrastructure (67);
  - indicator Venture capital deals (75) in Market sophistication (69); and
  - sub-pillar Innovation linkages (118) in Business sophistication (78).

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2018 rank
<b>92</b>	<b>64</b>	<b>Upper middle</b>	<b>CSA</b>	<b>18.4</b>	<b>507.6</b>	<b>27,549.8</b>	<b>74</b>
				Score/Value	Rank		
<b>INSTITUTIONS</b> .....				<b>68.3</b>	<b>49</b>		
<b>1.1</b>	<b>Political environment</b> .....		<b>54.6</b>	<b>66</b>			
1.1.1	Political and operational stability*.....		70.2	61			
1.1.2	Government effectiveness*.....		46.8	69			
<b>1.2</b>	<b>Regulatory environment</b> .....		<b>70.0</b>	<b>53</b>			
1.2.1	Regulatory quality*.....		46.5	62			
1.2.2	Rule of law*.....		35.5	87			
1.2.3	Cost of redundancy dismissal, salary weeks.....		8.7	19 ●			
<b>1.3</b>	<b>Business environment</b> .....		<b>80.4</b>	<b>31</b> ● ◆			
1.3.1	Ease of starting a business*.....		93.0	33 ●			
1.3.2	Ease of resolving insolvency*.....		67.8	34 ● ◆			
<b>HUMAN CAPITAL &amp; RESEARCH</b> .....				<b>29.8</b>	<b>67</b>		
<b>2.1</b>	<b>Education</b> .....		<b>44.3</b>	<b>72</b>			
2.1.1	Expenditure on education, % GDP.....		2.9	105 ◇			
2.1.2	Government funding/pupil, secondary, % GDP/cap... ..		20.2	49			
2.1.3	School life expectancy, years.....		15.3	45			
2.1.4	PISA scales in reading, maths, & science.....		416.4	53			
2.1.5	Pupil-teacher ratio, secondary.....		7.0	2 ● ◆			
<b>2.2</b>	<b>Tertiary education</b> .....		<b>34.5</b>	<b>54</b>			
2.2.1	Tertiary enrolment, % gross.....		53.3	53			
2.2.2	Graduates in science & engineering, %.....		24.8	31			
2.2.3	Tertiary inbound mobility, %.....		2.2	72			
<b>2.3</b>	<b>Research &amp; development (R&amp;D)</b> .....		<b>10.7</b>	<b>56</b>			
2.3.1	Researchers, FTE/mn pop.....		687.6	59			
2.3.2	Gross expenditure on R&D, % GDP.....		0.1	97			
2.3.3	Global R&D companies, avg. exp. top 3, mn US\$.....		0.0	43 ○ ◇			
2.3.4	QS university ranking, average score top 3*.....		31.7	35 ●			
<b>INFRASTRUCTURE</b> .....				<b>46.1</b>	<b>67</b>		
<b>3.1</b>	<b>Information &amp; communication technologies (ICTs)</b> .....		<b>76.2</b>	<b>40</b> ◆			
3.1.1	ICT access*.....		75.4	41 ◆			
3.1.2	ICT use*.....		58.9	58			
3.1.3	Government's online service*.....		86.8	32 ● ◆			
3.1.4	E-participation*.....		83.7	42			
<b>3.2</b>	<b>General infrastructure</b> .....		<b>35.4</b>	<b>63</b>			
3.2.1	Electricity output, kWh/mn pop.....		5,990.3	34 ◆			
3.2.2	Logistics performance*.....		34.9	70			
3.2.3	Gross capital formation, % GDP.....		25.5	42			
<b>3.3</b>	<b>Ecological sustainability</b> .....		<b>26.7</b>	<b>109</b> ◇			
3.3.1	GDP/unit of energy use.....		5.0	109 ○ ◇			
3.3.2	Environmental performance*.....		54.6	85			
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP..		0.3	99			
<b>MARKET SOPHISTICATION</b> .....				<b>46.3</b>	<b>69</b>		
<b>4.1</b>	<b>Credit</b> .....		<b>26.8</b>	<b>102</b>			
4.1.1	Ease of getting credit*.....		65.0	54			
4.1.2	Domestic credit to private sector, % GDP.....		29.9	95			
4.1.3	Microfinance gross loans, % GDP.....		0.2	46			
<b>4.2</b>	<b>Investment</b> .....		<b>44.9</b>	<b>57</b>			
4.2.1	Ease of protecting minority investors*.....		85.0	1 ● ◆			
4.2.2	Market capitalization, % GDP.....		25.4	52			
4.2.3	Venture capital deals/bn PPP\$ GDP.....		0.0	75 ○			
<b>4.3</b>	<b>Trade, competition, &amp; market scale</b> .....		<b>67.3</b>	<b>45</b>			
4.3.1	Applied tariff rate, weighted avg., %.....		2.4	58			
4.3.2	Intensity of local competition*.....		60.0	107 ◇			
4.3.3	Domestic market scale, bn PPP\$.....		507.6	40			
<b>BUSINESS SOPHISTICATION</b> .....				<b>28.1</b>	<b>78</b>		
<b>5.1</b>	<b>Knowledge workers</b> .....		<b>41.2</b>	<b>54</b>			
5.1.1	Knowledge-intensive employment, %.....		33.3	39 ◆			
5.1.2	Firms offering formal training, % firms.....		28.3	54			
5.1.3	GERD performed by business, % GDP.....		0.1	68			
5.1.4	GERD financed by business, %.....		39.6	45			
5.1.5	Females employed w/advanced degrees, %.....		17.5	33			
<b>5.2</b>	<b>Innovation linkages</b> .....		<b>15.6</b>	<b>118</b> ○ ◇			
5.2.1	University/industry research collaboration*.....		40.5	67			
5.2.2	State of cluster development*.....		34.4	110 ◇			
5.2.3	GERD financed by abroad, %.....		1.5	85			
5.2.4	JV-strategic alliance deals/bn PPP\$ GDP.....		0.0	74			
5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....		0.1	54			
<b>5.3</b>	<b>Knowledge absorption</b> .....		<b>27.6</b>	<b>92</b>			
5.3.1	Intellectual property payments, % total trade.....		0.3	80			
5.3.2	High-tech imports, % total trade.....		6.5	84			
5.3.3	ICT services imports, % total trade.....		0.6	99			
5.3.4	FDI net inflows, % GDP.....		6.2	22 ● ◆			
5.3.5	Research talent, % in business enterprise.....		n/a	n/a			
<b>KNOWLEDGE &amp; TECHNOLOGY OUTPUTS</b> .....				<b>18.2</b>	<b>81</b>		
<b>6.1</b>	<b>Knowledge creation</b> .....		<b>10.6</b>	<b>68</b>			
6.1.1	Patents by origin/bn PPP\$ GDP.....		2.4	36			
6.1.2	PCT patents by origin/bn PPP\$ GDP.....		0.0	80			
6.1.3	Utility models by origin/bn PPP\$ GDP.....		1.6	16 ●			
6.1.4	Scientific & technical articles/bn PPP\$ GDP.....		1.8	116 ○			
6.1.5	Citable documents H-index.....		3.5	110			
<b>6.2</b>	<b>Knowledge impact</b> .....		<b>29.5</b>	<b>96</b>			
6.2.1	Growth rate of PPP\$ GDP/worker, %.....		3.1	23 ●			
6.2.2	New businesses/th pop. 15-64.....		2.2	47			
6.2.3	Computer software spending, % GDP.....		0.0	120 ○ ◇			
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....		0.8	113			
6.2.5	High- & medium-high-tech manufactures, %.....		0.1	84			
<b>6.3</b>	<b>Knowledge diffusion</b> .....		<b>14.7</b>	<b>78</b>			
6.3.1	Intellectual property receipts, % total trade.....		0.0	99 ○ ◇			
6.3.2	High-tech net exports, % total trade.....		3.6	41			
6.3.3	ICT services exports, % total trade.....		0.2	115 ○			
6.3.4	FDI net outflows, % GDP.....		1.6	38			
<b>CREATIVE OUTPUTS</b> .....				<b>18.4</b>	<b>102</b> ◇		
<b>7.1</b>	<b>Intangible assets</b> .....		<b>31.5</b>	<b>103</b>			
7.1.1	Trademarks by origin/bn PPP\$ GDP.....		18.8	90			
7.1.2	Industrial designs by origin/bn PPP\$ GDP.....		0.2	98			
7.1.3	ICTs & business model creation*.....		54.7	87			
7.1.4	ICTs & organizational model creation*.....		48.2	87			
<b>7.2</b>	<b>Creative goods &amp; services</b> .....		<b>6.8</b>	<b>96</b>			
7.2.1	Cultural & creative services exports, % total trade.....		0.1	91			
7.2.2	National feature films/mn pop. 15-69.....		6.0	37			
7.2.3	Entertainment & Media market/th pop. 15-69.....		n/a	n/a			
7.2.4	Printing & other media, % manufacturing.....		0.5	92 ○			
7.2.5	Creative goods exports, % total trade.....		0.1	93			
<b>7.3</b>	<b>Online creativity</b> .....		<b>3.8</b>	<b>71</b>			
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.....		0.3	114 ○			
7.3.2	Country-code TLDs/th pop. 15-69.....		3.2	60			
7.3.3	Wikipedia edits/mn pop. 15-69.....		17.3	52			
7.3.4	Mobile app creation/bn PPP\$ GDP.....		0.0	90 ○			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; \* an index; † a survey question. ⊕ indicates that the economy's data are older than the base year; see Appendix II for details, including the year of the data, at <http://globalinnovationindex.org>. 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 data that are missing or are outdated for Kazakhstan.

### Missing data

Code	Indicator name	Country year	Model year	Source
5.3.5	Research talent, % in business enterprise	n/a	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2017	PwC

### Outdated data

Code	Indicator name	Country year	Model year	Source
2.1.4	PISA scales in reading, maths & science	2012	2015	OECD Programme for International Student Assessment (PISA)
2.3.1	Researchers, FTE/mn pop.	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.1	Knowledge-intensive employment, %	2015	2017	Source: International Labour Organization
5.1.3	GERD performed by business, % GDP	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.5	Females employed w/advanced degrees, %	2013	2017	International Labour Organization
7.1.1	Trademarks by origin/bn PPP\$ GDP	2016	2017	World Intellectual Property Organization
7.3.3	Wikipedia edits/mn pop. 15–69	2016	2017	Wikimedia Foundation

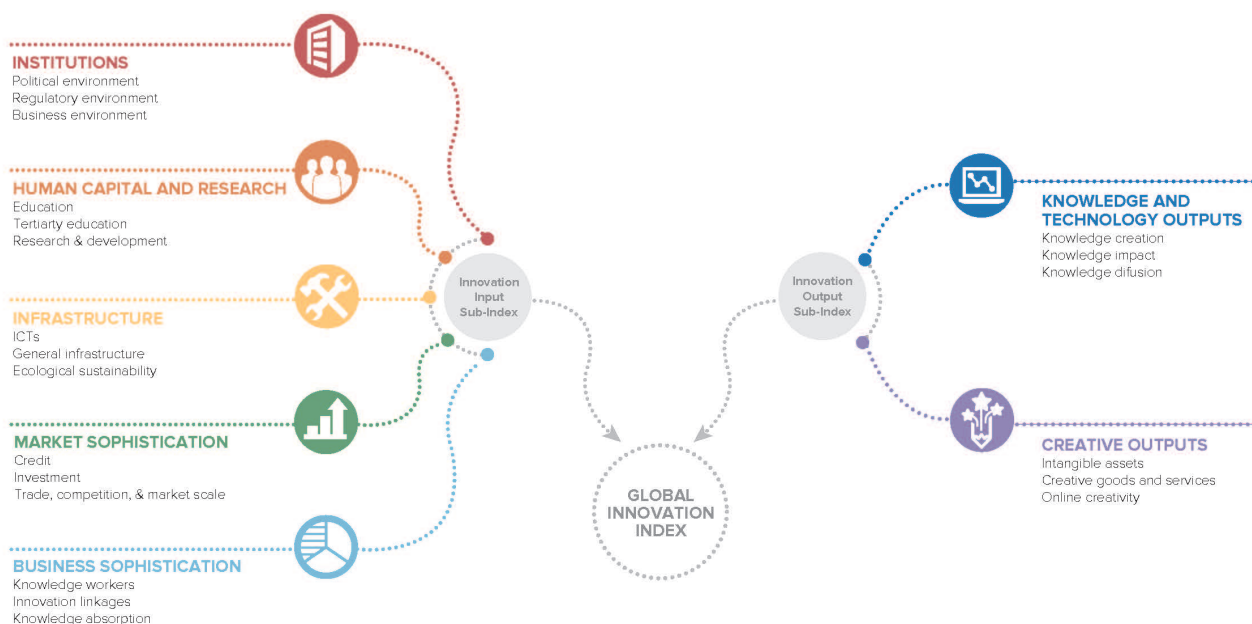


# ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2019, the GIi presents its 12<sup>th</sup> edition devoted to the theme **Creating Healthy Lives—The Future of Medical Innovation**.

Recognizing that innovation is a key driver of economic development, the GIi aims to provide a rich innovation ranking and 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 countries that incorporate the GIi into their innovation agendas.

## Framework of the Global Innovation Index 2019



The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that includes 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 containing three sub-pillars.

