

# GLOBAL INNOVATION INDEX 2019

## THE RUSSIAN FEDERATION

**46th**

The Russian Federation ranks 46th 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 the Russian Federation 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 the Russian Federation's ranking in the GII 2019 is between 43 and 48.

### The Russian Federation's Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
<b>2019</b>	46	41	59
<b>2018</b>	46	43	56
<b>2017</b>	45	43	51

- The Russian Federation performs better in Innovation Inputs than Outputs.
- This year the Russian Federation ranks 41st in Innovation Inputs, better than last year and compared to 2017.
- As for Innovation Outputs, the Russian Federation ranks 59th. This position is worse than last year and compared to 2017.

**6th**

The Russian Federation ranks 6th among the 34 upper middle-income economies.

**31st**

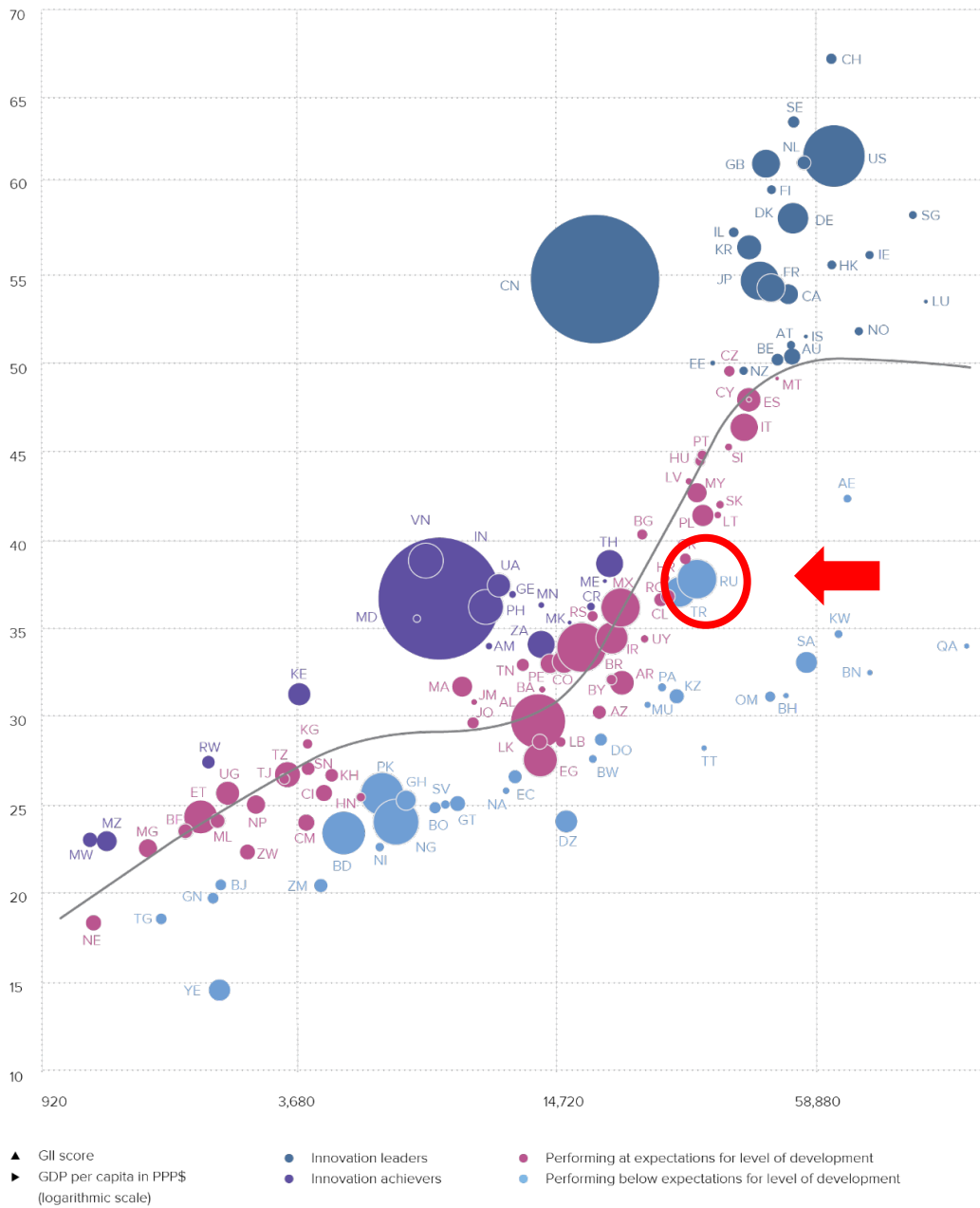
The Russian Federation ranks 31st among the 39 economies in Europe.

# 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, the Russian Federation performs below its expected level of development.

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

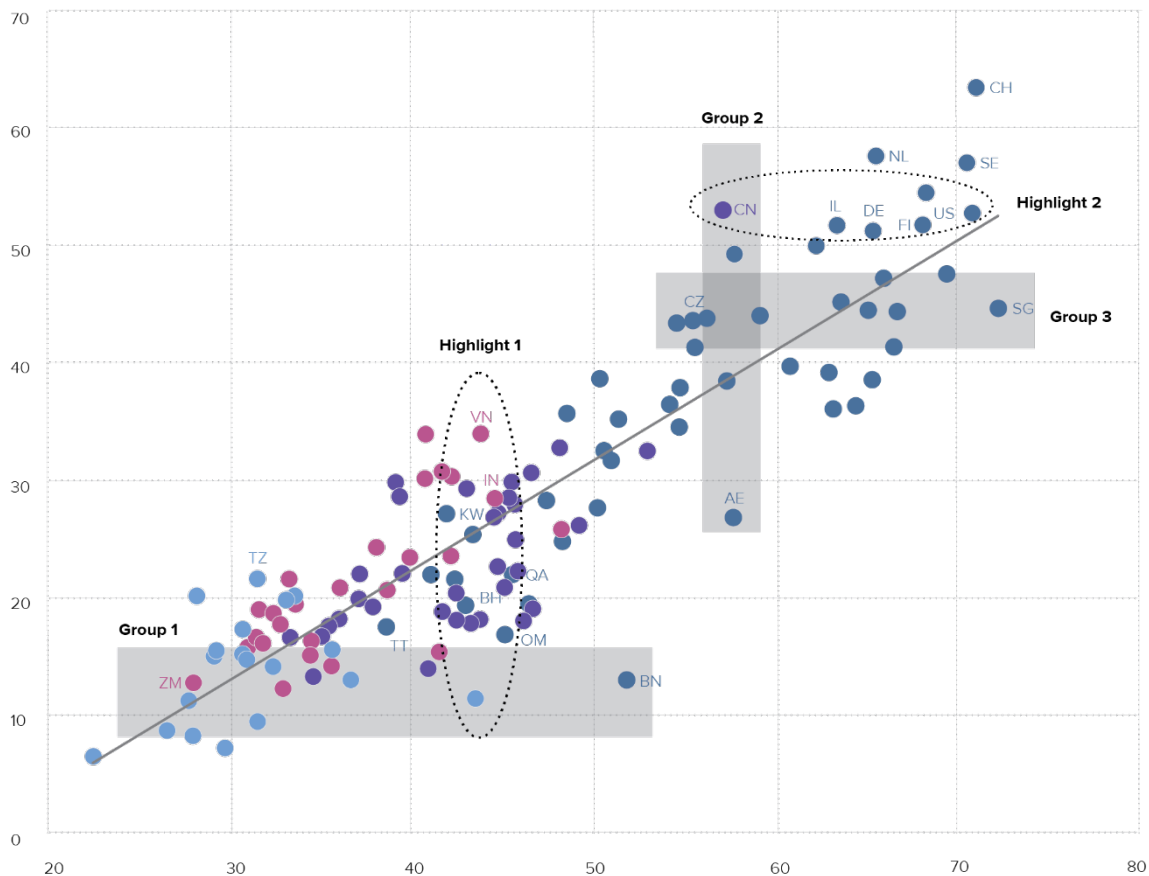


# EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

The Russian Federation produces less innovation outputs relative to its level of innovation investments.

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

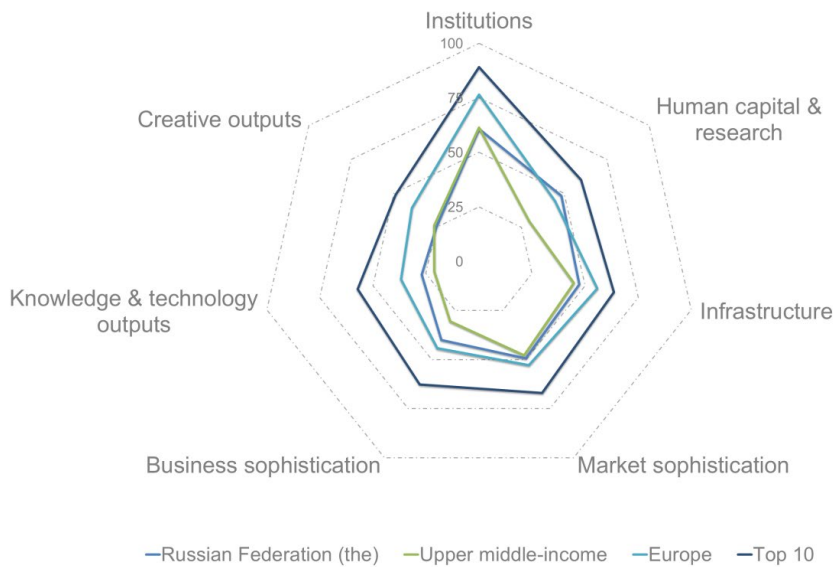


- ▲ Output score
- ▶ Input score
- High income
- Upper-middle income
- Lower-middle income
- Low income
- Fitted values

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	

# BENCHMARKING THE RUSSIAN FEDERATION TO OTHER UPPER MIDDLE-INCOME ECONOMIES AND THE EUROPE REGION

## The Russian Federation's scores in the seven GII pillars



### Upper middle-income economies

The Russian Federation has high scores in 5 out of the 7 GII pillars: Human capital & research, Infrastructure, Market sophistication, Business sophistication, and Knowledge & technology outputs, which are above the average of the upper middle-income group.

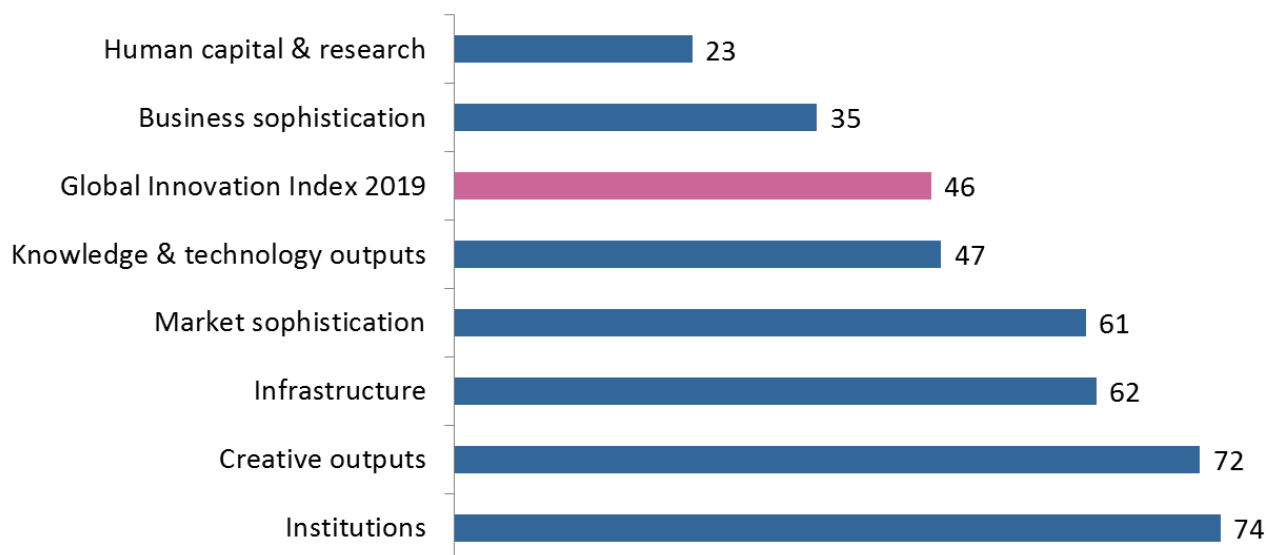
### Europe Region

Compared to other economies in Europe, the Russian Federation performs above average in 1 out of the 7 GII pillars: Human capital & research.

Top ranks are found in areas such as Tertiary education, Research and development (R&D), Information & communication technologies (ICTs), Trade, competition, & market scale, Knowledge workers, and Knowledge creation, where the country ranks in the top 30 worldwide.

## OVERVIEW OF THE RUSSIAN FEDERATION'S RANKINGS IN THE 7 GII AREAS

The Russian Federation performs the best in Human capital & research and its weakest performance is in Institutions.



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

## THE RUSSIAN FEDERATION'S INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
2.1.5	Pupil-teacher ratio, secondary	15	1.1.1	Political & operational stability*	91
2.2	Tertiary education	14	1.2	Regulatory environment	95
2.2.1	Tertiary enrolment, % gross	17	1.2.1	Regulatory quality*	103
2.2.2	Graduates in science & engineering, %	10	1.2.2	Rule of law*	111
4.3	Trade, competition, & market scale	11	3.3	Ecological sustainability	101
4.3.3	Domestic market scale, bn PPP\$	6	3.3.1	GDP/unit of energy use	113
5.1.1	Knowledge-intensive employment, %	18	3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	112
5.1.5	Females employed w/advanced degrees, %	7	4.1.3	Microfinance gross loans, % GDP	73
5.3.1	Intellectual property payments, % total trade	18	4.2	Investment	102
6.1.1	Patents by origin/bn PPP\$ GDP	20	4.2.3	Venture capital deals/bn PPP\$ GDP	77
6.1.3	Utility models by origin/bn PPP\$ GDP	8	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	111
6.1.5	Citable documents H index	22	7.1.3	ICTs & business model creation†	91
			7.2.4	Printing & other media, % manufacturing	78

## **STRENGTHS**

- GII strengths for the Russian Federation are found in four of the seven GII pillars.
- Most of them are in Human capital & research (23), where strengths are sub-pillar Tertiary education (14) and indicators Pupil-teacher ratio (15), Tertiary enrolment (17), and Graduates in science & engineering (10).
- Other three relative strengths are found in Business sophistication (35), and in particular indicators Knowledge-intensive employment (18), Females employed with advanced degrees (7), and Intellectual property payments (18).
- In Market sophistication (61), the Russian Federation's strengths are sub-pillar Trade, competition, & market scale (11) and indicator Domestic market scale (6).
- In Knowledge & technology outputs (47), indicators Patents by origin (20), Utility models by origin (8), and Quality of scientific publications (22) are GII strengths for the country.

## **WEAKNESSES**

- The Russian Federation's weaknesses in the GII are found in five of the seven GII pillars.
- In Institutions (74), the Russian Federation's weaknesses are sub-pillar Regulatory environment (95) and indicators Political & operational stability (91), Regulatory quality (103), and Rule of law (111).
- In Infrastructure (62), relative GII weaknesses are sub-pillar Ecological sustainability (101) and two of its three indicators - GDP per unit of energy use (113) and ISO 14001 environmental certificates (112).
- In Market sophistication (61), the Russian Federation's weaknesses are sub-pillar Investment (102) as well as indicators Microfinance gross loans (73) and Venture capital deals (77).
- In Knowledge & technology outputs (47), indicator ISO 9001 quality certificates (111) is a relative weakness for the country.
- In Creative outputs (72), GII weaknesses are two indicators: ICTs & business model creation (91) and Printing & other media (78).
- Human capital & research (23) and Business sophistication (35), the best ranked pillars for the Russian Federation, do not present any relative weakness.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2018 rank
59	41	Upper middle	EUR	144.0	4,179.6	29,266.9	46
				Score/Value	Rank		
<b>INSTITUTIONS</b> .....				60.9	74		
<b>1.1</b>	<b>Political environment</b> .....		50.2	83			
1.1.1	Political and operational stability*.....		61.4	91	○		
1.1.2	Government effectiveness*.....		44.7	76			
<b>1.2</b>	<b>Regulatory environment</b> .....		56.5	95	○		
1.2.1	Regulatory quality*.....		29.2	103	○		
1.2.2	Rule of law*.....		25.4	111	○	◇	
1.2.3	Cost of redundancy dismissal, salary weeks.....		17.3	73			
<b>1.3</b>	<b>Business environment</b> .....		75.8	43			
1.3.1	Ease of starting a business*.....		93.0	29			
1.3.2	Ease of resolving insolvency*.....		58.6	50			
<b>HUMAN CAPITAL &amp; RESEARCH</b> .....				48.3	23	◇	
<b>2.1</b>	<b>Education</b> .....		57.6	35			
2.1.1	Expenditure on education, % GDP.....		3.8	86			
2.1.2	Government funding/pupil, secondary, % GDP/cap... n/a		n/a	n/a			
2.1.3	School life expectancy, years.....		15.5	37			
2.1.4	PISA scales in reading, maths, & science.....		491.8	26	◆		
2.1.5	Pupil-teacher ratio, secondary.....		8.8	15	●	◆	
<b>2.2</b>	<b>Tertiary education</b> .....		50.3	14	●	◆	
2.2.1	Tertiary enrolment, % gross.....		81.8	17	●	◆	
2.2.2	Graduates in science & engineering, %.....		30.9	10	●	◆	
2.2.3	Tertiary inbound mobility, %.....		3.9	54			
<b>2.3</b>	<b>Research &amp; development (R&amp;D)</b> .....		36.9	30	◆		
2.3.1	Researchers, FTE/mn pop.....		2,851.7	33	◆		
2.3.2	Gross expenditure on R&D, % GDP.....		1.1	33	◆		
2.3.3	Global R&D companies, avg. exp. top 3, mn US\$.....		42.3	40	◆		
2.3.4	QS university ranking, average score top 3*.....		46.7	24	◆		
<b>INFRASTRUCTURE</b> .....				47.1	62		
<b>3.1</b>	<b>Information &amp; communication technologies (ICTs)</b> .....		80.7	29	◆		
3.1.1	ICT access*.....		74.0	51	◆		
3.1.2	ICT use*.....		64.9	45	◆		
3.1.3	Government's online service*.....		91.7	25	◆		
3.1.4	E-participation*.....		92.1	23	◆		
<b>3.2</b>	<b>General infrastructure</b> .....		31.5	81			
3.2.1	Electricity output, kWh/mn pop.....		7,544.3	28	◆		
3.2.2	Logistics performance*.....		32.4	74			
3.2.3	Gross capital formation, % GDP.....		21.2	86			
<b>3.3</b>	<b>Ecological sustainability</b> .....		29.2	101	○	◇	
3.3.1	GDP/unit of energy use.....		4.3	113	○	◇	
3.3.2	Environmental performance*.....		63.8	47			
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP..		0.2	112	○		
<b>MARKET SOPHISTICATION</b> .....				49.4	61		
<b>4.1</b>	<b>Credit</b> .....		34.6	69			
4.1.1	Ease of getting credit*.....		80.0	20			
4.1.2	Domestic credit to private sector, % GDP.....		52.7	62			
4.1.3	Microfinance gross loans, % GDP.....		0.0	73	○		
<b>4.2</b>	<b>Investment</b> .....		34.7	102	○		
4.2.1	Ease of protecting minority investors*.....		61.7	54			
4.2.2	Market capitalization, % GDP.....		38.9	39			
4.2.3	Venture capital deals/bn PPP\$ GDP.....		0.0	77	○		
<b>4.3</b>	<b>Trade, competition, &amp; market scale</b> .....		78.8	11	●	◆	
4.3.1	Applied tariff rate, weighted avg., %.....		3.6	71			
4.3.2	Intensity of local competition*.....		70.9	51			
4.3.3	Domestic market scale, bn PPP\$.....		4,179.6	6	●	◆	
<b>BUSINESS SOPHISTICATION</b> .....				40.0	35	◆	
<b>5.1</b>	<b>Knowledge workers</b> .....		58.0	25	◆		
5.1.1	Knowledge-intensive employment, %.....		44.3	18	●	◆	
5.1.2	Firms offering formal training, % firms.....		46.2	27			
5.1.3	GERD performed by business, % GDP.....		0.7	31	◆		
5.1.4	GERD financed by business, %.....		30.2	58			
5.1.5	Females employed w/advanced degrees, %.....		26.3	7	●	◆	
<b>5.2</b>	<b>Innovation linkages</b> .....		19.1	93			
5.2.1	University/industry research collaboration*.....		49.6	40			
5.2.2	State of cluster development*.....		41.4	89			
5.2.3	GERD financed by abroad, %.....		2.6	73			
5.2.4	JV-strategic alliance deals/bn PPP\$ GDP.....		0.0	69			
5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....		0.1	52			
<b>5.3</b>	<b>Knowledge absorption</b> .....		42.7	32	◆		
5.3.1	Intellectual property payments, % total trade.....		1.7	18	●	◆	
5.3.2	High-tech imports, % total trade.....		9.3	39			
5.3.3	ICT services imports, % total trade.....		1.5	45			
5.3.4	FDI net inflows, % GDP.....		1.6	92			
5.3.5	Research talent, % in business enterprise.....		47.1	27	◆		
<b>KNOWLEDGE &amp; TECHNOLOGY OUTPUTS</b> ....				27.1	47		
<b>6.1</b>	<b>Knowledge creation</b> .....		29.9	30	◆		
6.1.1	Patents by origin/bn PPP\$ GDP.....		5.8	20	●	◆	
6.1.2	PCT patents by origin/bn PPP\$ GDP.....		0.2	47			
6.1.3	Utility models by origin/bn PPP\$ GDP.....		2.5	8	●	◆	
6.1.4	Scientific & technical articles/bn PPP\$ GDP.....		6.9	63			
6.1.5	Citable documents H-index.....		37.4	22	●	◆	
<b>6.2</b>	<b>Knowledge impact</b> .....		33.9	77			
6.2.1	Growth rate of PPP\$ GDP/worker, %.....		1.0	63			
6.2.2	New businesses/th pop. 15-64.....		4.3	29			
6.2.3	Computer software spending, % GDP.....		0.2	63			
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....		0.9	111	○		
6.2.5	High- & medium-high-tech manufactures, %.....		0.3	43			
<b>6.3</b>	<b>Knowledge diffusion</b> .....		17.6	63			
6.3.1	Intellectual property receipts, % total trade.....		0.2	39	◆		
6.3.2	High-tech net exports, % total trade.....		2.6	49			
6.3.3	ICT services exports, % total trade.....		1.3	71			
6.3.4	FDI net outflows, % GDP.....		1.9	30			
<b>CREATIVE OUTPUTS</b> .....				25.1	72		
<b>7.1</b>	<b>Intangible assets</b> .....		39.4	71			
7.1.1	Trademarks by origin/bn PPP\$ GDP.....		58.1	38			
7.1.2	Industrial designs by origin/bn PPP\$ GDP.....		0.9	69			
7.1.3	ICTs & business model creation*.....		53.3	91	○		
7.1.4	ICTs & organizational model creation*.....		58.4	49			
<b>7.2</b>	<b>Creative goods &amp; services</b> .....		9.8	88			
7.2.1	Cultural & creative services exports, % total trade.....		1.0	27			
7.2.2	National feature films/mn pop. 15-69.....		1.2	76			
7.2.3	Entertainment & Media market/th pop. 15-69.....		6.5	43			
7.2.4	Printing & other media, % manufacturing.....		0.8	78	○		
7.2.5	Creative goods exports, % total trade.....		0.3	68			
<b>7.3</b>	<b>Online creativity</b> .....		12.1	47			
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.....		3.5	61			
7.3.2	Country-code TLDs/th pop. 15-69.....		13.3	34			
7.3.3	Wikipedia edits/mn pop. 15-69.....		19.7	49			
7.3.4	Mobile app creation/bn PPP\$ GDP.....		18.1	26			

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 the Russian Federation.

### Missing data

Code	Indicator name	Country year	Model year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2015	UNESCO Institute for Statistics

### Outdated data

Code	Indicator name	Country year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2012	2017	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2016	2017	UNESCO Institute for Statistics
5.1.2	Firms offering formal training, % firms	2012	2013	World Bank

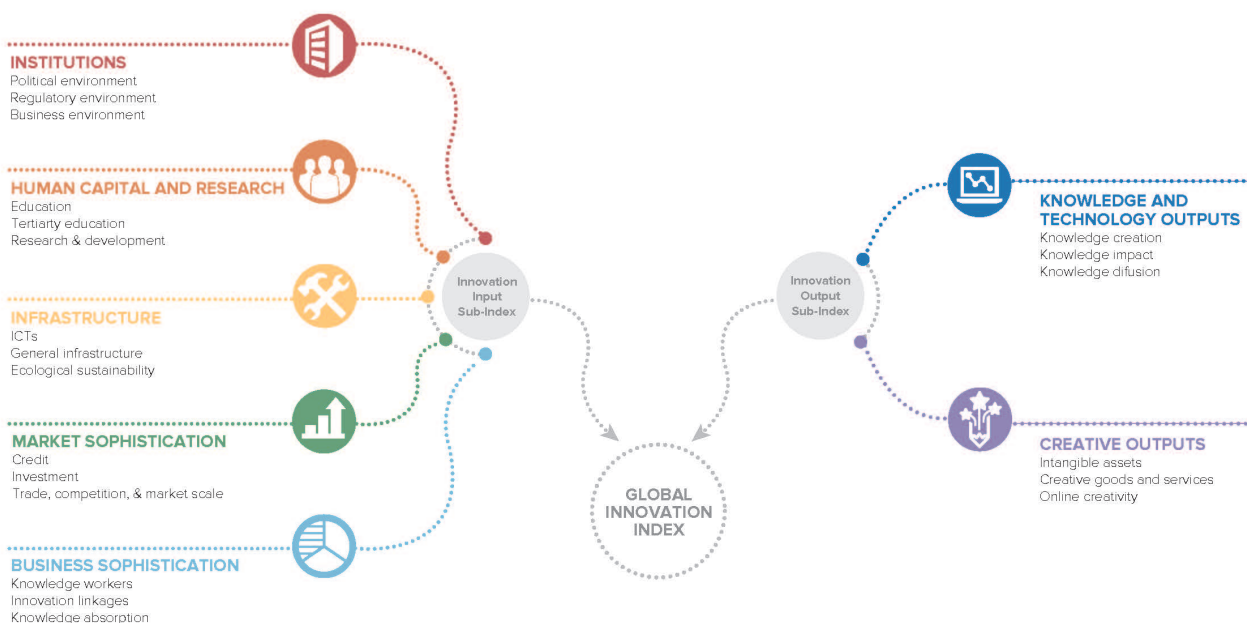


# ABOUT THE GLOBAL INNOVATION INDEX

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.

