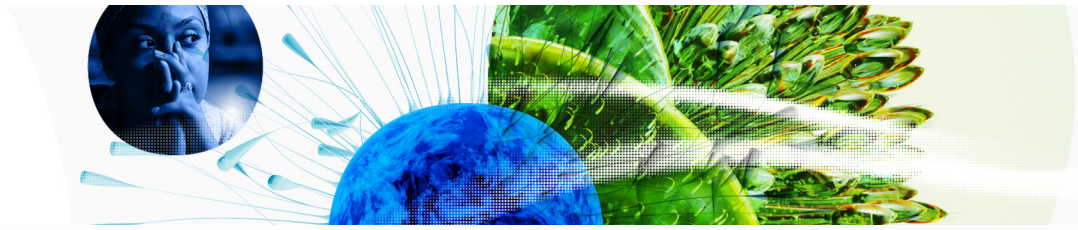
Global Innovation Index 2023



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**.

Russian Federation ranking in the Global Innovation Index 2023

> Russian Federation ranks 51st among the 132 economies featured in the GII 2023.

> Russian Federation ranks 7th among the 33 upper-middle-income group economies.

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

> Russian Federation GII Ranking (2020-2023)

The table shows the rankings of Russian Federation 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 Russian Federation in the GII 2023 is between ranks 48 and 55.

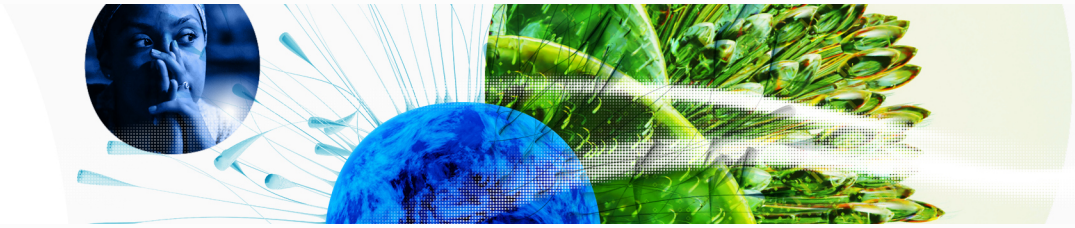
	GII Position	Innovation Inputs	Innovation Outputs
2020	47th	42nd	58th
2021	45th	43rd	52nd
2022	47th	46th	50th
2023	51st	58th	53rd

Russian Federation performs better in innovation outputs than innovation inputs in 2023.

This year Russian Federation ranks 58th in innovation inputs. This position is lower than last year.

Russian Federation ranks 53rd in innovation outputs. This position is lower than last year.

Global Innovation Index 2023



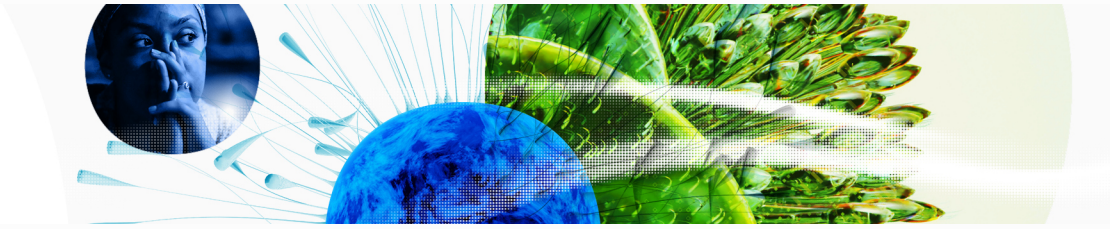
→ Expected vs. observed innovation performance

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

> Innovation overperformers relative to their economic development

Global Innovation Index 2023

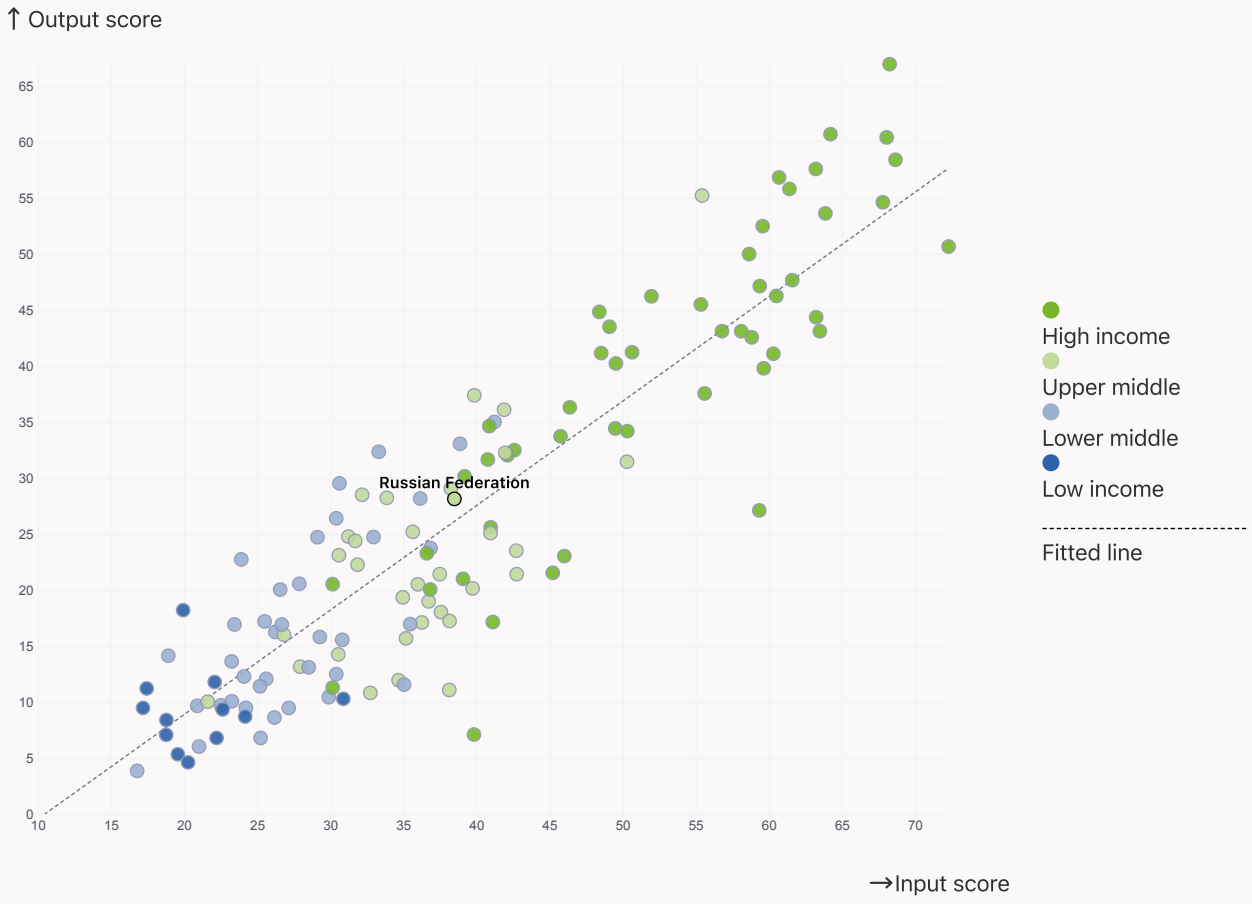


→ Effectively translating innovation investments into innovation outputs

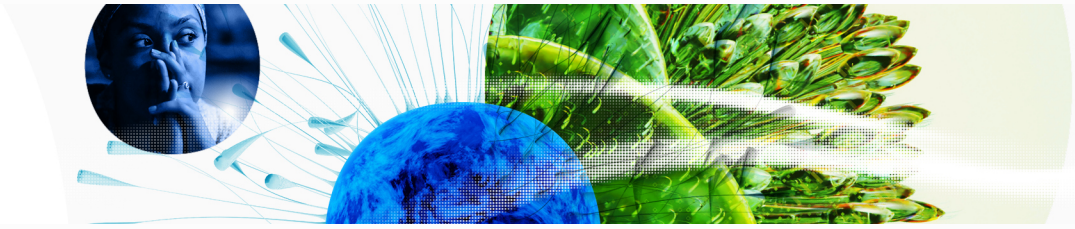
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

> Russian Federation produces more innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

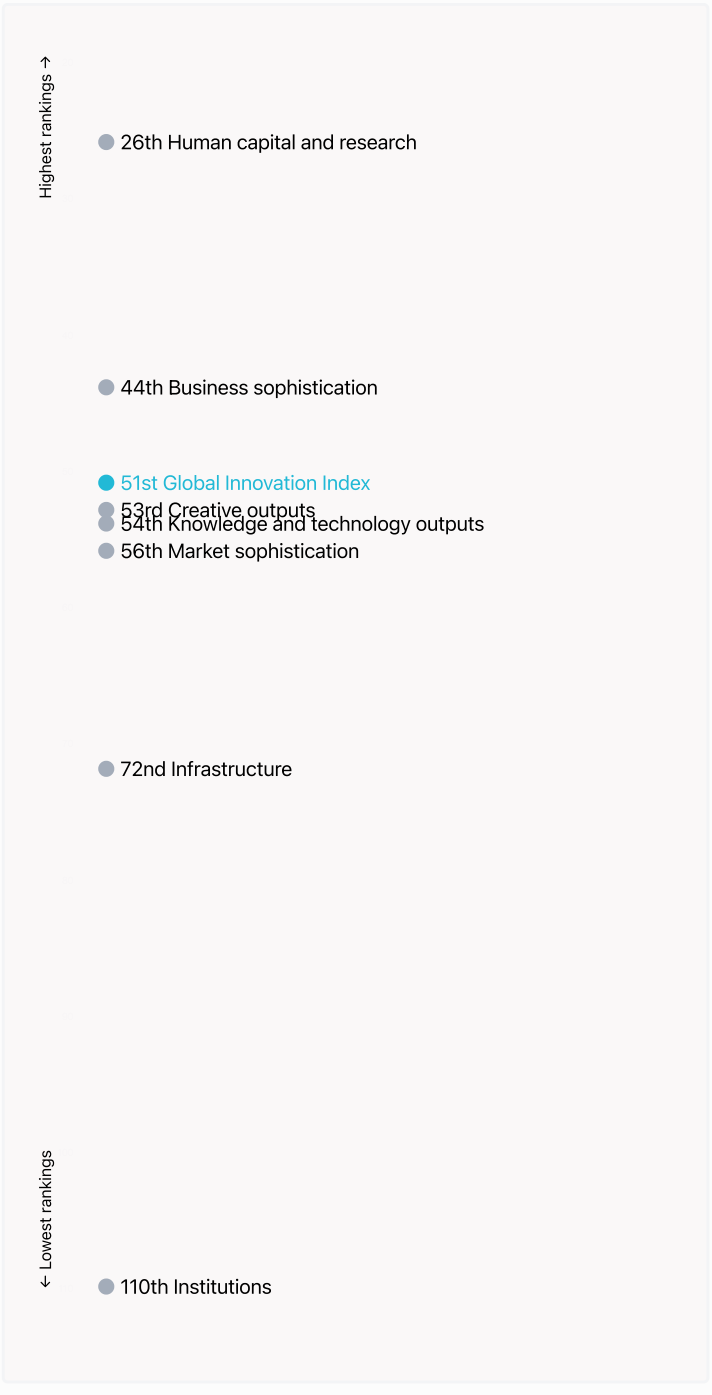


Global Innovation Index 2023



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



> Highest rankings

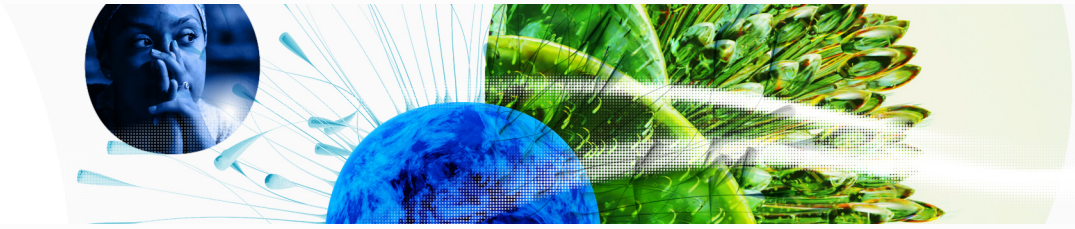
Russian Federation ranks highest in Human capital and research (26th) and Business sophistication (44th).

> Lowest rankings

Russian Federation ranks lowest in Institutions (110th), Infrastructure (72nd) and Market sophistication (56th).

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

Global Innovation Index 2023



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

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

> Upper-Middle-Income economies

Russian Federation performs above the upper-middle-income group average in Knowledge and technology outputs, Creative outputs, Business sophistication, Market sophistication, Human capital and research.

> Europe

Russian Federation performs below the regional average in Knowledge and technology outputs, Creative outputs, Business sophistication, Market sophistication, Infrastructure, Institutions.

Knowledge and technology outputs

- Top 10 | Score: 58.96
- Europe | Score: 38.80
- Russian Federation | Score: 26.37
- Upper middle income | Score: 22.36

Creative outputs

- Top 10 | 56.09
- Europe | 39.87
- Russian Federation | 29.86
- Upper middle income | 23.16

Business sophistication

- Top 10 | 64.39
- Europe | 44.61
- Russian Federation | 34.75
- Upper middle income | 29.27

Market sophistication

- Top 10 | 61.93
- Europe | 43.65
- Russian Federation | 37.68
- Upper middle income | 35.45

Human capital and research

- Top 10 | 60.28
- Russian Federation | 47.17
- Europe | 44.05
- Upper middle income | 29.68

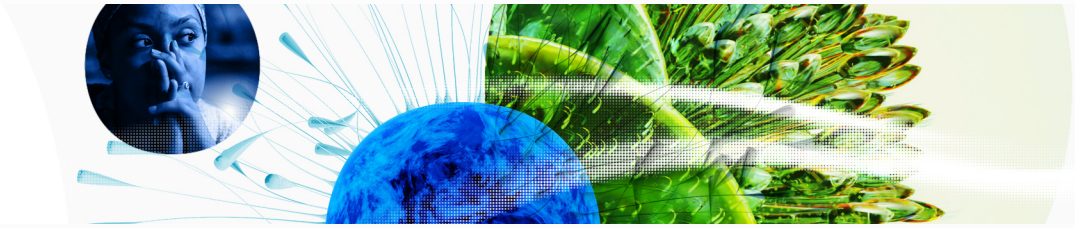
Infrastructure

- Top 10 | 62.83
- Europe | 54.69
- Upper middle income | 40.40
- Russian Federation | 38.01

Institutions

- Top 10 | 79.85
- Europe | 61.69
- Upper middle income | 47.71
- Russian Federation | 34.88

Global Innovation Index 2023



→ Innovation strengths and weaknesses in Russian Federation

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

> Russian Federation's main innovation strengths are **Domestic market scale, bn PPP$** (rank 1), **Utility models by origin/bn PPP$ GDP** (rank 8) and **Graduates in science and engineering, %** (rank 13).

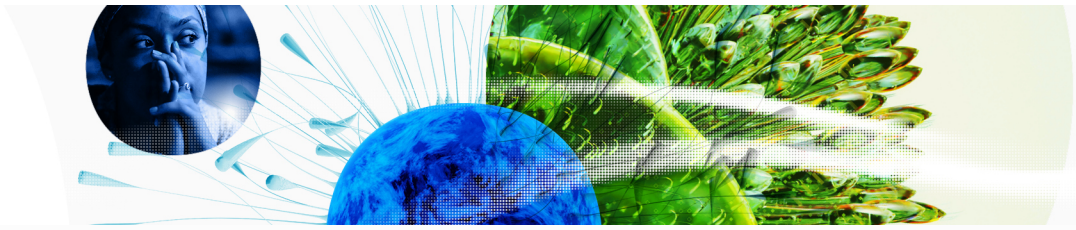
Strengths

Rank	Code	Indicator name
1	4.3.3	Domestic market scale, bn PPP$
8	6.1.3	Utility models by origin/bn PPP$ GDP
13	2.2.2	Graduates in science and engineering, %
16	5.1.5	Females employed w/advanced degrees, %
16	2.2.1	Tertiary enrolment, % gross
18	5.3.1	Intellectual property payments, % total trade
18	6.1.1	Patents by origin/bn PPP$ GDP
19	3.2.1	Electricity output, GWh/mn pop.
21	2.3.4	QS university ranking, top 3
22	5.1.1	Knowledge-intensive employment, %

Weaknesses

Rank	Code	Indicator name
124	1.1.1	Operational stability for businesses
120	3.3.1	GDP/unit of energy use
114	1.2.2	Rule of law
110	3.3.3	ISO 14001 environment/bn PPP$ GDP
109	6.3.5	ISO 9001 quality/bn PPP$ GDP
100	4.2.3	VC recipients, deals/bn PPP$ GDP
94	5.1.2	Firms offering formal training, %
82	4.2.2	Venture capital (VC) investors, deals/bn PPP$ GDP
71	1.3.2	Entrepreneurship policies and culture
48	6.2.2	Unicorn valuation, % GDP

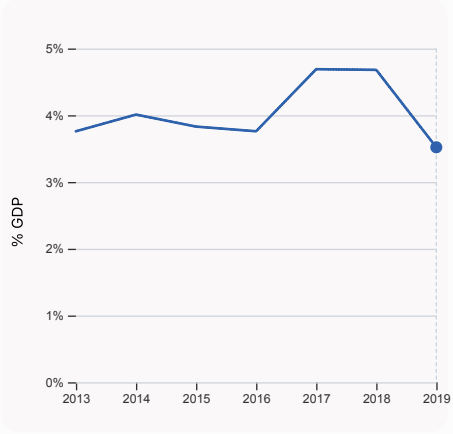
Global Innovation Index 2023



→ Russian Federation's innovation system

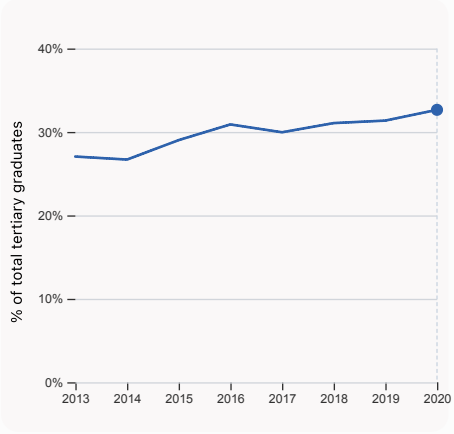
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Russian Federation



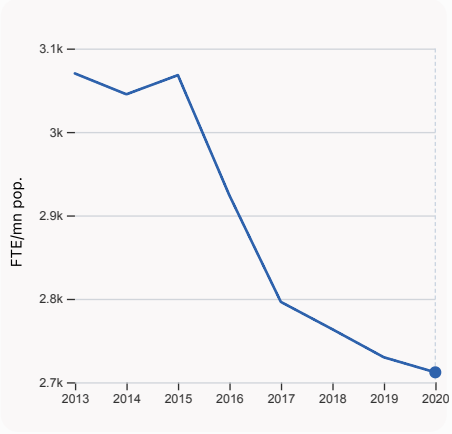
2.1.1 Expenditure on education, % GDP

was equal to 3.52% GDP in 2019, down by 1.16 percentage points from the year prior – and equivalent to an indicator rank of 90.



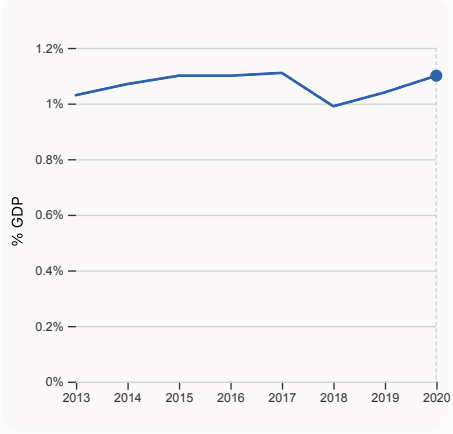
2.2.2 Graduates in science and engineering, %

was equal to 32.65% of total tertiary graduates in 2020, up by 1.29 percentage points from the year prior – and equivalent to an indicator rank of 13.



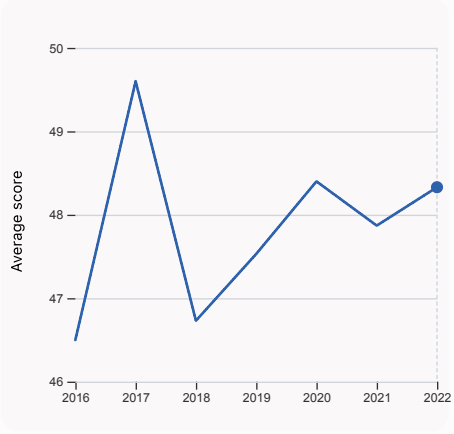
2.3.1 Researchers, FTE/mn pop.

was equal to 2,711.92 FTE/mn pop. in 2020, down by 0.66% from the year prior – and equivalent to an indicator rank of 33.



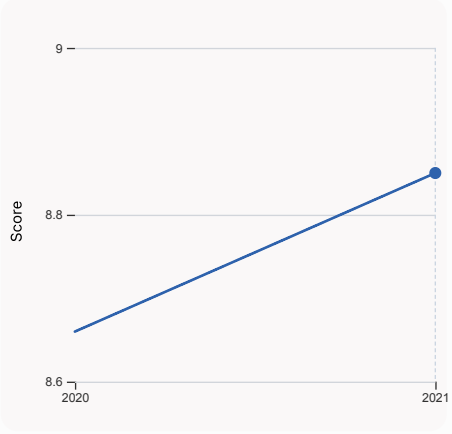
2.3.2 Gross expenditure on R&D, % GDP

was equal to 1.1% GDP in 2020, up by 0.06 percentage points from the year prior – and equivalent to an indicator rank of 37.



2.3.4 QS university ranking, top 3

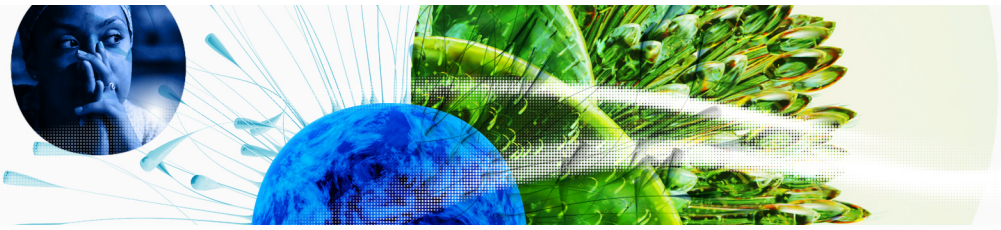
was equal to an average score of 48.33 for the top 3 universities in 2022, up by 0.96% from the year prior – and equivalent to an indicator rank of 21.

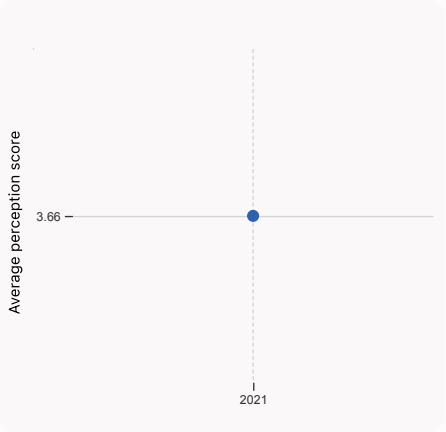


3.1.1 ICT access

was equal to a score of 8.85 in 2021, up by 2.19% from the year prior – and equivalent to an indicator rank of 63.

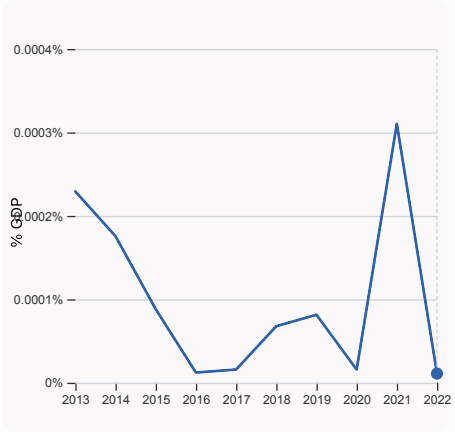
Global Innovation Index 2023





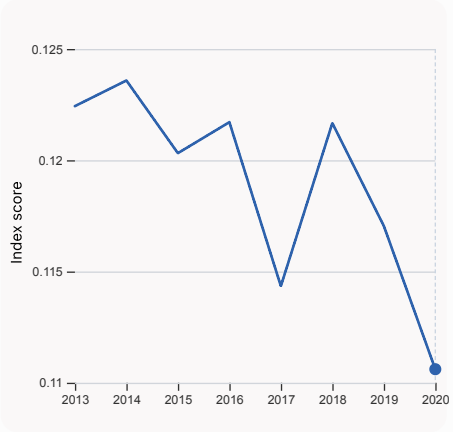
4.1.1 Finance for startups and scaleups

was equal to an average perception score of 3.66 in 2021, equivalent to an indicator rank of 70.



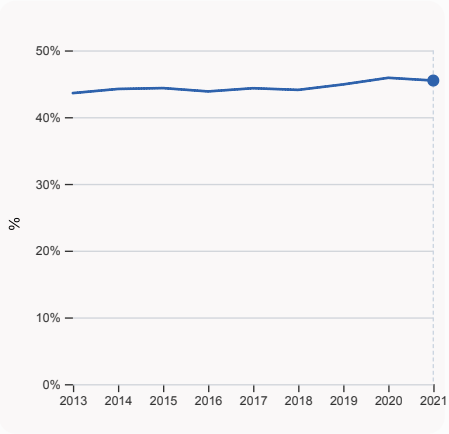
4.2.4 VC received, value, % GDP

was equal to 0.00001% GDP in 2022, down by 0.0003 percentage points from the year prior – and equivalent to an indicator rank of 80.



4.3.2 Domestic industry diversification

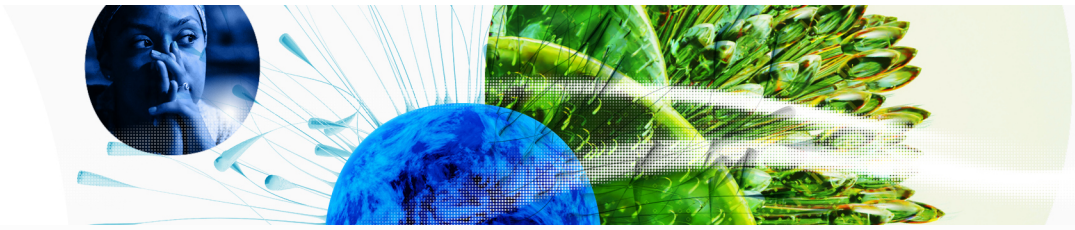
was equal to an index score of 0.111 in 2020, down by 5.5% from the year prior – and equivalent to an indicator rank of 26.



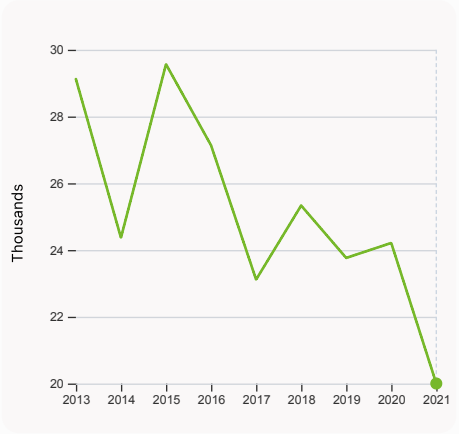
5.1.1 Knowledge-intensive employment, %

was equal to 45.48% in 2021, down by 0.41 percentage points from the year prior – and equivalent to an indicator rank of 22.

Global Innovation Index 2023

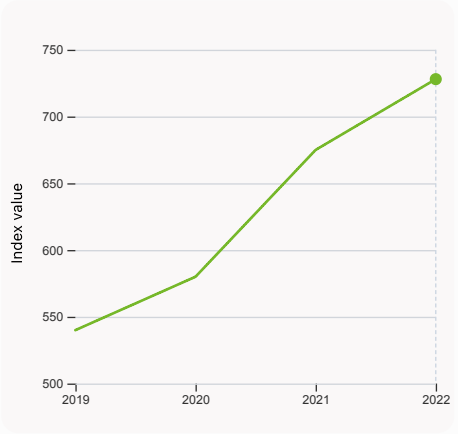


> Innovation outputs in Russian Federation



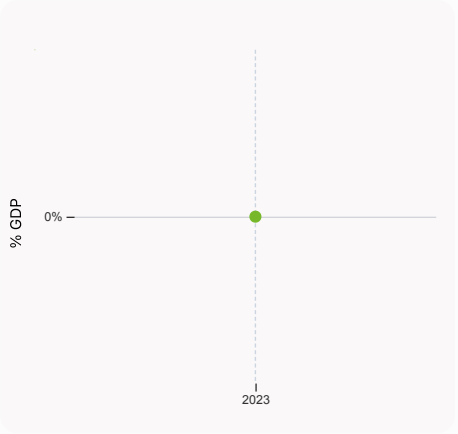
6.1.1 Patents by origin

was equal to 20.001 Thousands in 2021, down by 17.39% from the year prior – and equivalent to an indicator rank of 18.



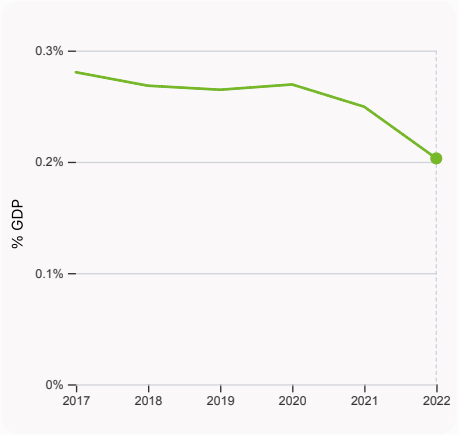
6.1.5 Citable documents H-index

was equal to an index value of 728 in 2022, up by 7.85% from the year prior – and equivalent to an indicator rank of 25.



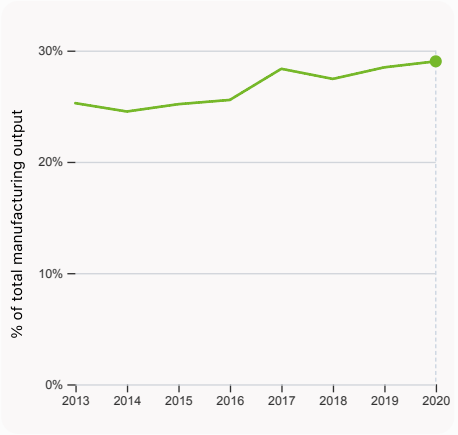
6.2.2 Unicorn valuation, % GDP

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



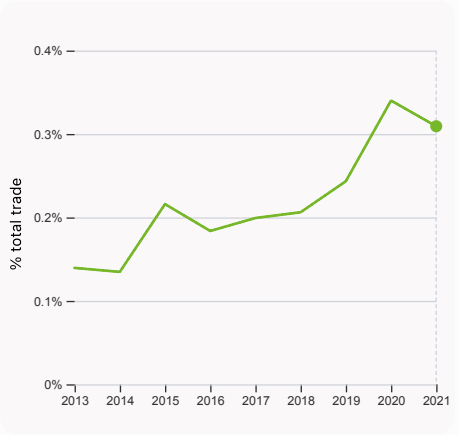
6.2.3 Software spending, % GDP

was equal to 0.203% GDP in 2022, down by 0.046 percentage points from the year prior – and equivalent to an indicator rank of 73.



6.2.4 High-tech manufacturing, %

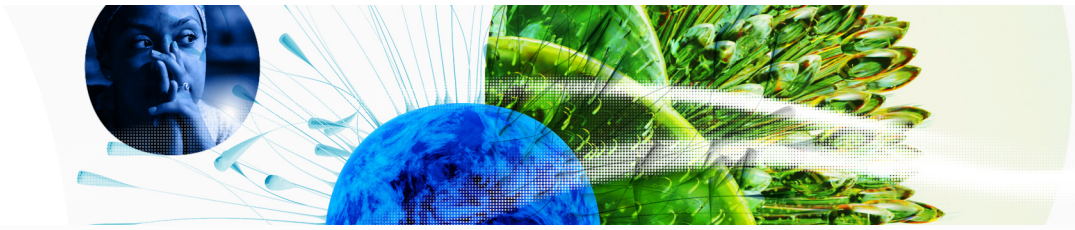
was equal to 29.03% of total manufacturing output in 2020, up by 0.54 percentage points from the year prior – and equivalent to an indicator rank of 43.

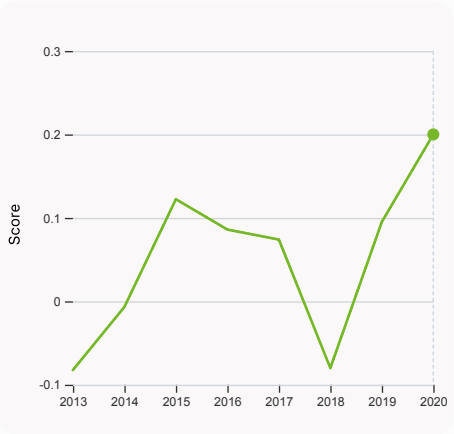


6.3.1 Intellectual property receipts, % total trade

was equal to 0.309% total trade in 2021, down by 0.031 percentage points from the year prior – and equivalent to an indicator rank of 37.

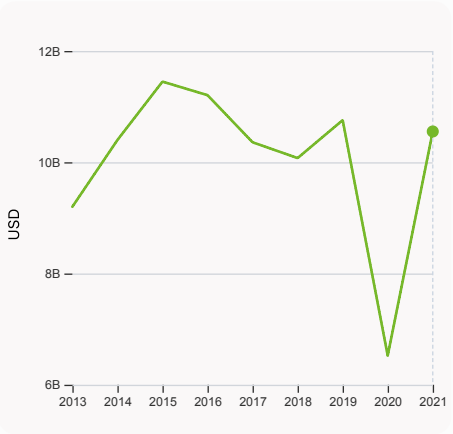
Global Innovation Index 2023





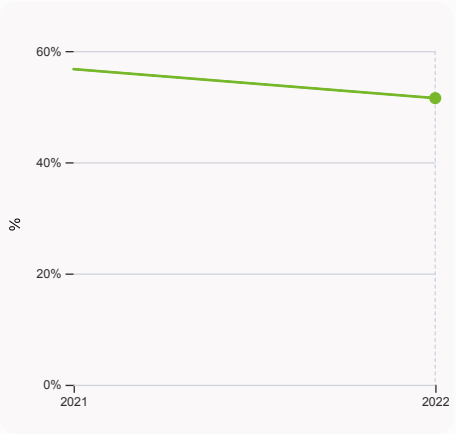
6.3.2 Production and export complexity

was equal to a score of 0.2 in 2020, up by 110.28% from the year prior – and equivalent to an indicator rank of 51.



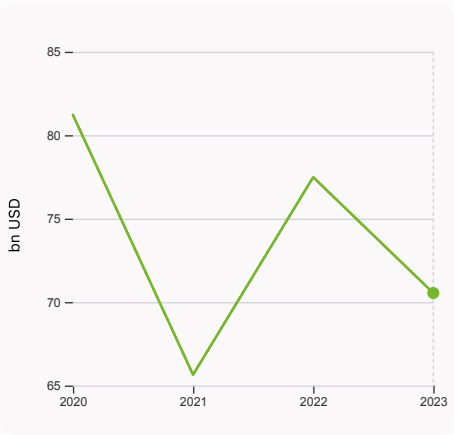
6.3.3 High-tech exports

was equal to 10,553,177,535 USD in 2021, up by 61.74% from the year prior – and equivalent to an indicator rank of 55.



7.1.1 Intangible asset intensity, top 15, %

was equal to 51.53% in 2022, down by 5.21 percentage points from the year prior – and equivalent to an indicator rank of 47.

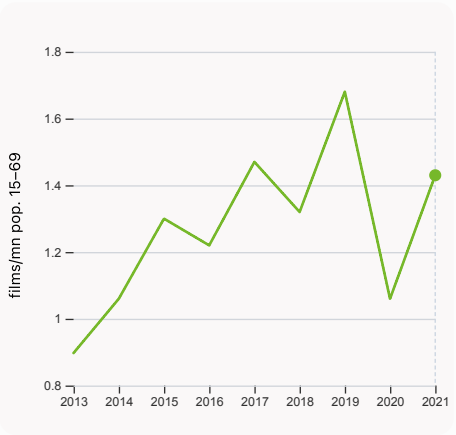


7.1.3 Global brand value, top 5,000

was equal to 70.543 bn USD in 2023, down by 8.96% from the year prior – and equivalent to an indicator rank of 42.

7.2.1 Cultural and creative services exports

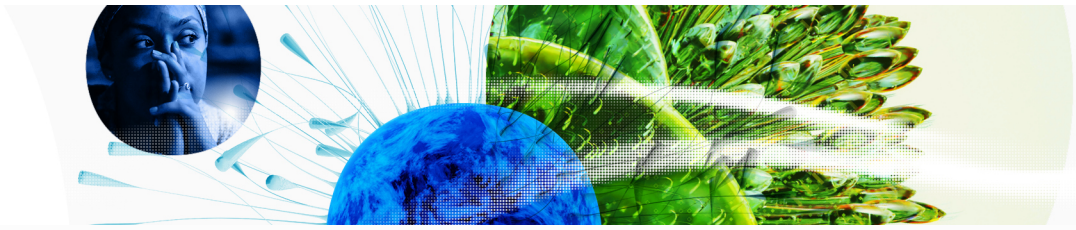
was equal to 4,461,793,000 USD in 2021, up by 17.84% from the year prior – and equivalent to an indicator rank of 30.

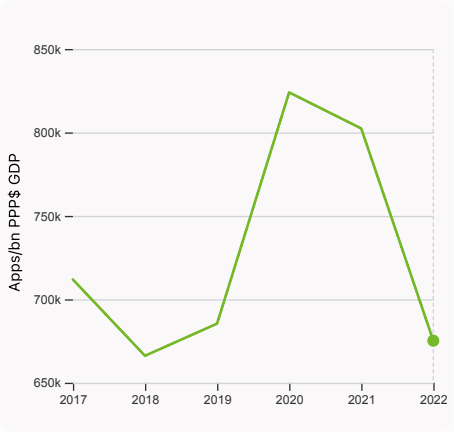


7.2.2 National feature films/mn pop. 15-69

was equal to 1.43 films/mn pop. 15–69 in 2021, up by 34.91% from the year prior – and equivalent to an indicator rank of 53.

Global Innovation Index 2023

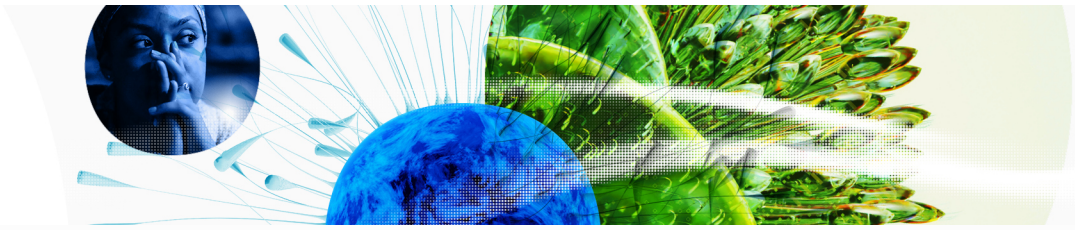




7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 675,225.24 Apps/bn PPP$ GDP in 2022, down by 15.85% from the year prior – and equivalent to an indicator rank of 30.

Global Innovation Index 2023



→ Russian Federation's innovation top performers

> 2.3.4 QS university ranking of Russian Federation's top universities

Rank	University	Score
75	LOMONOSOV MOSCOW STATE UNIVERSITY	66.80
230	BAUMAN MOSCOW STATE TECHNICAL UNIVERSITY	40.30
260	NOVOSIBIRSK STATE UNIVERSITY	37.90

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 Russian Federation

Rank	Firm	Intensity, %
1	MMC NORILSK NICKEL PJSC	66.65
2	NOVATEK PJSC	52.17
3	PHOSAGRO PJSC	70.47

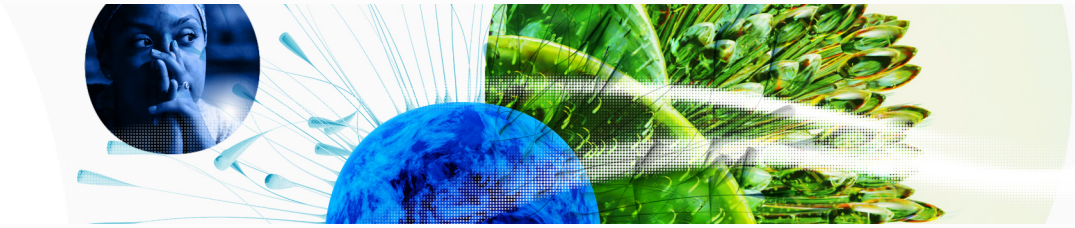
Source: Brand Finance (https://brandirectory.com/reports/gift-2022).
Note: Brand Finance only provides within economy ranks.

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

Rank	Brand	Industry	Brand Value, mn USD
1	SBER	Banking	11,950.1
2	GAZPROM	Oil & Gas	5,537.8
3	LUKOIL	Oil & Gas	5,149.4

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

Global Innovation Index 2023



Russian Federation

GII 2023 rank **51**

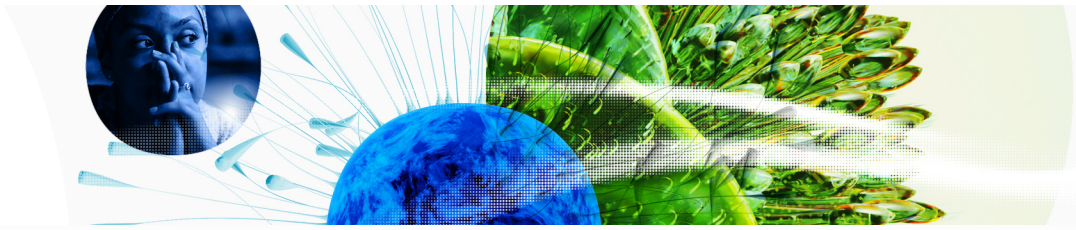
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
53	58	Upper middle	EUR	144.7	4,649.7	31,967.0

	Score / Value	Rank
Institutions	**34.9**	**110** ◇
1.1 Institutional environment	**25.3**	**111** ◇
1.1.1 Operational stability for businesses*	18.8	124 ○ ◇
1.1.2 Government effectiveness*	31.9	83
1.2 Regulatory environment	**51.4**	**95**
1.2.1 Regulatory quality*	28.4	101 ◇
1.2.2 Rule of law*	14.2	114 ○ ◇
1.2.3 Cost of redundancy dismissal	17.3	73
1.3 Business environment	**27.9**	**105**
1.3.1 Policies for doing business†	39.1	87
1.3.2 Entrepreneurship policies and culture†	16.8	71 ○ ◇
Human capital and research	**47.2**	**26**
2.1 Education	**57.0**	**50**
2.1.1 Expenditure on education, % GDP	3.5	90
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a
2.1.3 School life expectancy, years	15.8	43
2.1.4 PISA scales in reading, maths and science	481.3	31
2.1.5 Pupil-teacher ratio, secondary	13.7	68
2.2 Tertiary education	**45.9**	**20**
2.2.1 Tertiary enrolment, % gross	86.4	16 ●
2.2.2 Graduates in science and engineering, %	32.6	13 ●
2.2.3 Tertiary inbound mobility, %	5.0	49
2.3 Research and development (R&D)	**38.7**	**27**
2.3.1 Researchers, FTE/mn pop.	2,711.9	33
2.3.2 Gross expenditure on R&D, % GDP	1.1	37
2.3.3 Global corporate R&D investors, top 3, mn US$	58.0	26
2.3.4 QS university ranking, top 3*	49.0	21 ●
Infrastructure	**38.0**	**72**
3.1 Information and communication technologies (ICTs)	**74.8**	**49**
3.1.1 ICT access*	82.8	63
3.1.2 ICT use*	86.3	32
3.1.3 Government's online service*	70.9	61
3.1.4 E-participation*	59.3	57
3.2 General infrastructure	**25.8**	**69**
3.2.1 Electricity output, GWh/mn pop.	8,060.6	19 ●
3.2.2 Logistics performance*	22.7	82
3.2.3 Gross capital formation, % GDP	20.1	97
3.3 Ecological sustainability	**13.4**	**111** ◇
3.3.1 GDP/unit of energy use	4.7	120 ○ ◇
3.3.2 Environmental performance*	31.5	84
3.3.3 ISO 14001 environment/bn PPP$ GDP	0.2	110 ○
Market sophistication	**37.7**	**56**
4.1 Credit	**18.6**	**97**
4.1.1 Finance for startups and scaleups†	30.6	70
4.1.2 Domestic credit to private sector, % GDP	59.7	61
4.1.3 Loans from microfinance institutions, % GDP	0.3	45
4.2 Investment	**4.7**	**80**
4.2.1 Market capitalization, % GDP	42.7	40
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.0	82 ○
4.2.3 VC recipients, deals/bn PPP$ GDP	0.0	100 ○ ◇
4.2.4 VC received, value, % GDP	0.0	80
4.3 Trade, diversification, and market scale	**89.8**	**7**
4.3.1 Applied tariff rate, weighted avg., %	4.1	85
4.3.2 Domestic industry diversification	95.7	26
4.3.3 Domestic market scale, bn PPP$	4,649.7	1 ●

	Score / Value	Rank
Business sophistication	**34.7**	**44**
5.1 Knowledge workers	**41.8**	**44**
5.1.1 Knowledge-intensive employment, %	45.5	22 ●
5.1.2 Firms offering formal training, %	11.8	94 ○ ◇
5.1.3 GERD performed by business, % GDP	0.6	35
5.1.4 GERD financed by business, %	29.2	60
5.1.5 Females employed w/advanced degrees, %	26.1	16 ●
5.2 Innovation linkages	**19.7**	**76**
5.2.1 University-industry R&D collaboration†	45.7	60
5.2.2 State of cluster development†	43.1	60
5.2.3 GERD financed by abroad, % GDP	0.0	63
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	94
5.2.5 Patent families/bn PPP$ GDP	0.2	45
5.3 Knowledge absorption	**42.7**	**36**
5.3.1 Intellectual property payments, % total trade	1.7	18 ●
5.3.2 High-tech imports, % total trade	8.6	56
5.3.3 ICT services imports, % total trade	1.4	61
5.3.4 FDI net inflows, % GDP	1.6	84
5.3.5 Research talent, % in businesses	46.5	30
Knowledge and technology outputs	**26.4**	**54**
6.1 Knowledge creation	**29.5**	**32**
6.1.1 Patents by origin/bn PPP$ GDP	4.5	18 ●
6.1.2 PCT patents by origin/bn PPP$ GDP	0.2	48
6.1.3 Utility models by origin/bn PPP$ GDP	2.0	8 ●
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a
6.1.5 Citable documents H-index	38.1	25
6.2 Knowledge impact	**27.7**	**60**
6.2.1 Labor productivity growth, %	1.3	56
6.2.2 Unicorn valuation, % GDP	0.0	48 ○ ◇
6.2.3 Software spending, % GDP	0.2	73
6.2.4 High-tech manufacturing, %	29.0	43
6.3 Knowledge diffusion	**22.0**	**65**
6.3.1 Intellectual property receipts, % total trade	0.3	37
6.3.2 Production and export complexity	56.7	51
6.3.3 High-tech exports, % total trade	2.3	55
6.3.4 ICT services exports, % total trade	1.6	69
6.3.5 ISO 9001 quality/bn PPP$ GDP	1.0	109 ○
Creative outputs	**29.9**	**53**
7.1 Intangible assets	**41.0**	**40**
7.1.1 Intangible asset intensity, top 15, %	51.5	47
7.1.2 Trademarks by origin/bn PPP$ GDP	72.9	23
7.1.3 Global brand value, top 5,000	3.3	42
7.1.4 Industrial designs by origin/bn PPP$ GDP	1.4	56
7.2 Creative goods and services	**10.9**	**64**
7.2.1 Cultural and creative services exports, % total trade	1.0	30
7.2.2 National feature films/mn pop. 15-69	1.4	53
7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
7.2.4 Creative goods exports, % total trade	0.4	67
7.3 Online creativity	**26.4**	**48**
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.8	62
7.3.2 Country-code TLDs/th pop. 15-69	13.9	35
7.3.3 GitHub commits/mn pop. 15-69	13.7	50
7.3.4 Mobile app creation/bn PPP$ GDP	74.4	30

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 Russian Federation.

> Russian Federation has missing data for two indicators and outdated data for seventeen indicators.

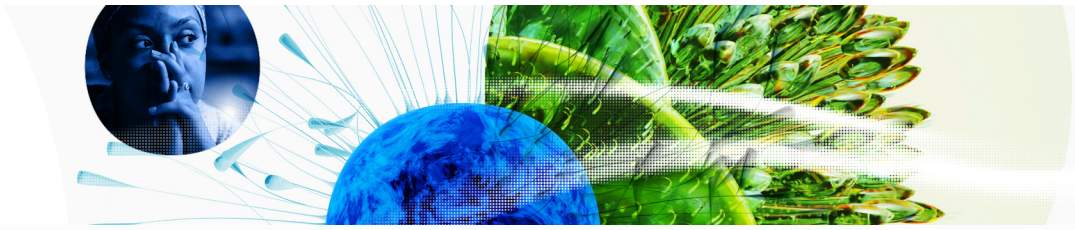
> Missing data for Russian Federation

Code	Indicator name	Economy Year	Model Year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2019	UNESCO Institute for Statistics
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 Russian Federation

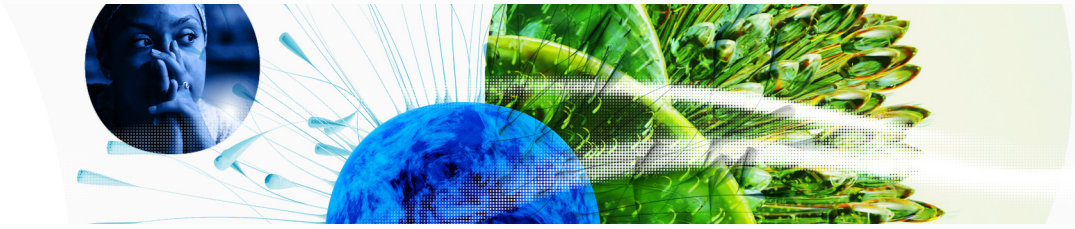
Code	Indicator name	Economy Year	Model Year	Source
1.3.1	Policies for doing business	2021	2022	World Economic Forum, Executive Opinion Survey (EOS)
1.3.2	Entrepreneurship policies and culture	2021	2022	Global Entrepreneurship Monitor
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2019	2020	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2019	2020	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2019	2020	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	2019	2020	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
2.3.2	Gross expenditure on R&D, % GDP	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
4.1.1	Finance for startups and scaleups	2021	2022	Global Entrepreneurship Monitor
4.1.3	Loans from microfinance institutions, % GDP	2020	2021	International Monetary Fund, Financial Access Survey (FAS)
5.1.1	Knowledge-intensive employment, %	2021	2022	International Labour Organization

Global Innovation Index 2023



Code	Indicator name	Economy Year	Model Year	Source
5.1.3	GERD performed by business, % GDP	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.5	Females employed w/advanced degrees, %	2021	2022	International Labour Organization
5.2.1	University-industry R&D collaboration	2021	2022	World Economic Forum, Executive Opinion Survey (EOS)
5.2.2	State of cluster development	2021	2022	World Economic Forum, Executive Opinion Survey (EOS)
5.3.5	Research talent, % in businesses	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT

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.