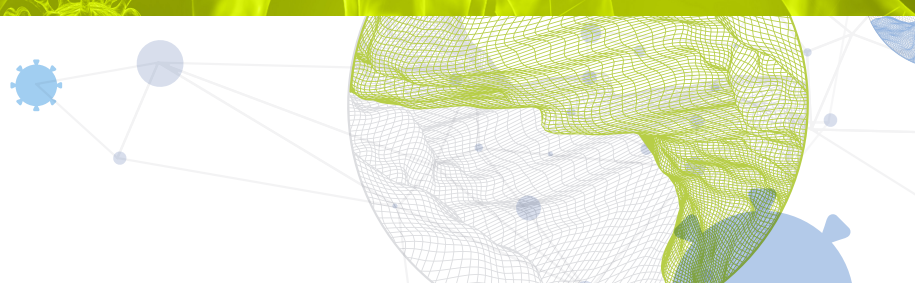




Global Innovation Index 2021



SERBIA

54th

Serbia ranks 54th among the 132 economies featured in the GII 2021.

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 Serbia 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 Serbia in the GII 2021 is between ranks 51 and 56.

Rankings for Serbia (2019–2021)

	GII	Innovation inputs	Innovation outputs
2021	54	50	57
2020	53	58	56
2019	57	62	57

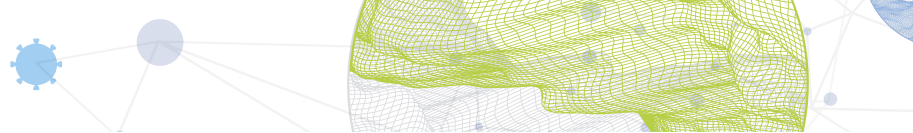
- Serbia performs better in innovation inputs than innovation outputs in 2021.
- This year Serbia ranks 50th in innovation inputs, higher than both 2020 and 2019.
- As for innovation outputs, Serbia ranks 57th. This position is lower than last year but the same as 2019.

8th

Serbia ranks 8th among the 34 upper middle-income group economies.

34th

Serbia ranks 34th among the 39 economies in Europe.

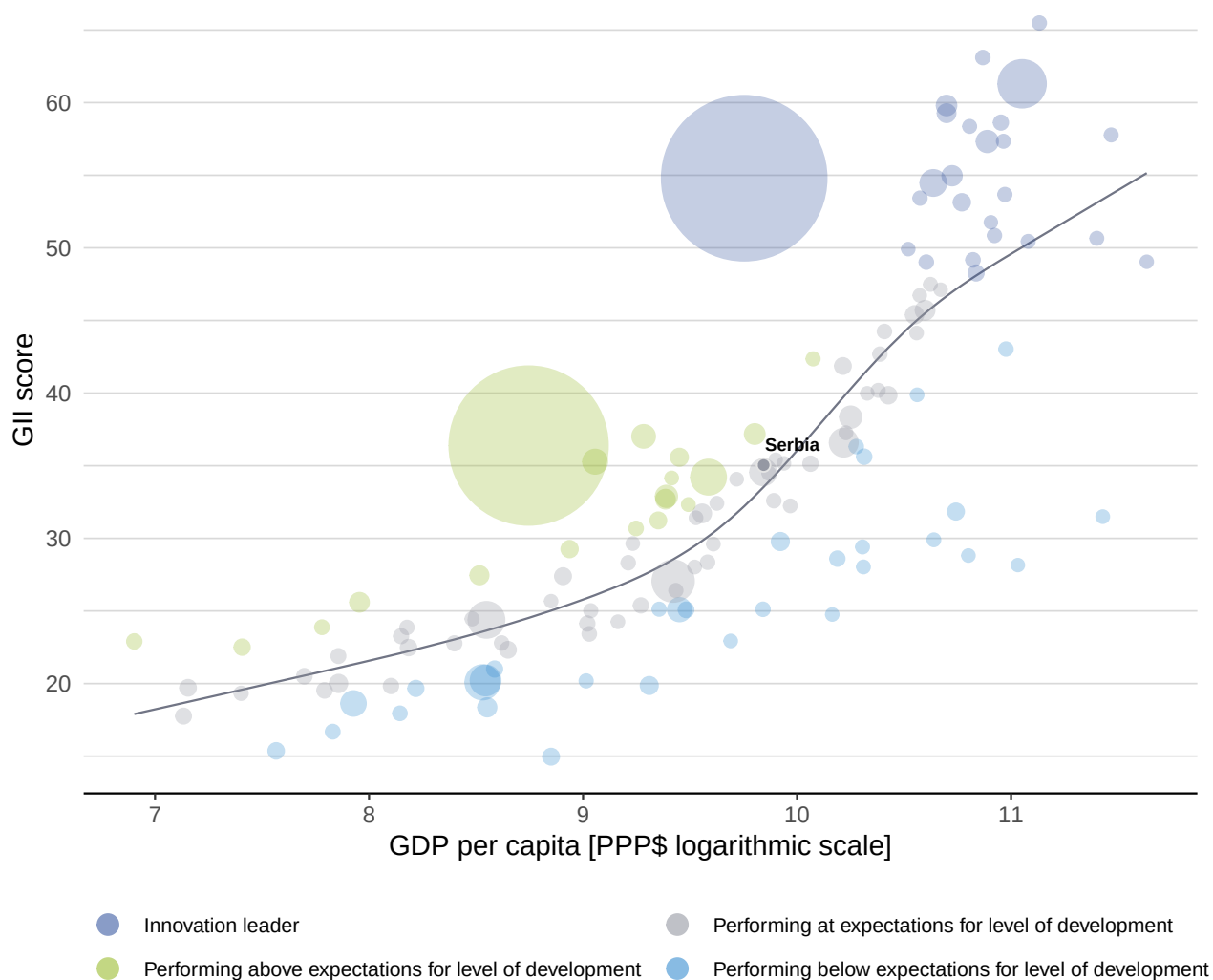


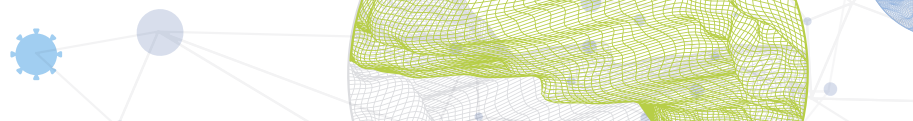
EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

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 performing below expectations.

Relative to GDP, Serbia's performance is at expectations for its level of development.

The positive relationship between innovation and development



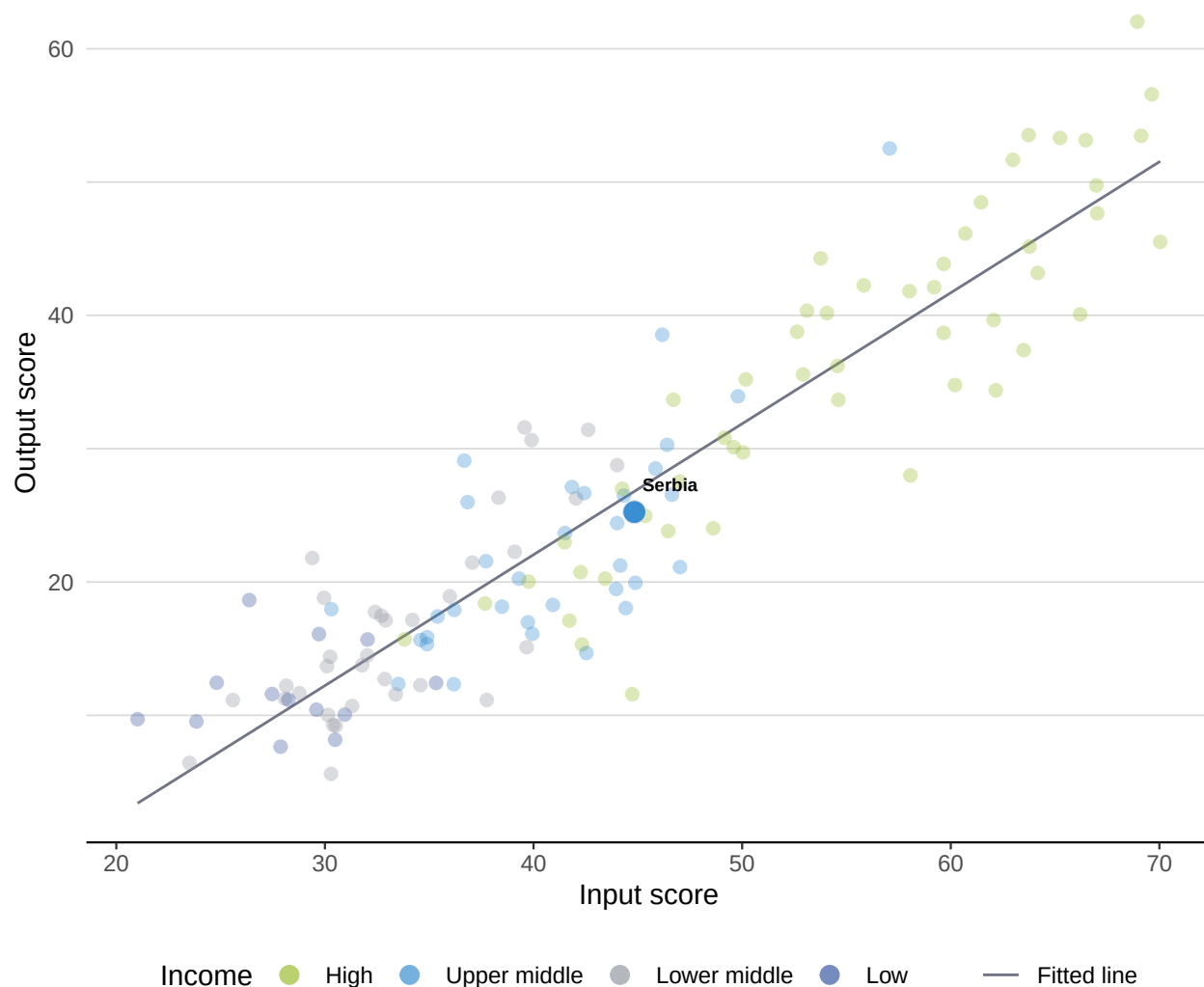


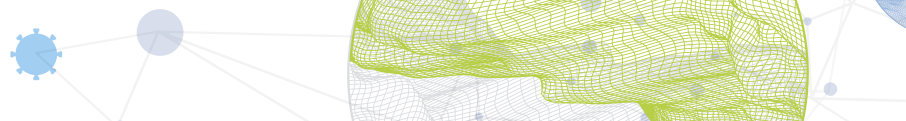
EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

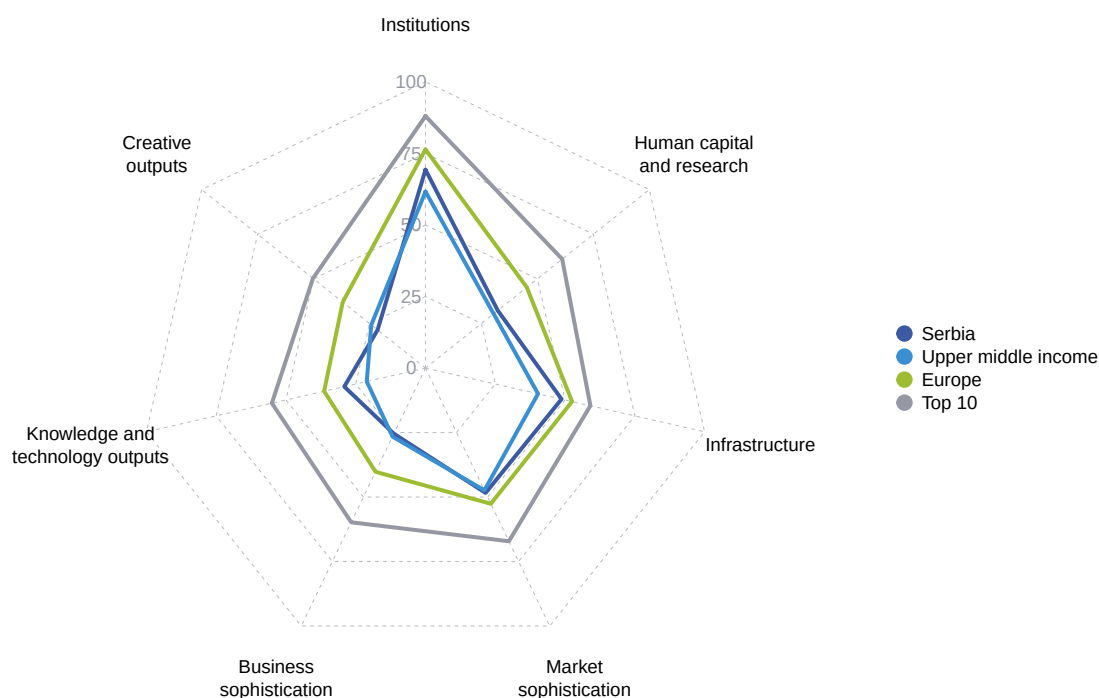
Innovation input to output performance





BENCHMARKING AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND EUROPE

The seven GII pillar scores for Serbia

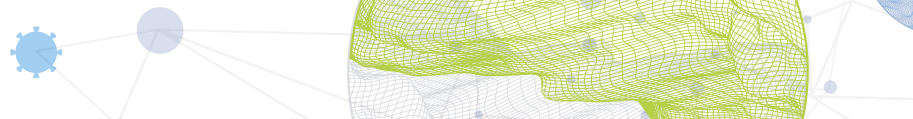


Upper middle-income group economies

Serbia performs above the upper middle-income group average in five pillars, namely: Institutions; Human capital and research; Infrastructure; Market sophistication; and, Knowledge and technology outputs.

Europe

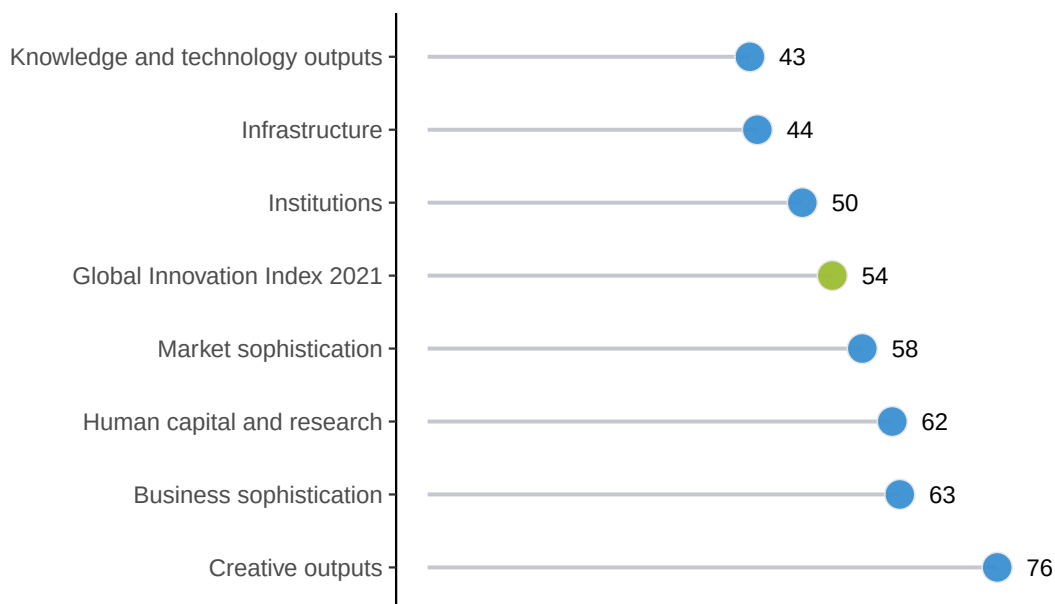
Serbia performs below the regional average in all GII pillars.



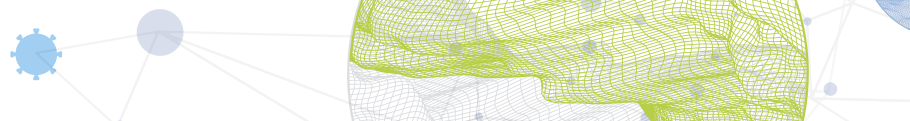
OVERVIEW OF RANKINGS IN THE SEVEN GII 2021 AREAS

Serbia performs best in Knowledge and technology outputs and its weakest performance is in Creative outputs.

The seven GII pillar ranks for Serbia



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



INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Serbia in the GII 2021.

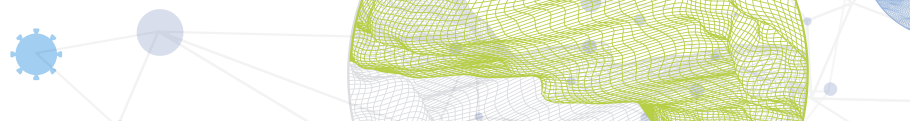
Strengths and weaknesses for Serbia

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal	1	2.1.2	Government funding/pupil, secondary, % GDP/cap	88
2.1.5	Pupil-teacher ratio, secondary	9	2.3.3	Global corporate R&D investors, top 3, mn US\$	41
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	3	2.3.4	QS university ranking, top 3	74
4.3.1	Applied tariff rate, weighted avg., %	17	3.3.1	GDP/unit of energy use	96
4.3.2	Domestic industry diversification	17	4.2.2	Market capitalization, % GDP	74
5.3.4	FDI net inflows, % GDP	13	5.1.4	GERD financed by business, %	78
6.1.4	Scientific and technical articles/bn PPP\$ GDP	17	5.2.2	State of cluster development and depth	107
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	10	5.3.5	Research talent, % in businesses	64
6.3.4	ICT services exports, % total trade	12	6.2.3	Software spending, % GDP	104
7.2.1	Cultural and creative services exports, % total trade	10	7.1	Intangible assets	98
			7.1.2	Global brand value, top 5,000, % GDP	80

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	GII 2020 rank
57	50	Upper middle	EUR	8.7	130.7	18,840	53

	Score/ Value	Rank		Score/ Value	Rank
 Institutions	69.3	50	 Business sophistication	25.5	63
1.1 Political environment	57.3	70	5.1 Knowledge workers	28.7	77
1.1.1 Political and operational stability*	69.6	60	5.1.1 Knowledge-intensive employment, %	28.0	53
1.1.2 Government effectiveness*	51.1	72	5.1.2 Firms offering formal training, %	38.3	32
1.2 Regulatory environment	72.5	41	5.1.3 GERD performed by business, % GDP	0.4	46
1.2.1 Regulatory quality*	46.5	64	5.1.4 GERD financed by business, %	9.1	78 ○
1.2.2 Rule of law*	43.6	68	5.1.5 Females employed w/advanced degrees, %	15.0	50
1.2.3 Cost of redundancy dismissal	8.0	1 ● ◆	5.2 Innovation linkages	19.8	72
1.3 Business environment	78.1	38	5.2.1 University-industry R&D collaboration†	38.5	85
1.3.1 Ease of starting a business*	89.3	60	5.2.2 State of cluster development and depth†	38.6	107 ○
1.3.2 Ease of resolving insolvency*	67.0	38	5.2.3 GERD financed by abroad, % GDP	0.2	24 ◆
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	80
			5.2.5 Patent families/bn PPP\$ GDP	0.1	58
 Human capital and research	32.3	62	5.3 Knowledge absorption	27.9	61
2.1 Education	43.2	83	5.3.1 Intellectual property payments, % total trade	1.0	38
2.1.1 Expenditure on education, % GDP	3.6	81	5.3.2 High-tech imports, % total trade	7.2	75
2.1.2 Government funding/pupil, secondary, % GDP/cap ○	11.1	88 ○	5.3.3 ICT services imports, % total trade	2.4	21 ◆
2.1.3 School life expectancy, years	14.7	60	5.3.4 FDI net inflows, % GDP	7.6	13 ● ◆
2.1.4 PISA scales in reading, maths and science	442.5	44	5.3.5 Research talent, % in businesses	9.6	64 ○
2.1.5 Pupil-teacher ratio, secondary	7.9	9 ● ◆			
2.2 Tertiary education	43.1	32	 Knowledge and technology outputs	29.1	43
2.2.1 Tertiary enrolment, % gross	67.8	36	6.1 Knowledge creation	23.4	42
2.2.2 Graduates in science and engineering, %	28.4	20	6.1.1 Patents by origin/bn PPP\$ GDP	1.3	54
2.2.3 Tertiary inbound mobility, %	4.6	50	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	51
2.3 Research and development (R&D)	10.6	56	6.1.3 Utility models by origin/bn PPP\$ GDP	0.6	35
2.3.1 Researchers, FTE/mn pop.	2,087.2	40 ◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	41.0	17 ● ◆
2.3.2 Gross expenditure on R&D, % GDP	0.9	41	6.1.5 Citable documents H-index	14.9	54
2.3.3 Global corporate R&D investors, top 3, mn US\$	0.0	41 ○ ◇	6.2 Knowledge impact	34.8	45
2.3.4 QS university ranking, top 3*	0.0	74 ○ ◇	6.2.1 Labor productivity growth, %	0.7	53
			6.2.2 New businesses/th pop. 15–64	1.9	58
 Infrastructure	48.7	44 ◆	6.2.3 Software spending, % GDP	0.0	104 ○ ◇
3.1 Information and communication technologies (ICTs)	74.1	50	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	21.4	10 ● ◆
3.1.1 ICT access*	75.2	49 ◆	6.2.5 High-tech manufacturing, %	25.4	49
3.1.2 ICT use*	59.8	62	6.3 Knowledge diffusion	29.1	39
3.1.3 Government's online service*	79.4	42	6.3.1 Intellectual property receipts, % total trade	0.2	41
3.1.4 E-participation*	82.1	41	6.3.2 Production and export complexity	59.3	38
3.2 General infrastructure	27.1	70	6.3.3 High-tech exports, % total trade	1.8	64
3.2.1 Electricity output, GWh/mn pop.	5,252.4	41	6.3.4 ICT services exports, % total trade	5.5	12 ● ◆
3.2.2 Logistics performance*	36.9	64			
3.2.3 Gross capital formation, % GDP	22.1	65	 Creative outputs	21.4	76
3.3 Ecological sustainability	45.0	25 ◆	7.1 Intangible assets	20.8	98 ○
3.3.1 GDP/unit of energy use	7.6	96 ○	7.1.1 Trademarks by origin/bn PPP\$ GDP	24.2	84
3.3.2 Environmental performance*	55.2	43 ◆	7.1.2 Global brand value, top 5,000, % GDP	0.0	80 ○ ◇
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	10.1	3 ● ◆	7.1.3 Industrial designs by origin/bn PPP\$ GDP	1.0	70
			7.1.4 ICTs and organizational model creation†	51.7	75
 Market sophistication	48.4	58	7.2 Creative goods and services	20.2	51
4.1 Credit	33.2	96	7.2.1 Cultural and creative services exports, % total trade	1.8	10 ● ◆
4.1.1 Ease of getting credit*	65.0	61	7.2.2 National feature films/mn pop. 15–69	5.6	39
4.1.2 Domestic credit to private sector, % GDP	42.0	80	7.2.3 Entertainment and media market/th pop. 15–69	n/a	n/a
4.1.3 Microfinance gross loans, % GDP	0.2	44	7.2.4 Printing and other media, % manufacturing	1.0	55
4.2 Investment	35.6	[47]	7.2.5 Creative goods exports, % total trade	0.6	59
4.2.1 Ease of protecting minority investors*	70.0	36	7.3 Online creativity	23.8	51
4.2.2 Market capitalization, % GDP ○	3.7	74 ○	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.3	91
4.2.3 Venture capital investors, deals/bn PPP\$ GDP	n/a	n/a	7.3.2 Country-code TLDs/th pop. 15–69	5.5	53
4.2.4 Venture capital recipients, deals/bn PPP\$ GDP	n/a	n/a	7.3.3 Wikipedia edits/mn pop. 15–69	69.8	36 ◆
4.3 Trade, diversification, and market scale	76.4	41	7.3.4 Mobile app creation/bn PPP\$ GDP	15.8	31
4.3.1 Applied tariff rate, weighted avg., % ○	1.4	17 ●			
4.3.2 Domestic industry diversification	96.9	17 ●			
4.3.3 Domestic market scale, bn PPP\$	130.7	75			

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 IV 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

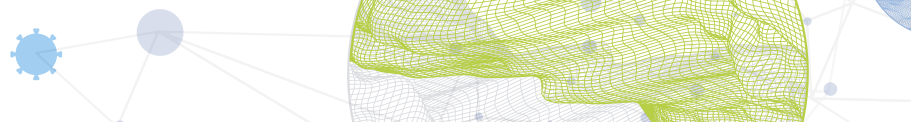
The following tables list data that are either missing or outdated for Serbia.

Missing data for Serbia

Code	Indicator name	Economy year	Model year	Source
4.2.3	Venture capital investors, deals/bn PPP\$ GDP	n/a	2020	Refinitiv Eikon
4.2.4	Venture capital recipients, deals/bn PPP\$ GDP	n/a	2020	Refinitiv Eikon
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2020	PwC

Outdated data for Serbia

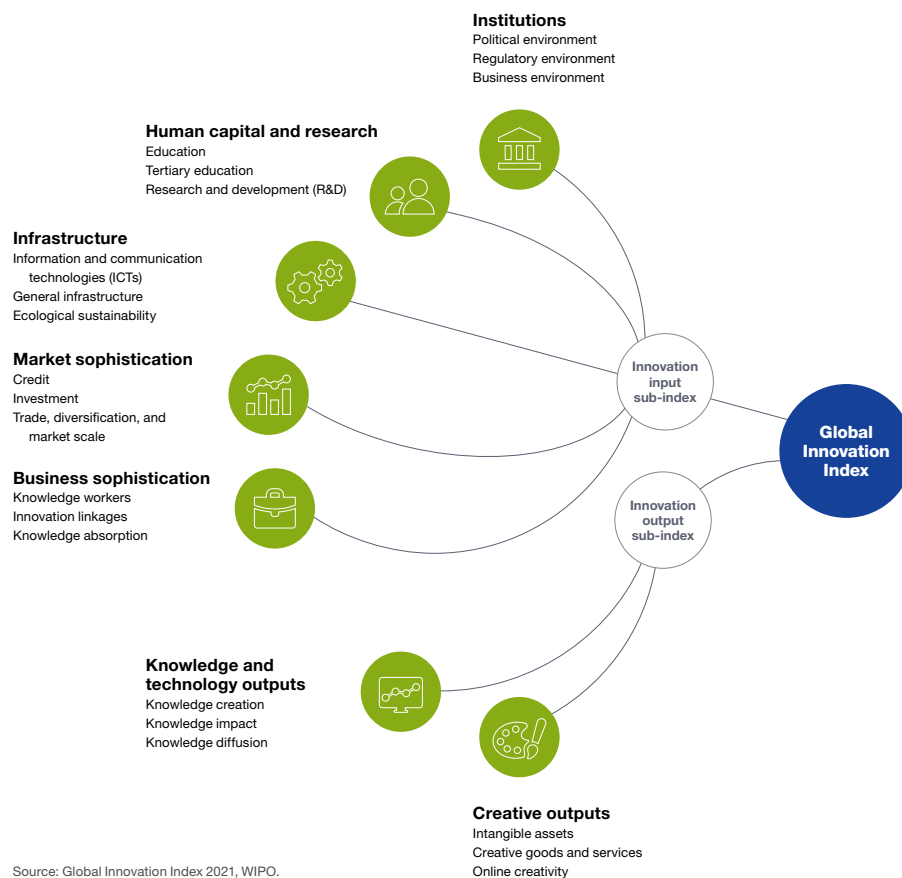
Code	Indicator name	Economy year	Model year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	2015	2017	UNESCO Institute for Statistics
4.2.2	Market capitalization, % GDP	2011	2019	World Federation of Exchanges
4.3.1	Applied tariff rate, weighted avg., %	2018	2019	World Bank



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.