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.

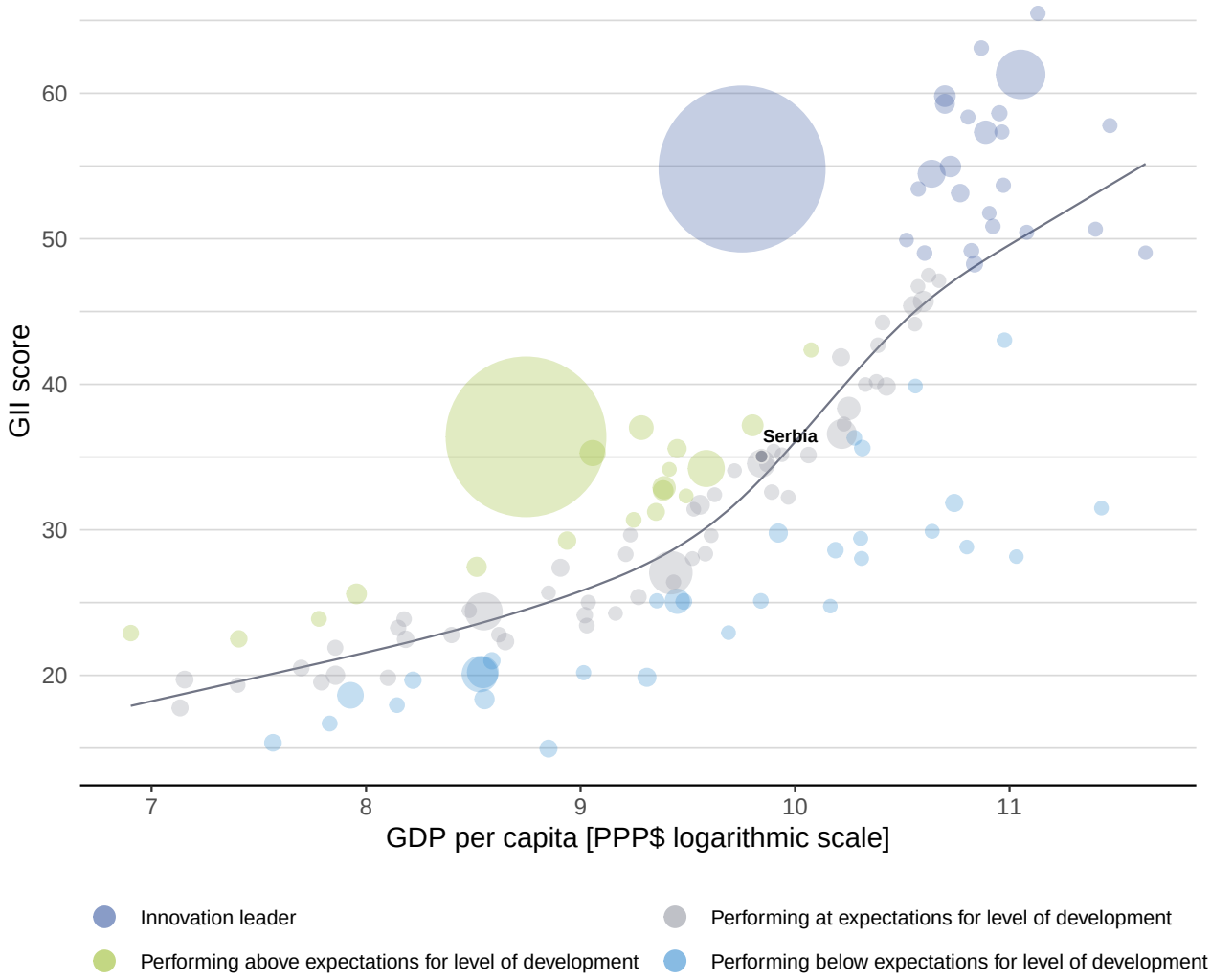
34th Serbia ranks 34th among the 39 economies in Europe.

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

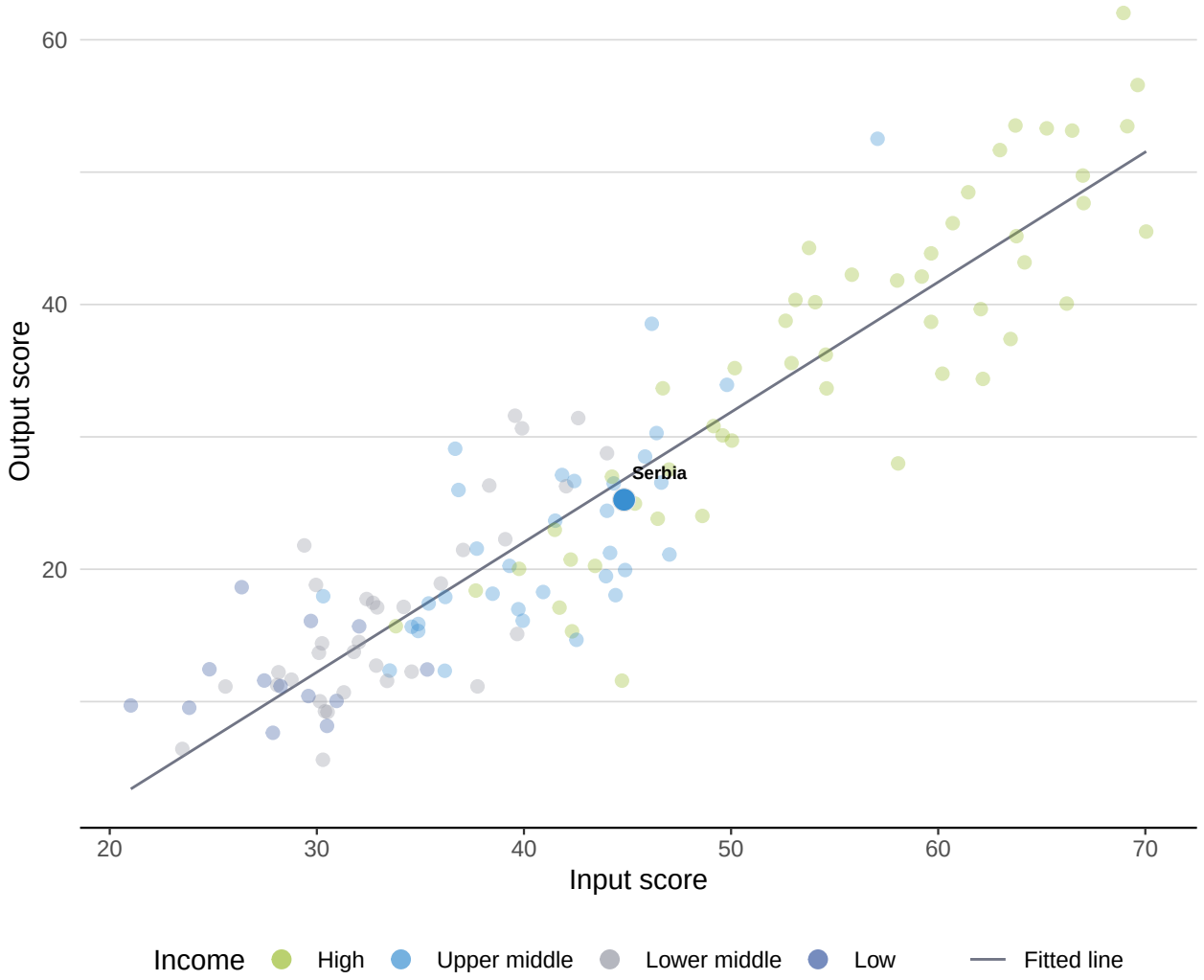


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

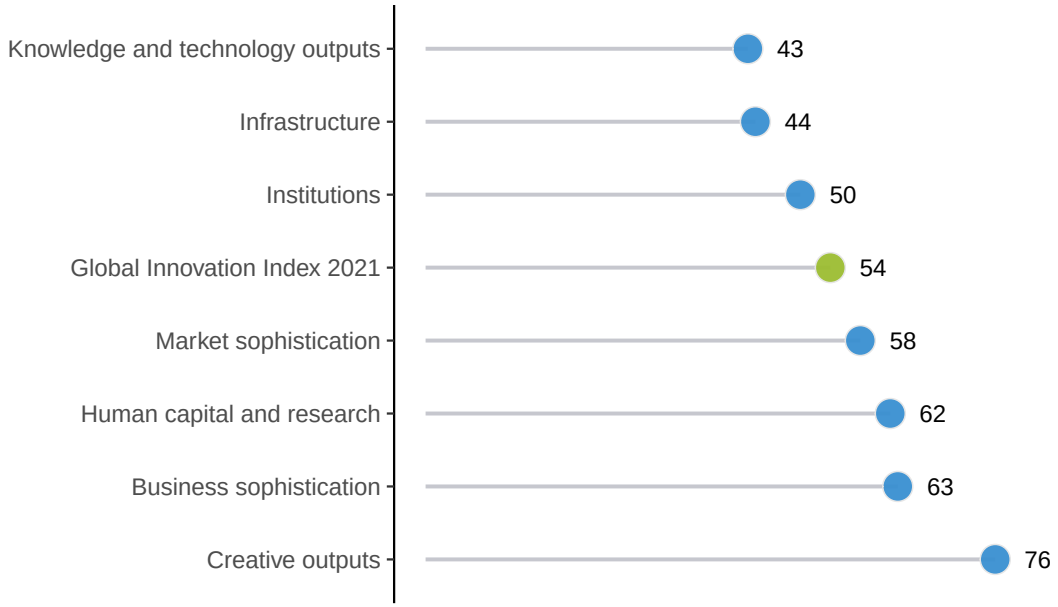
Europe

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 redudancy 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

Serbia

GII 2021 rank
54

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
Institutions		**69.3**	**50**
1.1	**Political environment**	**57.3**	**70**
1.1.1	Political and operational stability*	69.6	60
1.1.2	Government effectiveness*	51.1	72
1.2	**Regulatory environment**	**72.5**	**41**
1.2.1	Regulatory quality*	46.5	64
1.2.2	Rule of law*	43.6	68
1.2.3	Cost of redundancy dismissal	8.0	1 ● ◆
1.3	**Business environment**	**78.1**	**38**
1.3.1	Ease of starting a business*	89.3	60
1.3.2	Ease of resolving insolvency*	67.0	38
Human capital and research		**32.3**	**62**
2.1	**Education**	**43.2**	**83**
2.1.1	Expenditure on education, % GDP	3.6	81
2.1.2	Government funding/pupil, secondary, % GDP/cap ◴	11.1	88 ○
2.1.3	School life expectancy, years	14.7	60
2.1.4	PISA scales in reading, maths and science	442.5	44
2.1.5	Pupil-teacher ratio, secondary	7.9	9 ● ◆
2.2	**Tertiary education**	**43.1**	**32**
2.2.1	Tertiary enrolment, % gross	67.8	36
2.2.2	Graduates in science and engineering, %	28.4	20
2.2.3	Tertiary inbound mobility, %	4.6	50
2.3	**Research and development (R&D)**	**10.6**	**56**
2.3.1	Researchers, FTE/mn pop.	2,087.2	40 ◆
2.3.2	Gross expenditure on R&D, % GDP	0.9	41
2.3.3	Global corporate R&D investors, top 3, mn US$	0.0	41 ○ ◇
2.3.4	QS university ranking, top 3*	0.0	74 ○ ◇
Infrastructure		**48.7**	**44 ◆**
3.1	**Information and communication technologies (ICTs)**	**74.1**	**50**
3.1.1	ICT access*	75.2	49 ◆
3.1.2	ICT use*	59.8	62
3.1.3	Government's online service*	79.4	42
3.1.4	E-participation*	82.1	41
3.2	**General infrastructure**	**27.1**	**70**
3.2.1	Electricity output, GWh/mn pop.	5,252.4	41
3.2.2	Logistics performance*	36.9	64
3.2.3	Gross capital formation, % GDP	22.1	65
3.3	**Ecological sustainability**	**45.0**	**25 ◆**
3.3.1	GDP/unit of energy use	7.6	96 ○
3.3.2	Environmental performance*	55.2	43 ◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	10.1	3 ● ◆
Market sophistication		**48.4**	**58**
4.1	**Credit**	**33.2**	**96**
4.1.1	Ease of getting credit*	65.0	61
4.1.2	Domestic credit to private sector, % GDP	42.0	80
4.1.3	Microfinance gross loans, % GDP	0.2	44
4.2	**Investment**	**35.6**	**[47]**
4.2.1	Ease of protecting minority investors*	70.0	36
4.2.2	Market capitalization, % GDP ◴	3.7	74 ○
4.2.3	Venture capital investors, deals/bn PPP$ GDP	n/a	n/a
4.2.4	Venture capital recipients, deals/bn PPP$ GDP	n/a	n/a
4.3	**Trade, diversification, and market scale**	**76.4**	**41**
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

		Score/ Value	Rank
Business sophistication		**25.5**	**63**
5.1	**Knowledge workers**	**28.7**	**77**
5.1.1	Knowledge-intensive employment, %	28.0	53
5.1.2	Firms offering formal training, %	38.3	32
5.1.3	GERD performed by business, % GDP	0.4	46
5.1.4	GERD financed by business, %	9.1	78 ○
5.1.5	Females employed w/advanced degrees, %	15.0	50
5.2	**Innovation linkages**	**19.8**	**72**
5.2.1	University-industry R&D collaboration†	38.5	85
5.2.2	State of cluster development and depth†	38.6	107 ○
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
5.3	**Knowledge absorption**	**27.9**	**61**
5.3.1	Intellectual property payments, % total trade	1.0	38
5.3.2	High-tech imports, % total trade	7.2	75
5.3.3	ICT services imports, % total trade	2.4	21 ◆
5.3.4	FDI net inflows, % GDP	7.6	13 ● ◆
5.3.5	Research talent, % in businesses	9.6	64 ○
Knowledge and technology outputs		**29.1**	**43**
6.1	**Knowledge creation**	**23.4**	**42**
6.1.1	Patents by origin/bn PPP$ GDP	1.3	54
6.1.2	PCT patents by origin/bn PPP$ GDP	0.2	51
6.1.3	Utility models by origin/bn PPP$ GDP	0.6	35
6.1.4	Scientific and technical articles/bn PPP$ GDP	41.0	17 ● ◆
6.1.5	Citable documents H-index	14.9	54
6.2	**Knowledge impact**	**34.8**	**45**
6.2.1	Labor productivity growth, %	0.7	53
6.2.2	New businesses/th pop. 15–64	1.9	58
6.2.3	Software spending, % GDP	0.0	104 ○ ◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	21.4	10 ● ◆
6.2.5	High-tech manufacturing, %	25.4	49
6.3	**Knowledge diffusion**	**29.1**	**39**
6.3.1	Intellectual property receipts, % total trade	0.2	41
6.3.2	Production and export complexity	59.3	38
6.3.3	High-tech exports, % total trade	1.8	64
6.3.4	ICT services exports, % total trade	5.5	12 ● ◆
Creative outputs		**21.4**	**76**
7.1	**Intangible assets**	**20.8**	**98** ○
7.1.1	Trademarks by origin/bn PPP$ GDP	24.2	84
7.1.2	Global brand value, top 5,000, % GDP	0.0	80 ○ ◇
7.1.3	Industrial designs by origin/bn PPP$ GDP	1.0	70
7.1.4	ICTs and organizational model creation†	51.7	75
7.2	**Creative goods and services**	**20.2**	**51**
7.2.1	Cultural and creative services exports, % total trade	1.8	10 ● ◆
7.2.2	National feature films/mn pop. 15–69	5.6	39
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a
7.2.4	Printing and other media, % manufacturing	1.0	55
7.2.5	Creative goods exports, % total trade	0.6	59
7.3	**Online creativity**	**23.8**	**51**
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.3	91
7.3.2	Country-code TLDs/th pop. 15–69	5.5	53
7.3.3	Wikipedia edits/mn pop. 15–69	69.8	36 ◆
7.3.4	Mobile app creation/bn PPP$ GDP	15.8	31

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

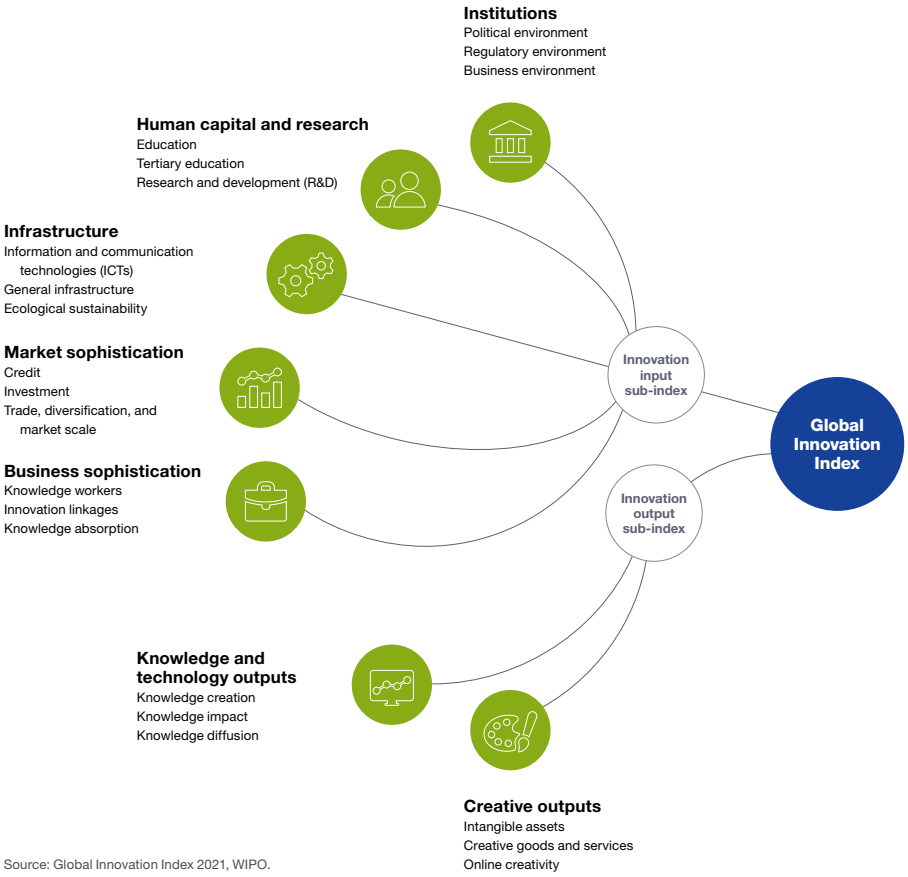
Outdated data for Serbia

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.



Source: Global Innovation Index 2021, WIPO.

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.