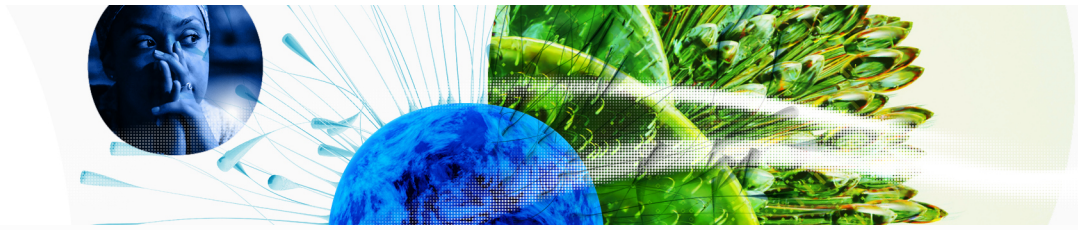
Global Innovation Index 2023



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**.

Bosnia and Herzegovina ranking in the Global Innovation Index 2023

> Bosnia and Herzegovina ranks 77th among the 132 economies featured in the GII 2023.

> Bosnia and Herzegovina ranks 22nd among the 33 upper-middle-income group economies.

> Bosnia and Herzegovina ranks 37th among the 39 economies in Europe.

> Bosnia and Herzegovina GII Ranking (2020-2023)

The table shows the rankings of Bosnia and Herzegovina 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 Bosnia and Herzegovina in the GII 2023 is between ranks 73 and 86.

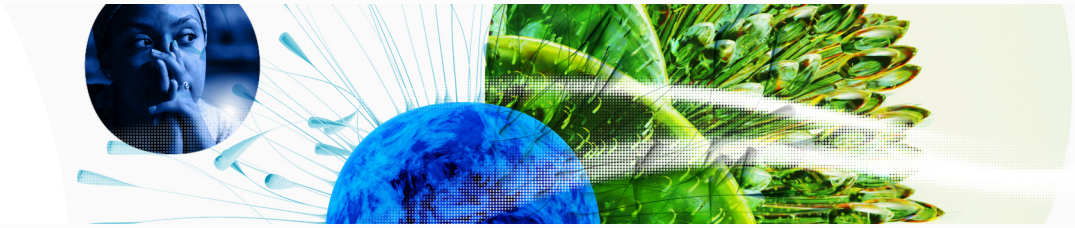
	GII Position	Innovation Inputs	Innovation Outputs
2020	74th	72nd	75th
2021	75th	70th	80th
2022	70th	64th	75th
2023	77th	75th	80th

Bosnia and Herzegovina performs worse in innovation outputs than innovation inputs in 2023.

This year **Bosnia and Herzegovina ranks 75th in innovation inputs.** This position is lower than last year.

Bosnia and Herzegovina ranks 80th in innovation outputs. This position is lower than last year.

Global Innovation Index 2023

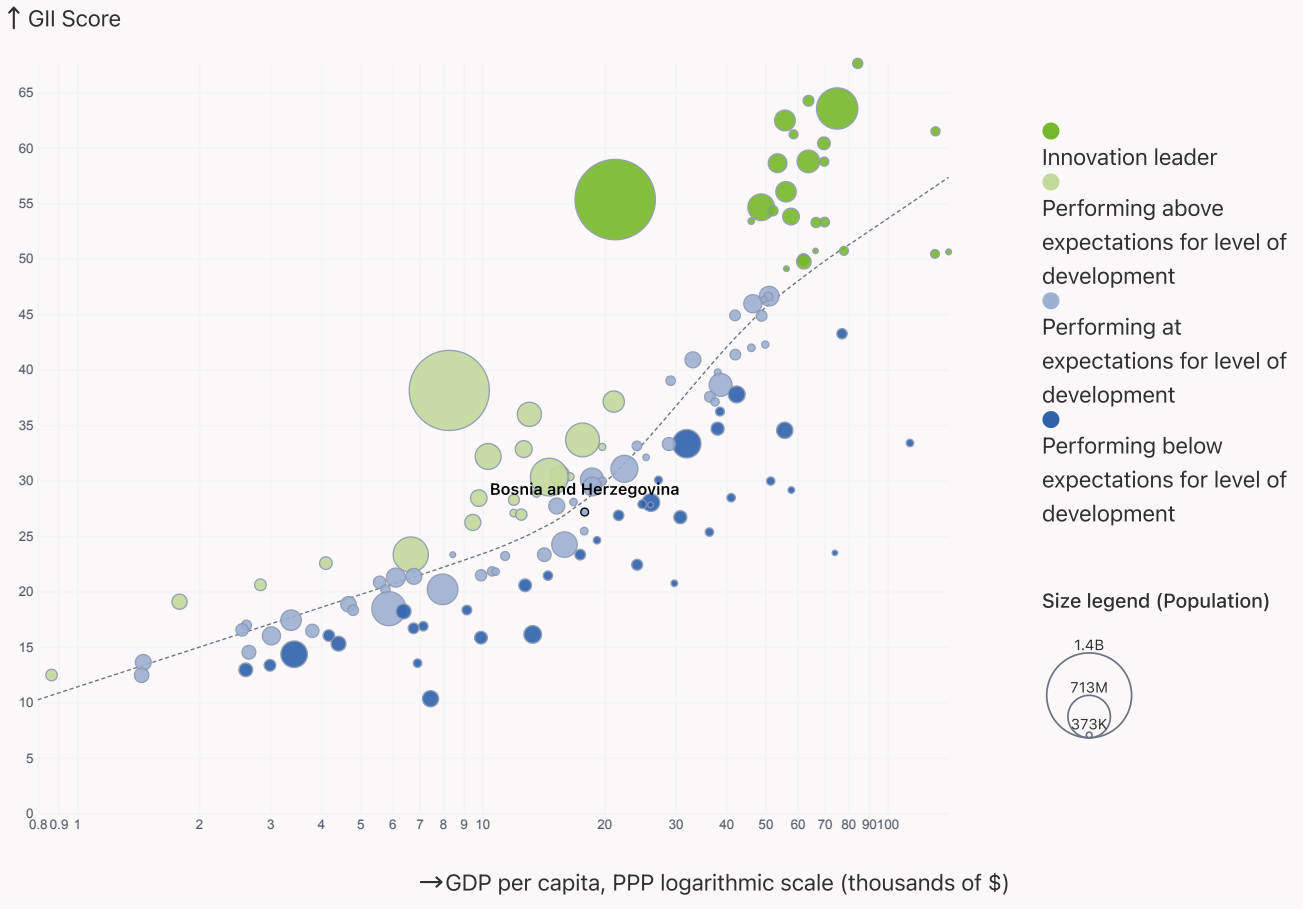


→ Expected vs. observed innovation performance

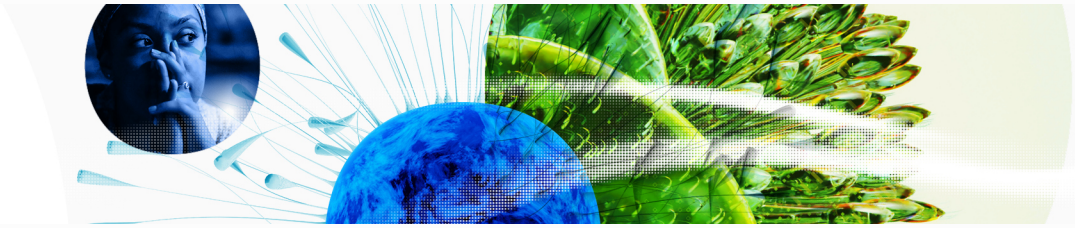
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.

> Relative to GDP, Bosnia and Herzegovina's performance is at expectations for its level of development.

> Innovation overperformers relative to their economic development



Global Innovation Index 2023



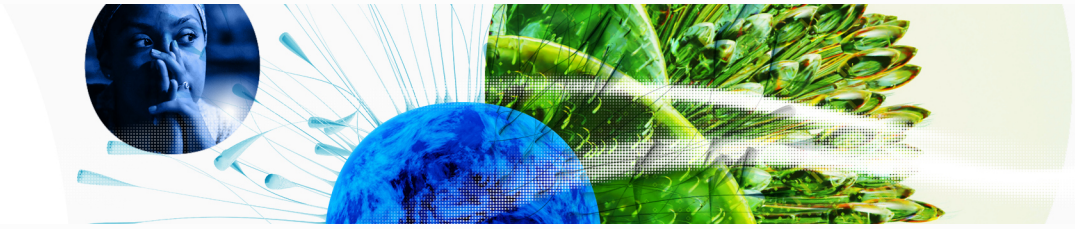
→ Effectively translating innovation investments into innovation outputs

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.

> Bosnia and Herzegovina produces less innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

Global Innovation Index 2023



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

> Highest rankings

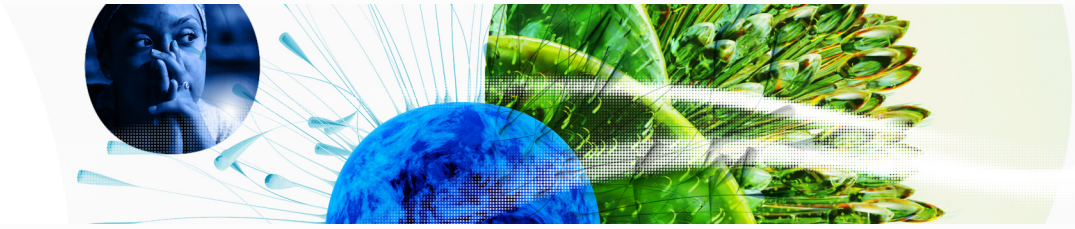
Bosnia and Herzegovina ranks highest in Market sophistication (27th), Knowledge and technology outputs (64th), Infrastructure (67th) and Human capital and research (68th).

> Lowest rankings

Bosnia and Herzegovina ranks lowest in Business sophistication (106th), Institutions (104th) and Creative outputs (91st).

The full WIPO Intellectual Property Statistics profile for Bosnia and Herzegovina can be found on this link.

Global Innovation Index 2023



→ Benchmark of Bosnia and Herzegovina against other country groupings for each of the seven areas of the GII Index

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

> Upper-Middle-Income economies

Bosnia and Herzegovina performs below the upper-middle-income group average in Creative outputs, Business sophistication, Infrastructure, Institutions.

> Europe

Bosnia and Herzegovina performs below the regional average in Knowledge and technology outputs, Creative outputs, Business sophistication, Human capital and research, Infrastructure, Institutions.

Knowledge and technology outputs

- Top 10 | Score: 58.96
- Europe | Score: 38.80
- Bosnia and Herzegovina | Score: 23.08
- Upper middle income | Score: 22.36

Creative outputs

- Top 10 | 56.09
- Europe | 39.87
- Upper middle income | 23.16
- Bosnia and Herzegovina | 15.58

Business sophistication

- Top 10 | 64.39
- Europe | 44.61
- Upper middle income | 29.27
- Bosnia and Herzegovina | 20.48

Market sophistication

- Top 10 | 61.93
- Bosnia and Herzegovina | 47.87
- Europe | 43.65
- Upper middle income | 35.45

Human capital and research

- Top 10 | 60.28
- Europe | 44.05
- Bosnia and Herzegovina | 30.49
- Upper middle income | 29.68

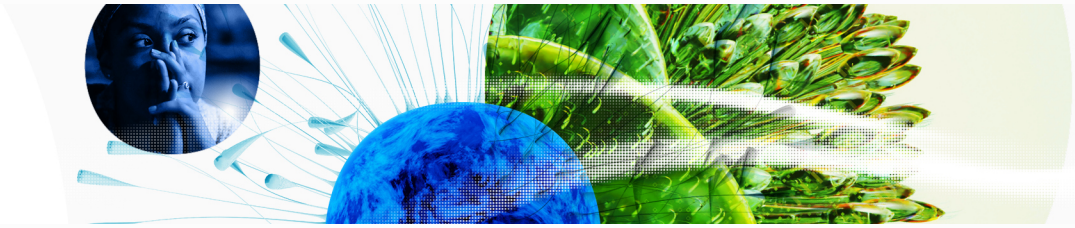
Infrastructure

- Top 10 | 62.83
- Europe | 54.69
- Upper middle income | 40.40
- Bosnia and Herzegovina | 39.49

Institutions

- Top 10 | 79.85
- Europe | 61.69
- Upper middle income | 47.71
- Bosnia and Herzegovina | 36.51

Global Innovation Index 2023



→ Innovation strengths and weaknesses in Bosnia and Herzegovina

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

> Bosnia and Herzegovina's main innovation strengths are **Government funding/pupil, secondary, % GDP/cap** (rank 5), **ISO 9001 quality/bn PPP$ GDP** (rank 6) and **Pupil-teacher ratio, secondary** (rank 13).

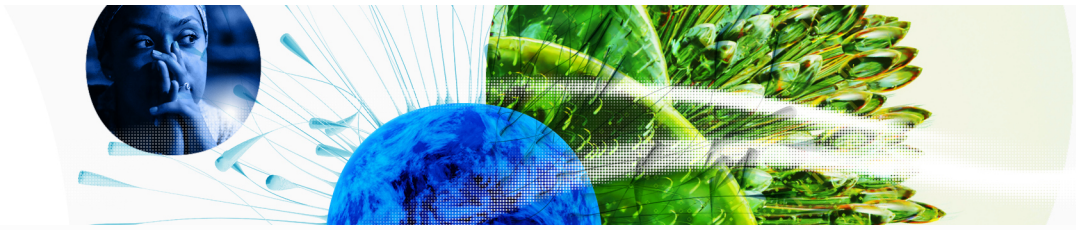
Strengths

Rank	Code	Indicator name
5	2.1.2	Government funding/pupil, secondary, % GDP/cap
6	6.3.5	ISO 9001 quality/bn PPP$ GDP
13	2.1.5	Pupil-teacher ratio, secondary
17	3.3.3	ISO 14001 environment/bn PPP$ GDP
18	4.3.2	Domestic industry diversification
24	1.2.3	Cost of redundancy dismissal
36	6.3.2	Production and export complexity
37	2.2.3	Tertiary inbound mobility, %
38	3.2.1	Electricity output, GWh/mn pop.
45	6.2.1	Labor productivity growth, %

Weaknesses

Rank	Code	Indicator name
127	1.1.2	Government effectiveness
126	1.3.1	Policies for doing business
126	5.2.1	University-industry R&D collaboration
105	7.3.4	Mobile app creation/bn PPP$ GDP
104	3.3.1	GDP/unit of energy use
76	7.1.1	Intangible asset intensity, top 15, %
74	7.1.3	Global brand value, top 5,000
71	2.3.4	QS university ranking, top 3
48	6.2.2	Unicorn valuation, % GDP
40	2.3.3	Global corporate R&D investors, top 3, mn US$

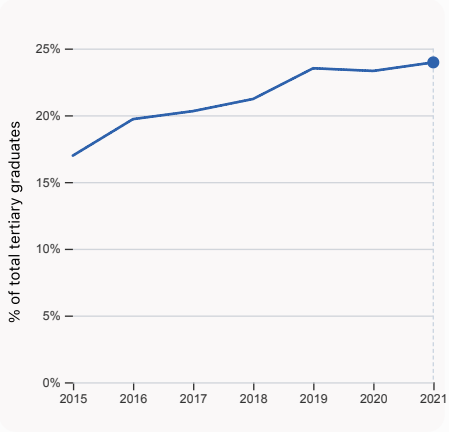
Global Innovation Index 2023



→ Bosnia and Herzegovina's innovation system

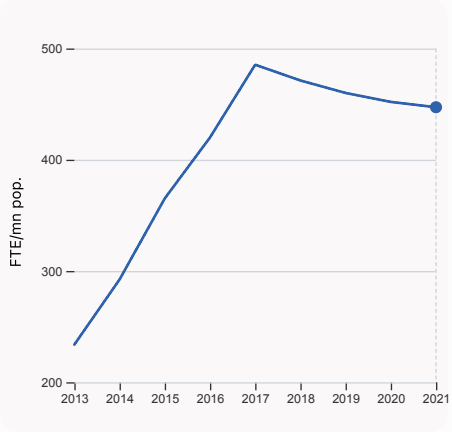
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Bosnia and Herzegovina



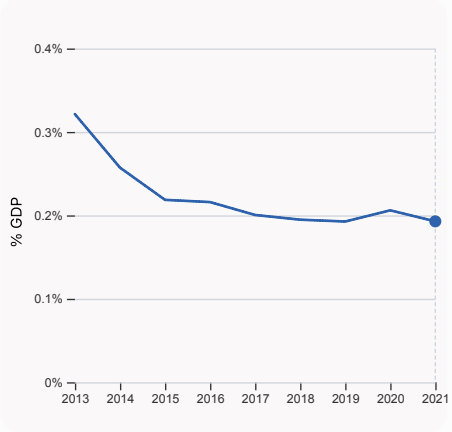
2.2.2 Graduates in science and engineering, %

was equal to 23.96% of total tertiary graduates in 2021, up by 0.64 percentage points from the year prior – and equivalent to an indicator rank of 50.



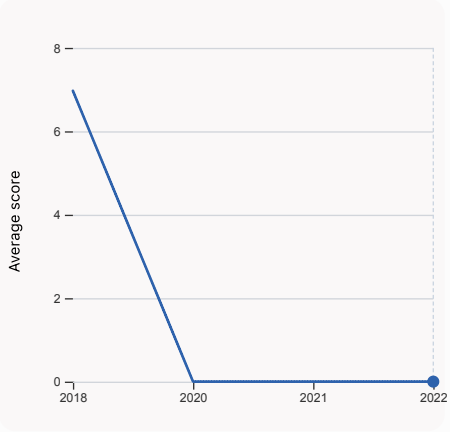
2.3.1 Researchers, FTE/mn pop.

was equal to 447.22 FTE/mn pop. in 2021, down by 1.055% from the year prior – and equivalent to an indicator rank of 72.



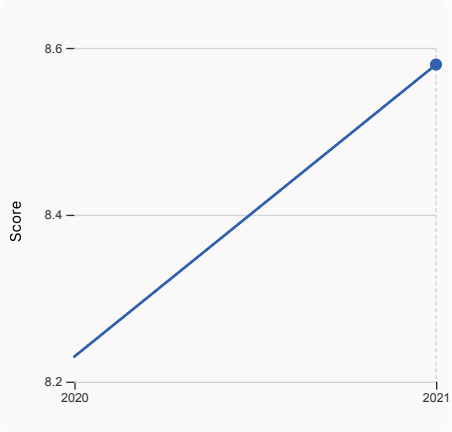
2.3.2 Gross expenditure on R&D, % GDP

was equal to 0.193% GDP in 2021, down by 0.013 percentage points from the year prior – and equivalent to an indicator rank of 89.



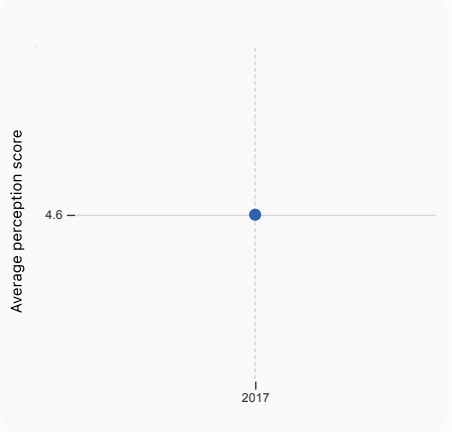
2.3.4 QS university ranking, top 3

was equal to an average score of 0 for the top 3 universities in 2022, equivalent to an indicator rank of 71.



3.1.1 ICT access

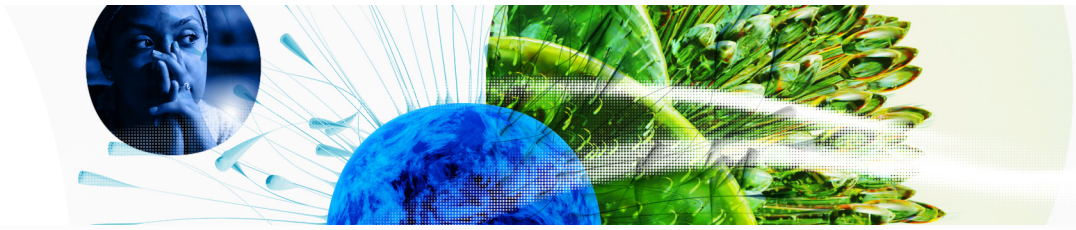
was equal to a score of 8.58 in 2021, up by 4.25% from the year prior – and equivalent to an indicator rank of 77.

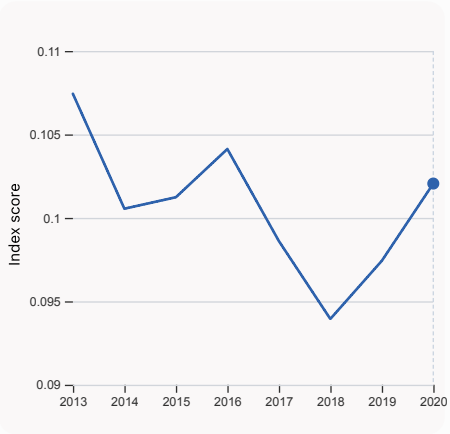


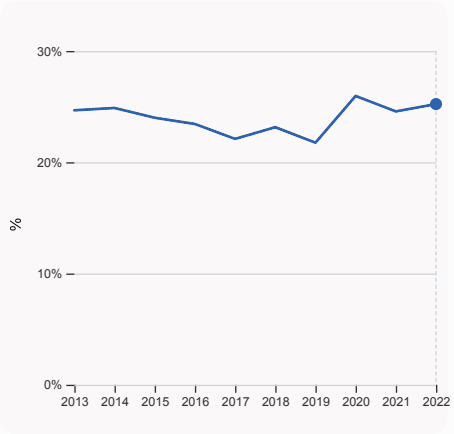
4.1.1 Finance for startups and scaleups

was equal to an average perception score of 4.6 in 2017, equivalent to an indicator rank of 44.

Global Innovation Index 2023







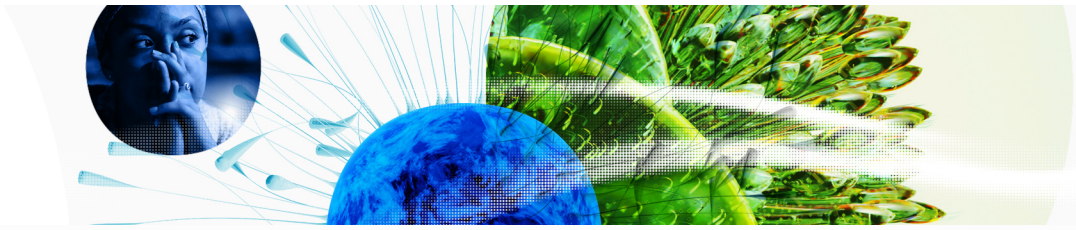
4.3.2 Domestic industry diversification

was equal to an index score of 0.102 in 2020, up by 4.75% from the year prior – and equivalent to an indicator rank of 18.

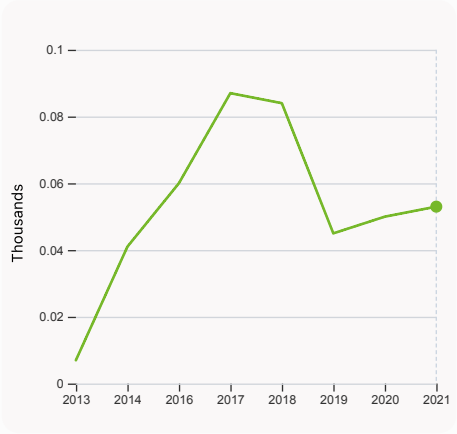
5.1.1 Knowledge-intensive employment, %

was equal to 25.23% in 2022, up by 0.66 percentage points from the year prior – and equivalent to an indicator rank of 55.

Global Innovation Index 2023

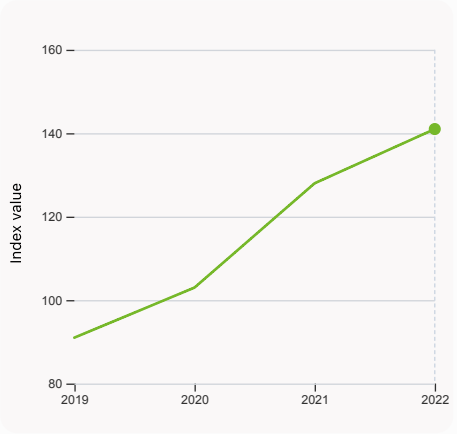


> Innovation outputs in Bosnia and Herzegovina



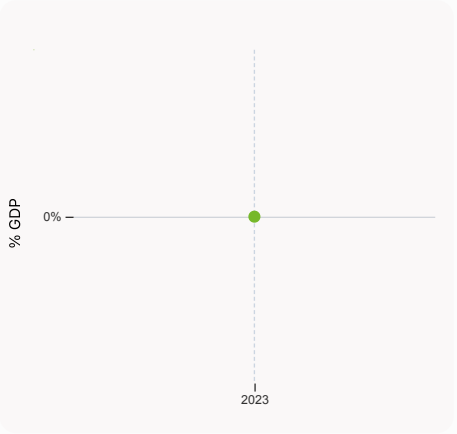
6.1.1 Patents by origin

was equal to 0.053 Thousands in 2021, up by 6% from the year prior – and equivalent to an indicator rank of 61.



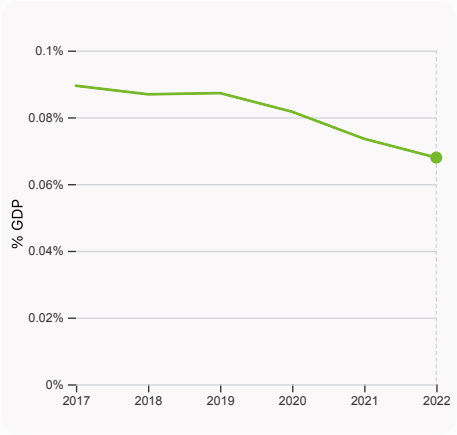
6.1.5 Citable documents H-index

was equal to an index value of 141 in 2022, up by 10.16% from the year prior – and equivalent to an indicator rank of 98.



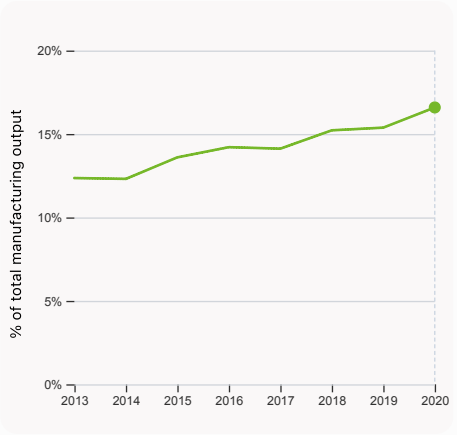
6.2.2 Unicorn valuation, % GDP

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



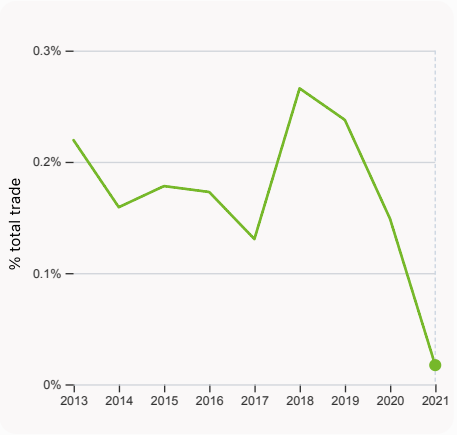
6.2.3 Software spending, % GDP

was equal to 0.068% GDP in 2022, down by 0.0056 percentage points from the year prior – and equivalent to an indicator rank of 98.



6.2.4 High-tech manufacturing, %

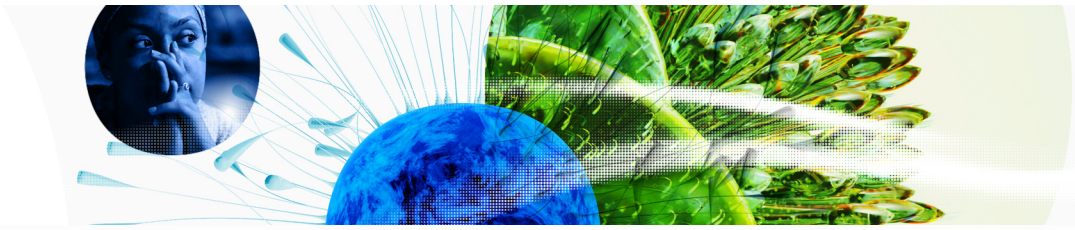
was equal to 16.59% of total manufacturing output in 2020, up by 1.21 percentage points from the year prior – and equivalent to an indicator rank of 73.

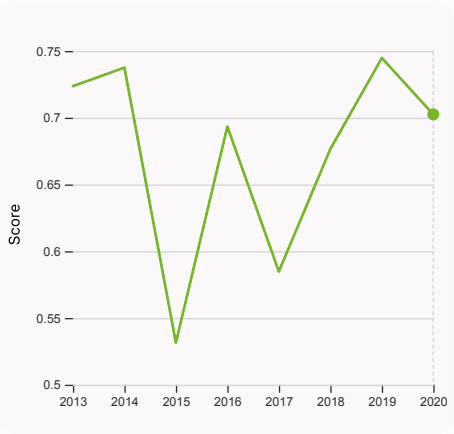


6.3.1 Intellectual property receipts, % total trade

was equal to 0.017% total trade in 2021, down by 0.13 percentage points from the year prior – and equivalent to an indicator rank of 50.

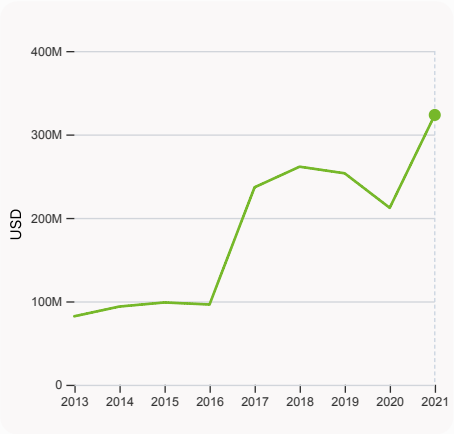
Global Innovation Index 2023





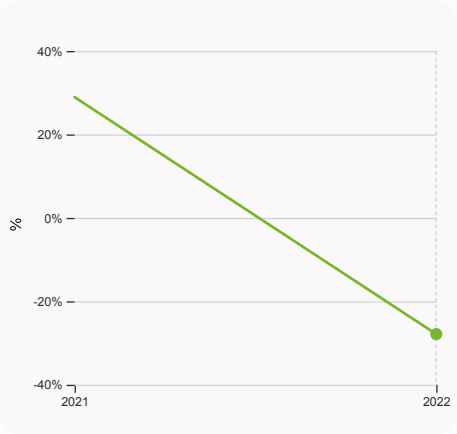
6.3.2 Production and export complexity

was equal to a score of 0.703 in 2020, down by 5.67% from the year prior – and equivalent to an indicator rank of 36.



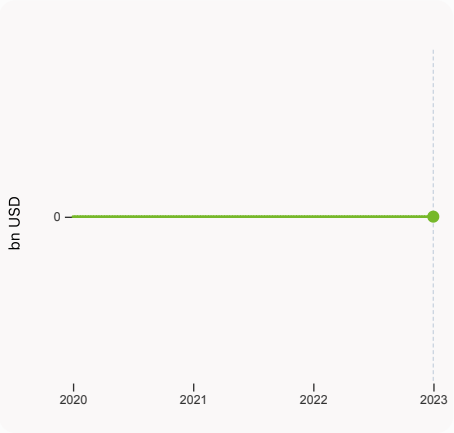
6.3.3 High-tech exports

was equal to 323,354,350 USD in 2021, up by 52.49% from the year prior – and equivalent to an indicator rank of 48.



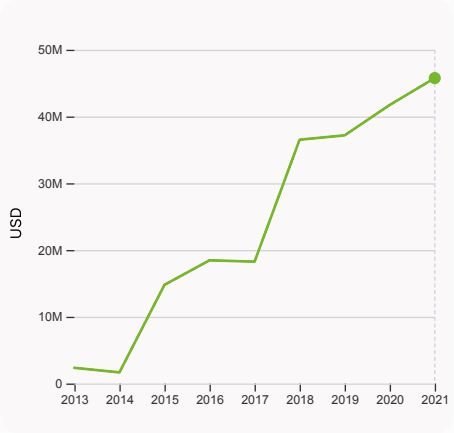
7.1.1 Intangible asset intensity, top 15, %

was equal to -27.856% in 2022, down by 56.8 percentage points from the year prior – and equivalent to an indicator rank of 76.



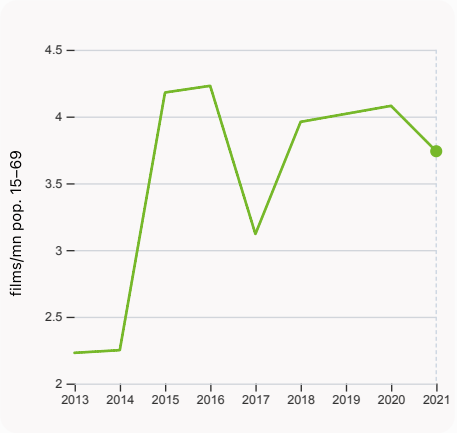
7.1.3 Global brand value, top 5,000

was equal to 0 bn USD in 2023 – and equivalent to an indicator rank of 74.



7.2.1 Cultural and creative services exports

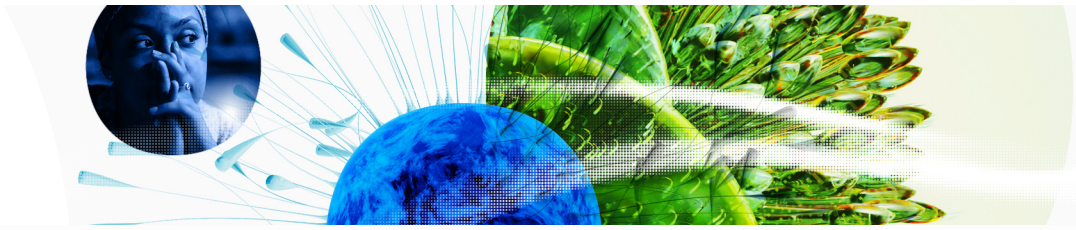
was equal to 45,760,000 USD in 2021, up by 9.65% from the year prior – and equivalent to an indicator rank of 60.

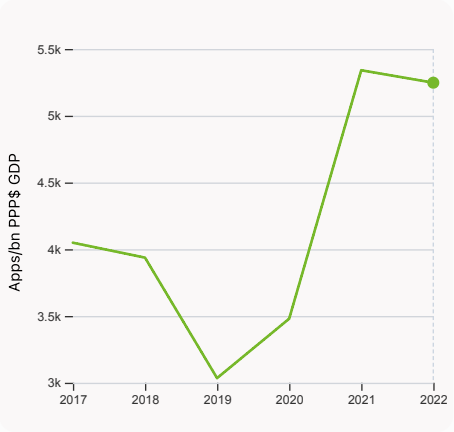


7.2.2 National feature films/mn pop. 15-69

was equal to 3.74 films/mn pop. 15–69 in 2021, down by 8.33% from the year prior – and equivalent to an indicator rank of 35.

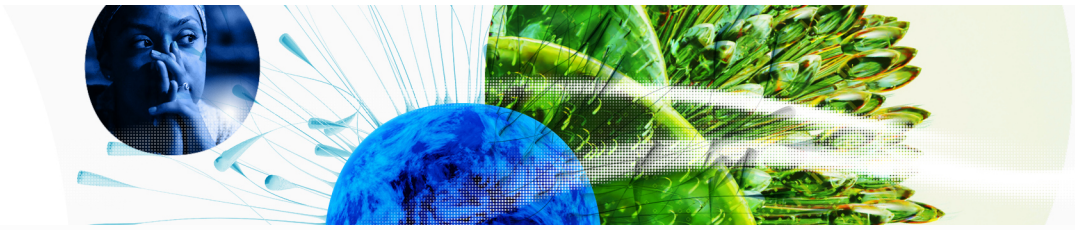
Global Innovation Index 2023





7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 5,247.62 Apps/bn PPP$ GDP in 2022, down by 1.74% from the year prior – and equivalent to an indicator rank of 105.



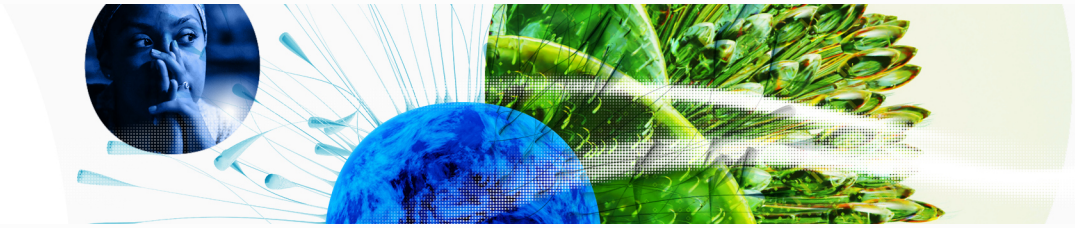
→ Bosnia and Herzegovina's innovation top performers

> 7.1.1 Top 15 intangible-asset intensive companies in Bosnia and Herzegovina

Rank	Firm	Intensity, %
1	TELEKOM SRPSKE AD BANJA LUKA	30.76
2	ATOS BANK AD BANJA LUKA	40.28
3	BOSNALIJEK DD	28.11

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

Global Innovation Index 2023



Bosnia and Herzegovina

GII 2023 rank **77**

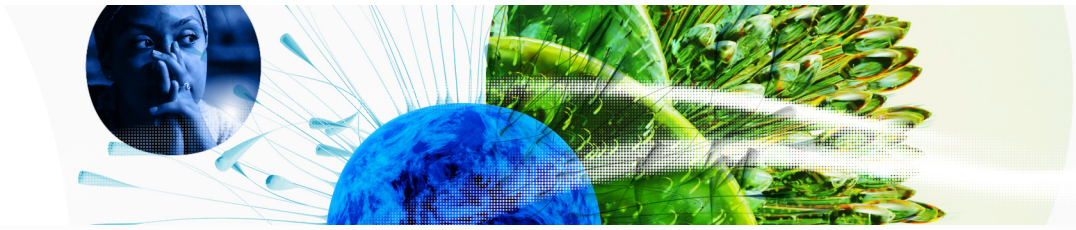
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
80	75	Upper middle	EUR	3.2	62.2	17,899.1

	Score / Value	Rank	
Institutions	**36.5**	**104**	
1.1 Institutional environment	**24.8**	**113**	○ ◇
1.1.1 Operational stability for businesses*	41.7	87	
1.1.2 Government effectiveness*	8.0	127	○ ◇
1.2 Regulatory environment	**66.0**	**56**	
1.2.1 Regulatory quality*	37.5	81	
1.2.2 Rule of law*	31.6	80	
1.2.3 Cost of redundancy dismissal	9.2	24	● ◆
1.3 Business environment	**18.7**	**120**	○ ◇
1.3.1 Policies for doing business†	11.2	126	○ ◇
1.3.2 Entrepreneurship policies and culture†	26.1	66	
Human capital and research	**30.5**	**68**	
2.1 Education	**61.3**	**[28]**	
2.1.1 Expenditure on education, % GDP	n/a	n/a	
2.1.2 Government funding/pupil, secondary, % GDP/cap	33.5	5	● ◆
2.1.3 School life expectancy, years	n/a	n/a	
2.1.4 PISA scales in reading, maths and science	402.6	63	
2.1.5 Pupil-teacher ratio, secondary	8.3	13	● ◆
2.2 Tertiary education	**28.2**	**73**	
2.2.1 Tertiary enrolment, % gross	39.2	78	
2.2.2 Graduates in science and engineering, %	24.0	50	
2.2.3 Tertiary inbound mobility, %	6.6	37	● ◆
2.3 Research and development (R&D)	**1.9**	**90**	
2.3.1 Researchers, FTE/mn pop.	447.2	72	
2.3.2 Gross expenditure on R&D, % GDP	0.2	89	
2.3.3 Global corporate R&D investors, top 3, mn US$	0.0	40	○ ◇
2.3.4 QS university ranking, top 3*	0.0	71	○ ◇
Infrastructure	**39.5**	**67**	
3.1 Information and communication technologies (ICTs)	**59.5**	**83**	
3.1.1 ICT access*	78.7	77	
3.1.2 ICT use*	63.5	87	
3.1.3 Government's online service*	43.6	102	◇
3.1.4 E-participation*	52.3	71	
3.2 General infrastructure	**28.6**	**58**	
3.2.1 Electricity output, GWh/mn pop.	5,639.0	38	● ◆
3.2.2 Logistics performance*	40.9	60	
3.2.3 Gross capital formation, % GDP	21.8	83	
3.3 Ecological sustainability	**30.3**	**53**	
3.3.1 GDP/unit of energy use	6.4	104	○ ◇
3.3.2 Environmental performance*	34.7	75	
3.3.3 ISO 14001 environment/bn PPP$ GDP	5.6	17	● ◆
Market sophistication	**47.9**	**27**	● ◆
4.1 Credit	**35.9**	**50**	
4.1.1 Finance for startups and scaleups†	50.8	44	
4.1.2 Domestic credit to private sector, % GDP	58.5	63	
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	
4.2 Investment	**n/a**	**[n/a]**	
4.2.1 Market capitalization, % GDP	n/a	n/a	
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	n/a	n/a	
4.2.3 VC recipients, deals/bn PPP$ GDP	n/a	n/a	
4.2.4 VC received, value, % GDP	n/a	n/a	
4.3 Trade, diversification, and market scale	**59.9**	**56**	
4.3.1 Applied tariff rate, weighted avg., %	2.9	72	
4.3.2 Domestic industry diversification	96.9	18	● ◆
4.3.3 Domestic market scale, bn PPP$	62.2	100	

	Score / Value	Rank	
Business sophistication	**20.5**	**106**	◇
5.1 Knowledge workers	**30.9**	**67**	
5.1.1 Knowledge-intensive employment, %	25.2	55	
5.1.2 Firms offering formal training, %	37.9	39	
5.1.3 GERD performed by business, % GDP	0.1	64	
5.1.4 GERD financed by business, %	29.4	59	
5.1.5 Females employed w/advanced degrees, %	10.7	71	
5.2 Innovation linkages	**9.8**	**119**	○ ◇
5.2.1 University-industry R&D collaboration†	11.0	126	○ ◇
5.2.2 State of cluster development†	31.2	90	
5.2.3 GERD financed by abroad, % GDP	0.0	74	
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	79	
5.2.5 Patent families/bn PPP$ GDP	0.0	81	
5.3 Knowledge absorption	**20.7**	**127**	○ ◇
5.3.1 Intellectual property payments, % total trade	0.2	95	◇
5.3.2 High-tech imports, % total trade	6.0	103	
5.3.3 ICT services imports, % total trade	0.5	108	◇
5.3.4 FDI net inflows, % GDP	2.4	65	
5.3.5 Research talent, % in businesses	9.7	62	
Knowledge and technology outputs	**23.1**	**64**	
6.1 Knowledge creation	**11.2**	**79**	
6.1.1 Patents by origin/bn PPP$ GDP	0.9	61	
6.1.2 PCT patents by origin/bn PPP$ GDP	0.1	68	
6.1.3 Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a	
6.1.5 Citable documents H-index	5.5	98	
6.2 Knowledge impact	**21.0**	**100**	
6.2.1 Labor productivity growth, %	1.5	45	● ◆
6.2.2 Unicorn valuation, % GDP	0.0	48	○ ◇
6.2.3 Software spending, % GDP	0.1	98	
6.2.4 High-tech manufacturing, %	16.6	73	
6.3 Knowledge diffusion	**37.1**	**37**	● ◆
6.3.1 Intellectual property receipts, % total trade	0.1	50	
6.3.2 Production and export complexity	67.2	36	● ◆
6.3.3 High-tech exports, % total trade	2.9	48	
6.3.4 ICT services exports, % total trade	2.2	54	
6.3.5 ISO 9001 quality/bn PPP$ GDP	23.4	6	● ◆
Creative outputs	**15.6**	**91**	
7.1 Intangible assets	**17.5**	**91**	
7.1.1 Intangible asset intensity, top 15, %	-27.9	76	○
7.1.2 Trademarks by origin/bn PPP$ GDP	17.9	96	◇
7.1.3 Global brand value, top 5,000	0.0	74	○ ◇
7.1.4 Industrial designs by origin/bn PPP$ GDP	0.9	73	
7.2 Creative goods and services	**12.1**	**63**	
7.2.1 Cultural and creative services exports, % total trade	0.4	60	
7.2.2 National feature films/mn pop. 15-69	3.7	35	◆
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	68	
7.3 Online creativity	**15.2**	**96**	
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	3.4	66	
7.3.2 Country-code TLDs/th pop. 15-69	3.3	63	
7.3.3 GitHub commits/mn pop. 15-69	7.0	61	
7.3.4 Mobile app creation/bn PPP$ GDP	47.2	105	○ ◇

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 Bosnia and Herzegovina.

> Bosnia and Herzegovina has missing data for nine indicators and outdated data for six indicators.

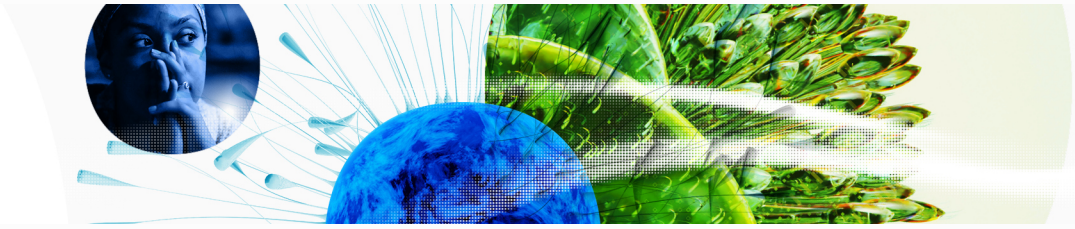
> Missing data for Bosnia and Herzegovina

Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	n/a	2021	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	n/a	2020	UNESCO Institute for Statistics
4.1.3	Loans from microfinance institutions, % GDP	n/a	2021	International Monetary Fund, Financial Access Survey (FAS)
4.2.1	Market capitalization, % GDP	n/a	2020	World Federation of Exchanges; World Bank
4.2.2	Venture capital (VC) investors, deals/bn PPP$ GDP	n/a	2022	Refinitiv; International Monetary Fund
4.2.3	VC recipients, deals/bn PPP$ GDP	n/a	2022	Refinitiv; International Monetary Fund
4.2.4	VC received, value, % GDP	n/a	2022	Refinitiv; International Monetary Fund
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2021	World Intellectual Property Organization; International Monetary Fund
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 Bosnia and Herzegovina

Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	2017	2022	Global Entrepreneurship Monitor
2.1.2	Government funding/pupil, secondary, % GDP/cap	2018	2019	UNESCO Institute for Statistics
4.1.1	Finance for startups and scaleups	2017	2022	Global Entrepreneurship Monitor
5.1.3	GERD performed by business, % GDP	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	2021	2022	Refinitiv; International Monetary Fund
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.