

## BOSNIA AND HERZEGOVINA

**74th**

Bosnia and Herzegovina ranks 74th among the 131 economies featured in the GII 2020.

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 Bosnia and Herzegovina 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 Bosnia and Herzegovina in the GII 2020 is between ranks 72 and 81.

**Rankings of Bosnia and Herzegovina (2018–2020)**

	GII	Innovation inputs	Innovation outputs
<b>2020</b>	74	72	75
<b>2019</b>	76	71	79
<b>2018</b>	77	68	82

- Bosnia and Herzegovina performs better in innovation inputs than innovation outputs in 2020.
- This year Bosnia and Herzegovina ranks 72nd in innovation inputs, lower than last year and lower compared to 2018.
- As for innovation outputs, Bosnia and Herzegovina ranks 75th. This position is higher than last year and higher compared to 2018.

**22nd**

Bosnia and Herzegovina ranks 22nd among the 37 upper middle-income group economies.

**38th**

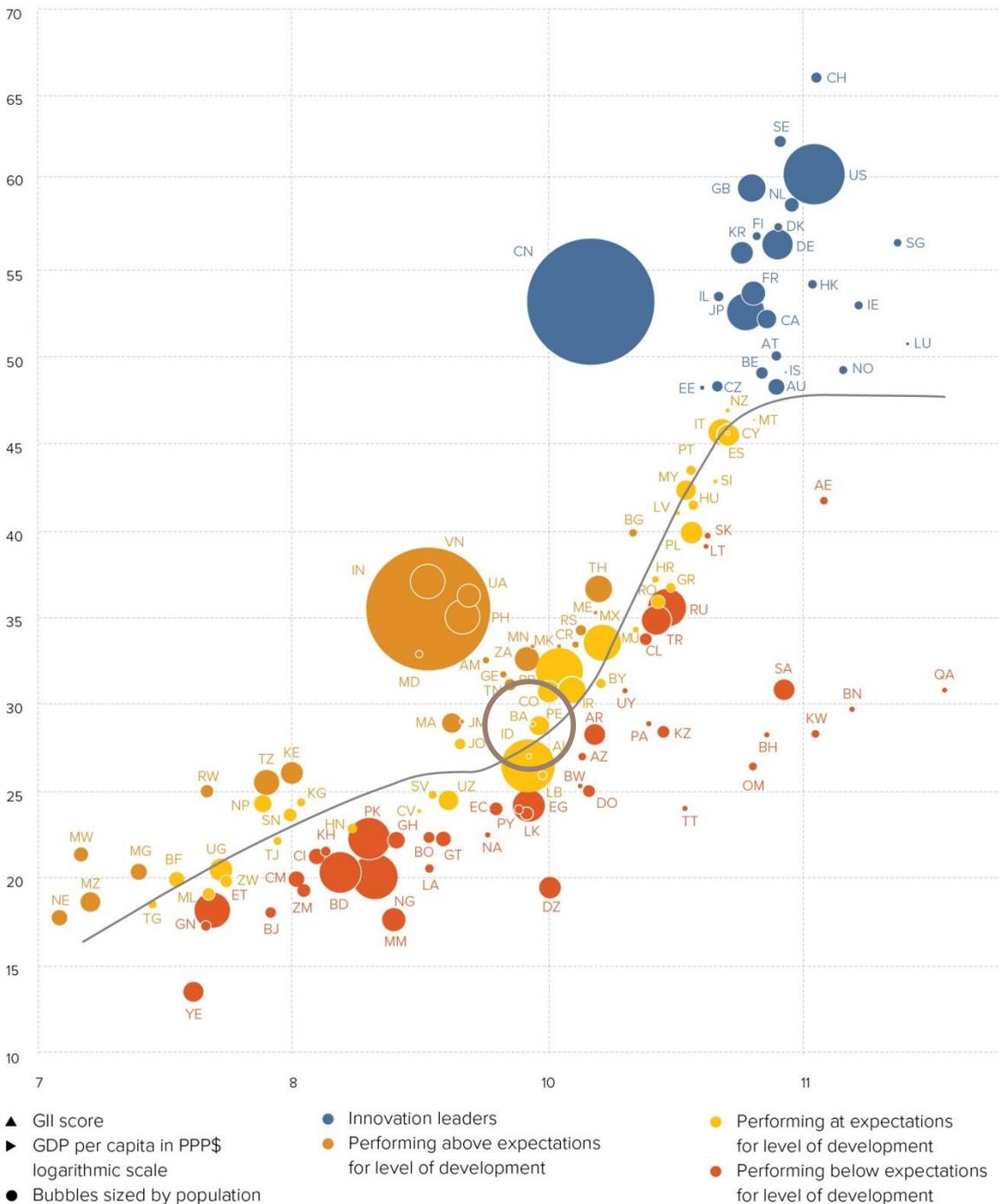
Bosnia and Herzegovina ranks 38th among the 39 economies in Europe.

## 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, Bosnia and Herzegovina's performance matches expectations for its level of development.

### The positive relationship between innovation and development

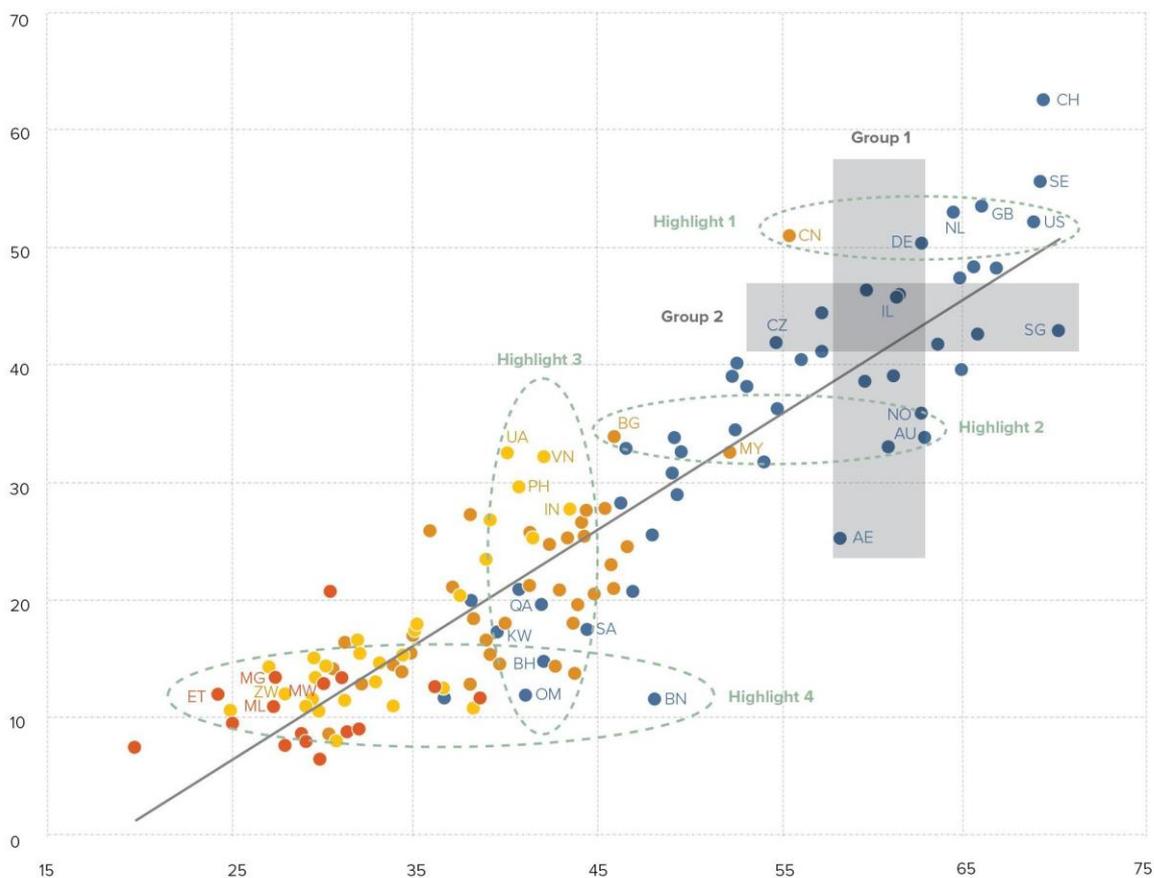


## EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and 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.

**Innovation input to output performance, 2020**

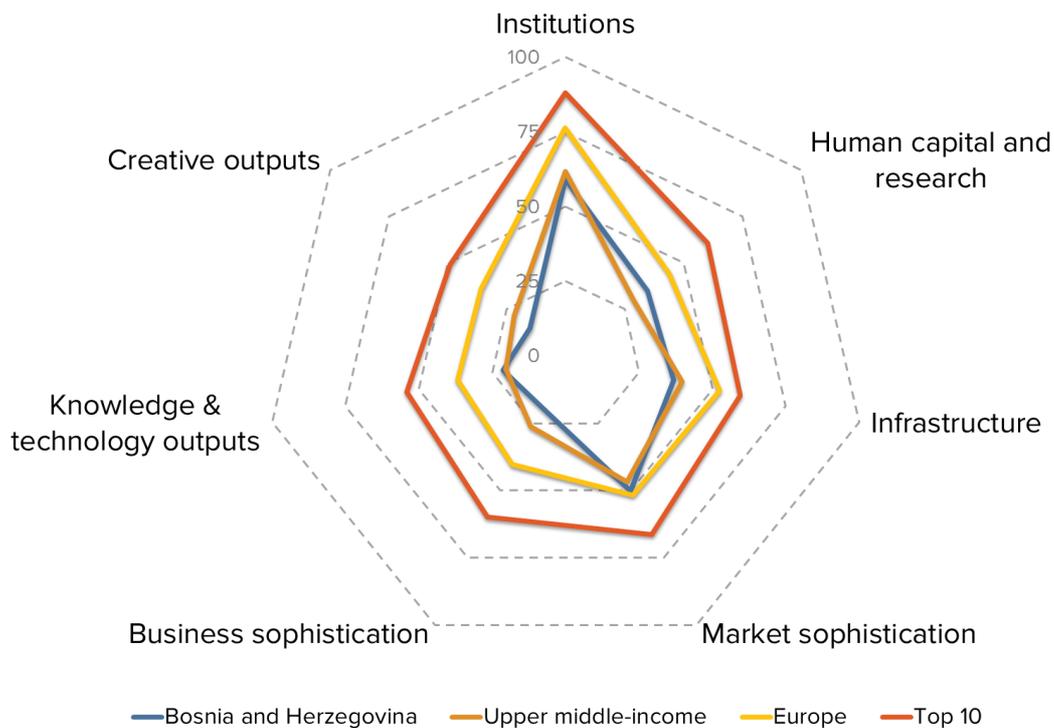


▲ Output score      ● High income group      ● Lower middle-income group      — Fitted values  
 ► Input score      ● Upper middle-income group      ● Low income group

AU	Australia	IN	India	NL	Netherlands	CH	Switzerland
BH	Bahrain	IL	Israel	NO	Norway	UA	Ukraine
BN	Brunei Darussalam	KW	Kuwait	OM	Oman	AE	United Arab Emirates
BG	Bulgaria	MG	Madagascar	PH	Philippines	GB	United Kingdom
CN	China	MW	Malawi	QA	Qatar	US	United States of America
CZ	Czech Republic	ML	Mali	SA	Saudi Arabia	VN	Viet Nam
ET	Ethiopia	MY	Malaysia	SG	Singapore	ZW	Zimbabwe
DE	Germany			SE	Sweden		

# BENCHMARKING BOSNIA AND HERZEGOVINA AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND EUROPE

## Bosnia and Herzegovina's scores in the seven GII pillars



### Upper middle-income group economies

Bosnia and Herzegovina has high scores in three out of the seven GII pillars: Human capital & research, Market sophistication and Knowledge & technology outputs, which are above average for the upper middle-income group.

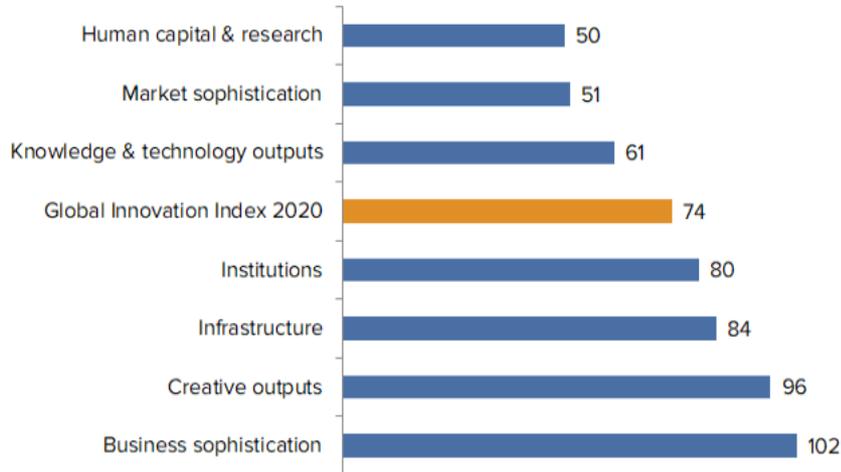
Conversely, Bosnia and Herzegovina scores below average for its income group in four pillars: Institutions, Infrastructure, Business sophistication and Creative outputs.

### Europe

Compared to other economies in Europe, Bosnia and Herzegovina performs below average in all seven of the GII pillars.

## OVERVIEW OF BOSNIA AND HERZEGOVINA RANKINGS IN THE SEVEN GII AREAS

Bosnia and Herzegovina performs best in Human capital & research and its weakest performance is in Business sophistication.



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

## INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Bosnia and Herzegovina in the GII 2020.

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal, salary weeks	24	1.3.1	Ease of starting a business*	130
1.3.2	Ease of resolving insolvency*	34	2.3.3	Global R&D companies, top 3, mn US\$	42
2.1.2	Government funding/pupil, secondary, % GDP/cap	2	2.3.4	QS university ranking, average score top 3*	77
2.1.5	Pupil-teacher ratio, secondary	23	3.1.3	Government's online service*	114
2.2.3	Tertiary inbound mobility, %	32	5.2	Innovation linkages	123
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	15	5.2.1	University/industry research collaboration†	124
6.1.1	Patents by origin/bn PPP\$ GDP	42	5.2.2	State of cluster development†	116
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	4	5.3	Knowledge absorption	128
7.2.2	National feature films/mn pop. 15–69	24	5.3.1	Intellectual property payments, % total trade	102
7.3.3	Wikipedia edits/mn pop. 15–69	41	6.2.1	Growth rate of PPP\$ GDP/worker, %	110
			7.1.2	Global brand value, top 5000, % GDP	80
			7.1.4	ICTs & organizational model creation†	116

## **STRENGTHS**

GII strengths for Bosnia and Herzegovina are found in five of the seven GII pillars.

- Institutions (80): exhibits strengths in the indicators Cost of redundancy dismissal (24) and Ease of resolving insolvency (34).
- Human capital & research (50): shows strengths in the indicators Government funding/pupil (2), Pupil–teacher ratio (23) and Tertiary inbound mobility (32).
- Infrastructure (84): demonstrates strengths in the indicator ISO 14001 environmental certificates (15).
- Knowledge & technology outputs (61): displays strengths in the indicators Patents by origin (42) and ISO 9001 quality certificates (4).
- Creative outputs (96): shows strengths in the indicators National feature films (24) and Wikipedia edits (41).

## **WEAKNESSES**

GII weaknesses for Bosnia and Herzegovina are found in six of the seven GII pillars.

- Institutions (80): exhibits weakness in the indicator Ease of starting a business (130).
- Human capital & research (50): shows weaknesses in the indicators Global R&D companies (42) and QS university ranking (77).
- Infrastructure (84): the indicator Government’s online service (114) reveals a weakness.
- Business sophistication (102): demonstrates weaknesses in the sub-pillars Innovation linkages (123) and Knowledge absorption (128) and in the indicators University/industry research collaboration (124), State of cluster development (116) and Intellectual property payments (102).
- Knowledge & technology outputs (61): the indicator Growth rate of PPP (110) displays a weakness.
- Creative outputs (96): reveals weaknesses in the indicators Global brand value (80) and ICTs & organizational model creation (116).

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2019 rank	
75	72	Upper middle	EUR	3.3	49.8	12,414.2	76	
				Score/Value	Rank			
				Score/Value	Rank			
<b>INSTITUTIONS</b> .....				59.3	80			
<b>1.1</b>	<b>Political environment</b> .....	45.6	103	◇	<b>5.1</b>	<b>Knowledge workers</b> .....	27.4	76
1.1.1	Political and operational stability*.....	64.3	83		5.1.1	Knowledge-intensive employment, %.....	21.8	71
1.1.2	Government effectiveness*.....	36.3	110	◇	5.1.2	Firms offering formal training, %.....	37.9	34
<b>1.2</b>	<b>Regulatory environment</b> .....	68.0	53		5.1.3	GERD performed by business, % GDP.....	0.1	65
1.2.1	Regulatory quality*.....	36.3	87		5.1.4	GERD financed by business, %.....	28.9	62
1.2.2	Rule of law*.....	40.6	74		5.1.5	Females employed w/advanced degrees, %.....	6.1	83
1.2.3	Cost of redundancy dismissal, salary weeks.....	9.2	24	●	<b>5.2</b>	<b>Innovation linkages</b> .....	13.0	123
<b>1.3</b>	<b>Business environment</b> .....	64.1	88		5.2.1	University/industry research collaboration*.....	23.7	124
1.3.1	Ease of starting a business*.....	60.0	130	○ ◇	5.2.2	State of cluster development.....	33.6	116
1.3.2	Ease of resolving insolvency*.....	68.2	34	● ◆	5.2.3	GERD financed by abroad, % GDP.....	0.0	54
<b>HUMAN CAPITAL &amp; RESEARCH</b> .....				35.0	50			
<b>2.1</b>	<b>Education</b> .....	70.8	[4]		5.2.4	JV-strategic alliance deals/bn PPP\$ GDP.....	0.0	77
2.1.1	Expenditure on education, % GDP.....	n/a	n/a		5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....	0.0	82
2.1.2	Government funding/pupil, secondary, % GDP/cap.....	43.5	2	● ◆	<b>5.3</b>	<b>Knowledge absorption</b> .....	15.7	128
2.1.3	School life expectancy, years.....	n/a	n/a		5.3.1	Intellectual property payments, % total trade.....	0.1	102
2.1.4	PISA scales in reading, maths, & science.....	402.6	63		5.3.2	High-tech imports, % total trade.....	5.5	106
2.1.5	Pupil-teacher ratio, secondary.....	9.1	23	●	5.3.3	ICT services imports, % total trade.....	0.5	104
<b>2.2</b>	<b>Tertiary education</b> .....	32.0	68		5.3.4	FDI net inflows, % GDP.....	2.3	73
2.2.1	Tertiary enrolment, % gross.....	n/a	n/a		5.3.5	Research talent, % in business enterprise.....	8.4	63
2.2.2	Graduates in science & engineering, %.....	21.2	61		<b>KNOWLEDGE &amp; TECHNOLOGY OUTPUTS</b> .....			
2.2.3	Tertiary inbound mobility, %.....	7.4	32	● ◆	<b>6.1</b>	<b>Knowledge creation</b> .....	11.0	76
<b>2.3</b>	<b>Research &amp; development (R&amp;D)</b> .....	2.3	92		6.1.1	Patents by origin/bn PPP\$ GDP.....	1.8	42
2.3.1	Researchers, FTE/mn pop.....	471.3	71		6.1.2	PCT patents by origin/bn PPP\$ GDP.....	0.0	84
2.3.2	Gross expenditure on R&D, % GDP.....	0.2	90		6.1.3	Utility models by origin/bn PPP\$ GDP.....	n/a	n/a
2.3.3	Global R&D companies, avg. exp. top 3, mn \$US.....	0.0	42	○ ◇	6.1.4	Scientific & technical articles/bn PPP\$ GDP.....	8.0	60
2.3.4	QS university ranking, average score top 3*.....	0.0	77	○ ◇	6.1.5	Citable documents H-index.....	4.8	106
<b>INFRASTRUCTURE</b> .....				36.8	84			
<b>3.1</b>	<b>Information &amp; communication technologies (ICTs)</b> .....	52.0	94		<b>6.2</b>	<b>Knowledge impact</b> .....	27.4	53
3.1.1	ICT access*.....	68.1	61		6.2.1	Growth rate of PPP\$ GDP/worker, %.....	-1.2	110
3.1.2	ICT use*.....	53.4	67		6.2.2	New businesses/th pop. 15-64.....	1.1	83
3.1.3	Government's online service*.....	43.1	114	○ ◇	6.2.3	Computer software spending, % GDP.....	0.0	91
3.1.4	E-participation*.....	43.3	110	◇	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....	28.3	4
<b>3.2</b>	<b>General infrastructure</b> .....	22.7	82		6.2.5	High- and medium-high-tech manufacturing, %.....	13.0	74
3.2.1	Electricity output, kWh/mn pop.....	4,683.2	46		<b>6.3</b>	<b>Knowledge diffusion</b> .....	25.3	59
3.2.2	Logistics performance*.....	34.7	71		6.3.1	Intellectual property receipts, % total trade.....	0.2	40
3.2.3	Gross capital formation, % GDP.....	21.4	85		6.3.2	High-tech net exports, % total trade.....	2.7	50
<b>3.3</b>	<b>Ecological sustainability</b> .....	35.9	47		6.3.3	ICT services exports, % total trade.....	1.8	62
3.3.1	GDP/unit of energy use.....	5.8	103	◇	6.3.4	FDI net outflows, % GDP.....	0.2	98
3.3.2	Environmental performance*.....	45.4	70		<b>CREATIVE OUTPUTS</b> .....			
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP.....	6.1	15	● ◆	<b>7.1</b>	<b>Intangible assets</b> .....	14.7	111
<b>MARKET SOPHISTICATION</b> .....				50.1	51			
<b>4.1</b>	<b>Credit</b> .....	38.0	80		7.1.1	Trademarks by origin/bn PPP\$ GDP.....	20.8	92
4.1.1	Ease of getting credit*.....	65.0	61		7.1.2	Global brand value, top 5,000, % GDP.....	0.0	80
4.1.2	Domestic credit to private sector, % GDP.....	58.6	59		7.1.3	Industrial designs by origin/bn PPP\$ GDP.....	1.6	54
4.1.3	Microfinance gross loans, % GDP.....	0.7	29		7.1.4	ICTs & organizational model creation*.....	39.0	116
<b>4.2</b>	<b>Investment</b> .....	56.0	[19]		<b>7.2</b>	<b>Creative goods and services</b> .....	11.6	73
4.2.1	Ease of protecting minority investors*.....	56.0	82		7.2.1	Cultural & creative services exports, % total trade.....	0.0	94
4.2.2	Market capitalization, % GDP.....	n/a	n/a		7.2.2	National feature films/mn pop. 15-69.....	8.4	24
4.2.3	Venture capital deals/bn PPP\$ GDP.....	n/a	n/a		7.2.3	Entertainment & Media market/th pop. 15-69.....	n/a	n/a
<b>4.3</b>	<b>Trade, competition, and market scale</b> .....	56.2	92		7.2.4	Printing and other media, % manufacturing.....	1.1	47
4.3.1	Applied tariff rate, weighted avg., %.....	2.8	63		7.2.5	Creative goods exports, % total trade.....	0.4	68
4.3.2	Intensity of local competition*.....	61.9	98		<b>7.3</b>	<b>Online creativity</b> .....	18.0	58
4.3.3	Domestic market scale, bn PPP\$.....	49.8	100		7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.....	2.8	67
					7.3.2	Country-code TLDs/th pop. 15-69.....	2.8	62
					7.3.3	Wikipedia edits/mn pop. 15-69.....	68.2	41
					7.3.4	Mobile app creation/bn PPP\$ GDP.....	0.1	83

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 either missing or outdated for Bosnia and Herzegovina.

### Missing data

Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	n/a	2018	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	n/a	2017	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	n/a	2017	UNESCO Institute for Statistics
4.2.2	Market capitalization, % GDP	n/a	2018	World Federation of Exchanges
4.2.3	Venture capital deals/bn PPP\$ GDP	n/a	2019	Thomson Reuters
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2018	World Intellectual Property Organization
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2018	PwC

### Outdated data

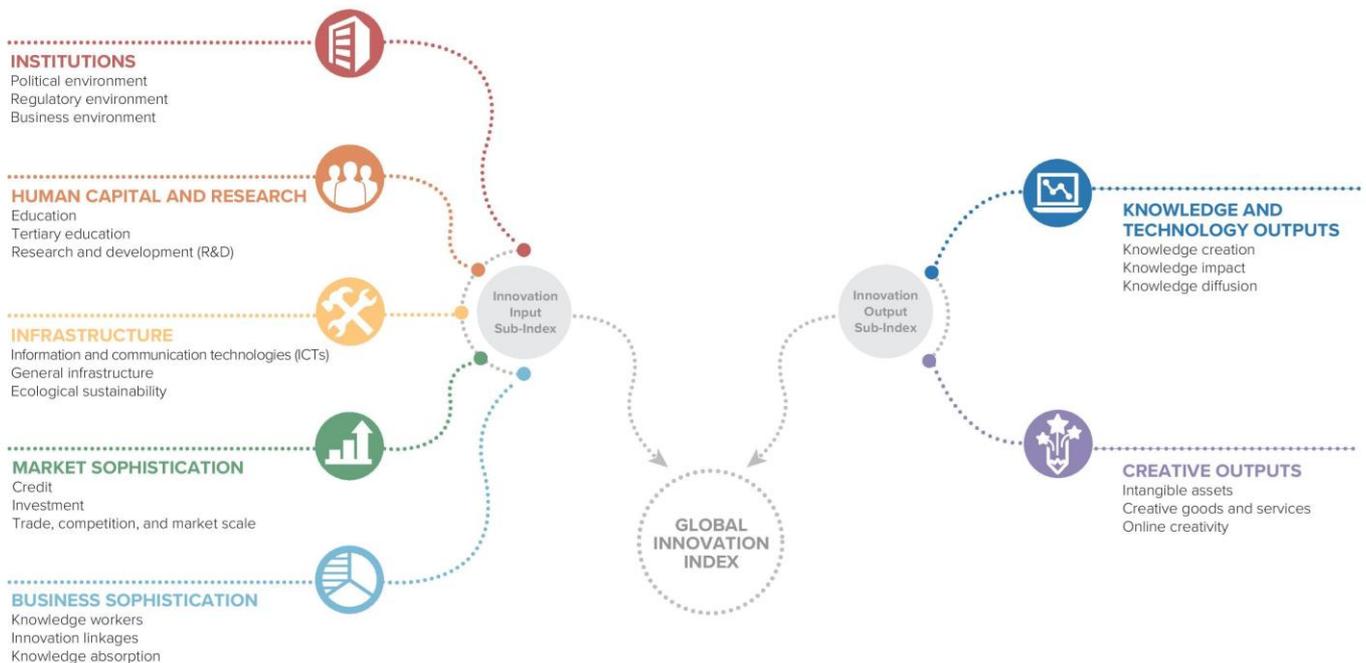
Bosnia and Herzegovina has no outdated data in the GII 2020.

## 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 2020, the GII presents its 13<sup>th</sup> edition devoted to the theme *Who Will Finance Innovation?*

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.

### Framework of the Global Innovation Index 2020



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.

