GLOBAL INNOVATION INDEX 2020

MONTENEGRO

49th Montenegro ranks 49th 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 Montenegro 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 Montenegro in the GII 2020 is between ranks 47 and 58.

Rankings of Montenegro (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	49	53	49
2019	45	55	46
2018	52	51	55

- Montenegro performs better in innovation outputs than innovation inputs in 2020.
- This year Montenegro ranks 53rd in innovation inputs, higher than last year and lower compared to 2018.
- As for innovation outputs, Montenegro ranks 49th. This position is lower than last year and higher compared to 2018.

7th Montenegro ranks 7th among the 37 upper middle-income group economies.

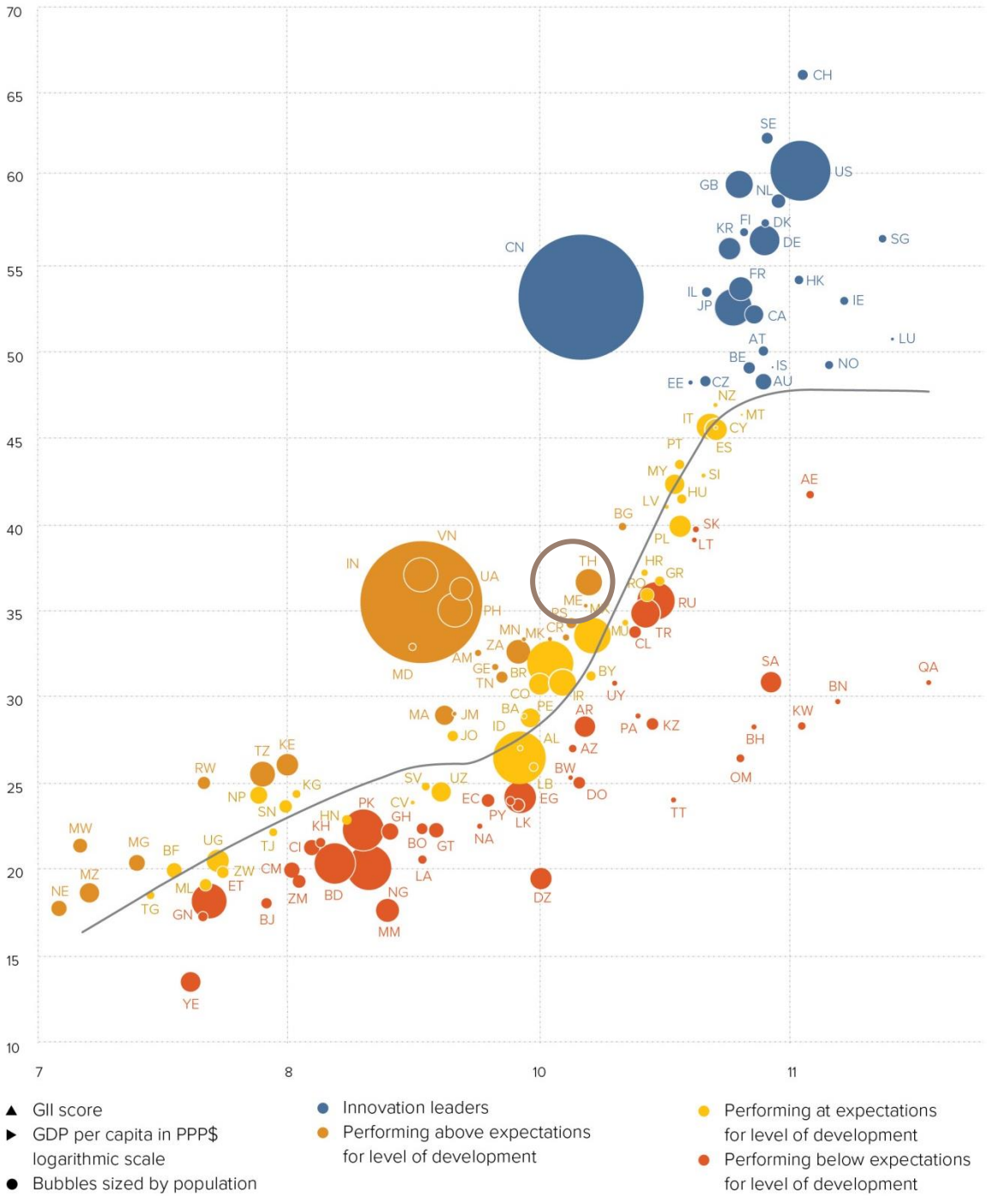
33rd Montenegro ranks 33rd among the 39 economies in Europe.

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, Montenegro's performance is above expectations for its level of development.

The positive relationship between innovation and development

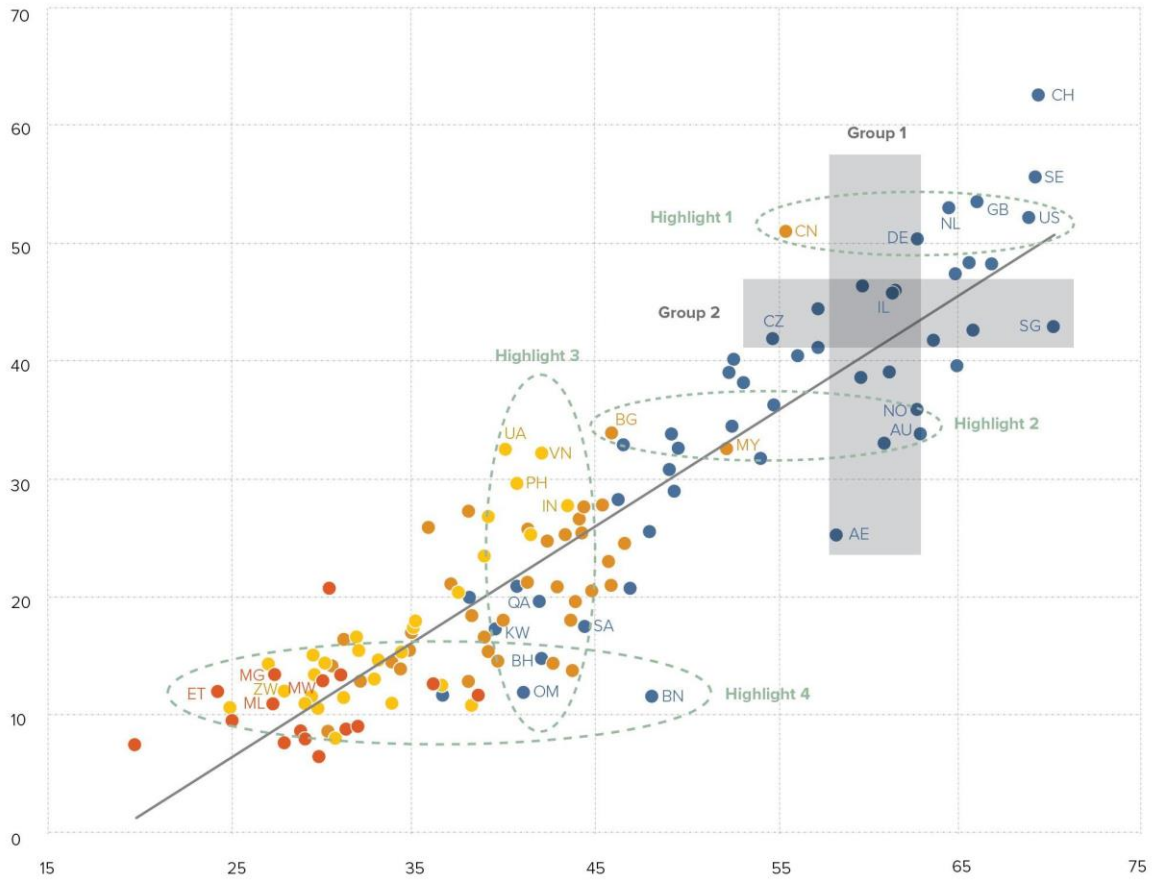


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

Montenegro produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance, 2020



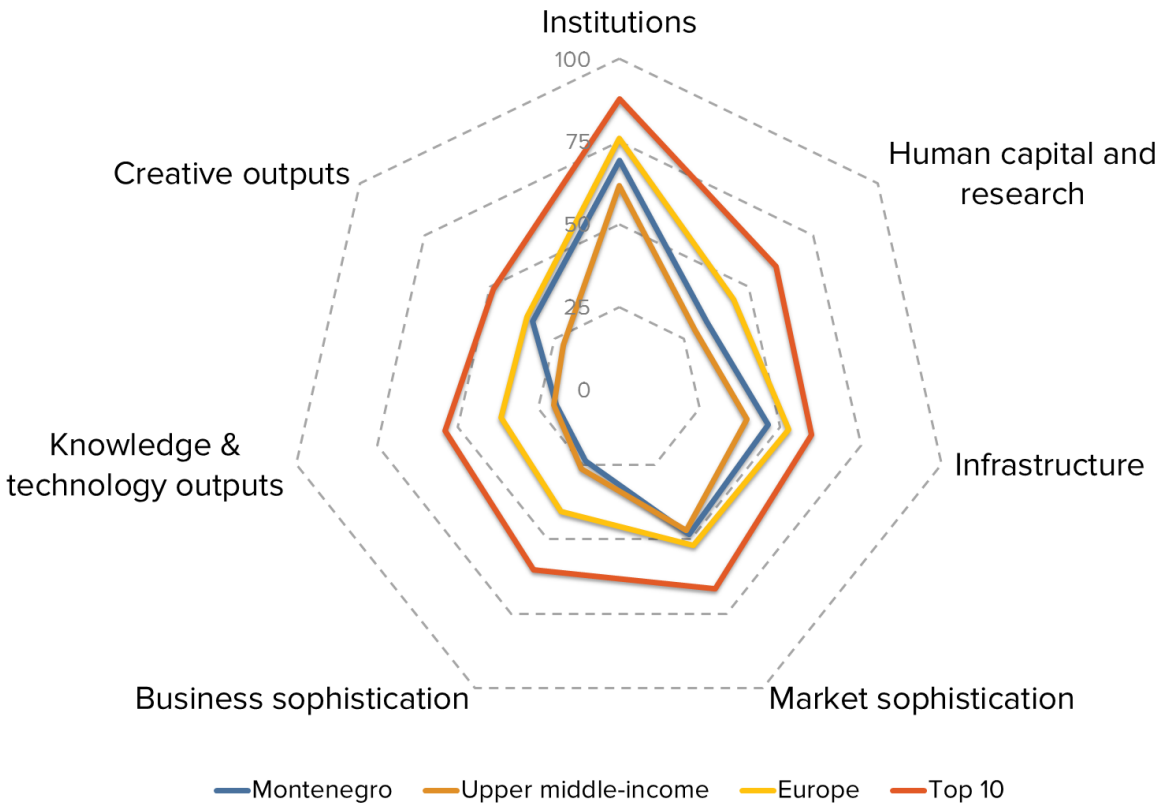
▲ Output score
► Input score

● High income group
● Upper middle-income group
● Lower middle-income group
● Low income group
— Fitted values

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 MONTENEGRO AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND EUROPE

Montenegro's scores in the seven GII pillars



Upper middle-income group economies

Montenegro has high scores in five out of the seven GII pillars: Institutions, Human capital & research, Infrastructure, Market sophistication and Creative outputs, which are above average for the upper middle-income group.

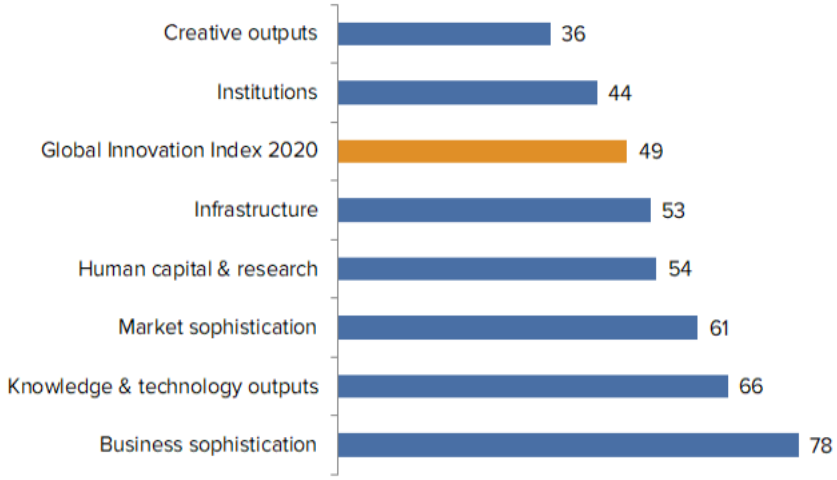
Conversely, Montenegro scores below average for its income group in two pillars: Business sophistication and Knowledge & technology outputs.

Europe

Montenegro performs below the regional average in all GII pillars.

OVERVIEW OF MONTENEGRO RANKINGS IN THE SEVEN GII AREAS

Montenegro performs best in Creative outputs 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 Montenegro in the GII 2020.

Strengths

Code	Indicator name	Rank
3.2.3	Gross capital formation, % GDP	20
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	20
4.1.1	Ease of getting credit*	14
5.3.3	ICT services imports, % total trade	6
5.3.4	FDI net inflows, % GDP	12
6.2.2	New businesses/th pop. 15–64	10
6.2.3	Computer software spending, % GDP	24
7.2.2	National feature films/mn pop. 15–69	11
7.2.4	Printing and other media, % manufacturing	4
7.3	Online creativity	15
7.3.2	Country-code TLDs/th pop. 15–69	1

Weaknesses

Code	Indicator name	Rank
2.3.3	Global R&D companies, top 3, mn US$	42
2.3.4	QS university ranking, average score top 3*	77
4.3	Trade, competition, and market scale	118
4.3.3	Domestic market scale, bn PPP$	130
5.1.2	Firms offering formal training, %	86
5.2.5	Patent families 2+ offices/bn PPP$ GDP	101
6.1.5	Citable documents H index	128
6.2.5	High- and medium-high-tech manufacturing, %	91
6.3.2	High-tech net exports, % total trade	104
6.3.4	FDI net outflows, % GDP	125
7.1.3	Industrial designs by origin/bn PPP$ GDP	111

STRENGTHS

GII strengths for Montenegro are found in five of the seven GII pillars.

- Infrastructure (53): demonstrates strengths in the indicators Gross capital formation (20) and ISO 14001 environmental certificates (20).
- Market sophistication (61): shows strengths in the indicator Ease of getting credit (14).
- Business sophistication (78): exhibits strengths in the indicators ICT services imports (6) and FDI net inflows (12).
- Knowledge & technology outputs (66): reveals strengths in the indicators New businesses (10) and Computer software spending (24).
- Creative outputs (36): displays strengths in the sub-pillar Online creativity (15) and in the indicators National feature films, Printing and other media (4) and Country-code TLDs (1).

WEAKNESSES

GII weaknesses for Montenegro are found in five of the seven GII pillars.

- Human capital & research (54): exhibits weaknesses in the indicators Global R&D companies (42) and QS university ranking (77).
- Market sophistication (61): shows weaknesses in the sub-pillar Trade, competition, and market scale (118) and in the indicator Domestic market scale (130).
- Business sophistication (78): demonstrates weaknesses in the indicators Firms offering formal training (86) and Patent families 2+ offices (101).
- Knowledge & technology outputs (66): displays weaknesses in the indicators Citable documents H index (128), High- and medium-high-tech manufacturing (91), High-tech net exports (104) and FDI net outflows (125).
- Creative outputs (36): reveals weaknesses in the indicator Industrial designs by origin (111).

MONTENEGRO

GII 2020 rank

49

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2019 rank
49	53	Upper middle	EUR	0.6	12.5	17,533.9	45

		Score/Value	Rank	
INSTITUTIONS		**69.6**	**44**	
1.1	**Political environment**	**60.4**	**57**	
1.1.1	Political and operational stability*	75.0	44	
1.1.2	Government effectiveness*	53.1	62	
1.2	**Regulatory environment**	**72.0**	**41**	
1.2.1	Regulatory quality*	51.4	54	
1.2.2	Rule of law*	49.2	58	
1.2.3	Cost of redundancy dismissal, salary weeks	11.2	35	
1.3	**Business environment**	**76.4**	**44**	
1.3.1	Ease of starting a business*	86.7	79	
1.3.2	Ease of resolving insolvency*	66.1	40	
HUMAN CAPITAL & RESEARCH		**33.5**	**[54]**	
2.1	**Education**	**55.9**	**[32]**	
2.1.1	Expenditure on education, % GDP	n/a	n/a	
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	15.0	52	
2.1.4	PISA scales in reading, maths, & science	421.9	55	
2.1.5	Pupil-teacher ratio, secondary	14.4	70	
2.2	**Tertiary education**	**40.7**	**[40]**	
2.2.1	Tertiary enrolment, % gross	56.1	49	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.3	**Research & development (R&D)**	**4.0**	**81**	
2.3.1	Researchers, FTE/mn pop	734.3	57	
2.3.2	Gross expenditure on R&D, % GDP	0.4	73	
2.3.3	Global R&D companies, avg. exp. top 3, mn $US	0.0	42	○ ◇
2.3.4	QS university ranking, average score top 3*	0.0	77	○ ◇
INFRASTRUCTURE		**46.0**	**53**	
3.1	**Information & communication technologies (ICTs)**	**70.0**	**57**	
3.1.1	ICT access*	76.9	36	◆
3.1.2	ICT use*	62.3	54	
3.1.3	Government's online service*	66.7	76	
3.1.4	E-participation*	74.2	63	
3.2	**General infrastructure**	**28.9**	**56**	
3.2.1	Electricity output, kWh/mn pop	4,004.5	51	
3.2.2	Logistics performance*	31.7	76	
3.2.3	Gross capital formation, % GDP	31.8	20	● ◆
3.3	**Ecological sustainability**	**39.0**	**38**	
3.3.1	GDP/unit of energy use	9.8	58	
3.3.2	Environmental performance*	46.3	68	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	5.3	20	●
MARKET SOPHISTICATION		**48.2**	**61**	
4.1	**Credit**	**45.2**	**51**	
4.1.1	Ease of getting credit*	85.0	14	●
4.1.2	Domestic credit to private sector, % GDP	49.6	72	
4.1.3	Microfinance gross loans, % GDP	1.0	24	
4.2	**Investment**	**49.7**	**26**	
4.2.1	Ease of protecting minority investors*	62.0	60	
4.2.2	Market capitalization, % GDP	82.6	18	
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, and market scale**	**49.8**	**118**	○ ◇
4.3.1	Applied tariff rate, weighted avg., %	3.1	65	
4.3.2	Intensity of local competition+	62.9	93	
4.3.3	Domestic market scale, bn PPP$	12.5	130	○ ◇

		Score/Value	Rank	
BUSINESS SOPHISTICATION		**23.6**	**78**	
5.1	**Knowledge workers**	**27.3**	**77**	
5.1.1	Knowledge-intensive employment, %	36.6	34	◆
5.1.2	Firms offering formal training, %	15.8	86	○ ◇
5.1.3	GERD performed by business, % GDP	0.1	71	
5.1.4	GERD financed by business, %	18.7	67	
5.1.5	Females employed w/advanced degrees, %	17.0	37	
5.2	**Innovation linkages**	**19.0**	**76**	
5.2.1	University/industry research collaboration+	45.3	51	
5.2.2	State of cluster development+	44.8	77	
5.2.3	GERD financed by abroad, % GDP	0.0	56	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	45	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	101	○ ◇
5.3	**Knowledge absorption**	**24.3**	**81**	
5.3.1	Intellectual property payments, % total trade	0.2	86	
5.3.2	High-tech imports, % total trade	6.4	86	
5.3.3	ICT services imports, % total trade	3.2	6	● ◆
5.3.4	FDI net inflows, % GDP	8.5	12	● ◆
5.3.5	Research talent, % in business enterprise	11.1	62	
KNOWLEDGE & TECHNOLOGY OUTPUTS		**19.6**	**66**	
6.1	**Knowledge creation**	**15.9**	**61**	
6.1.1	Patents by origin/bn PPP$ GDP	0.3	94	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	67	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	19.5	29	◆
6.1.5	Citable documents H-index	1.9	128	○ ◇
6.2	**Knowledge impact**	**26.4**	**57**	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15-64	11.3	10	● ◆
6.2.3	Computer software spending, % GDP	0.0	24	● ◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	11.5	26	
6.2.5	High- and medium-high-tech manufacturing, %	7.3	91	○
6.3	**Knowledge diffusion**	**16.5**	**87**	
6.3.1	Intellectual property receipts, % total trade	0.0	81	
6.3.2	High-tech net exports, % total trade	0.1	104	○
6.3.3	ICT services exports, % total trade	2.7	36	
6.3.4	FDI net outflows, % GDP	-0.7	125	○ ◇
CREATIVE OUTPUTS		**33.6**	**36**	◆
7.1	**Intangible assets**	**28.6**	**58**	
7.1.1	Trademarks by origin/bn PPP$ GDP	43.7	59	
7.1.2	Global brand value, top 5,000, % GDP	n/a	n/a	
7.1.3	Industrial designs by origin/bn PPP$ GDP	0.1	111	○
7.1.4	ICTs & organizational model creation+	52.6	70	
7.2	**Creative goods and services**	**23.8**	**40**	
7.2.1	Cultural & creative services exports, % total trade	0.5	50	
7.2.2	National feature films/mn pop. 15-69	13.3	11	● ◆
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing and other media, % manufacturing	3.0	4	● ◆
7.2.5	Creative goods exports, % total trade	0.1	95	
7.3	**Online creativity**	**53.5**	**15**	● ◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.4	90	
7.3.2	Country-code TLDs/th pop. 15-69	100.0	1	● ◆
7.3.3	Wikipedia edits/mn pop. 15-69	61.1	52	
7.3.4	Mobile app creation/bn PPP$ GDP	n/a	n/a	

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 Montenegro.

Missing data

Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	n/a	2018	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2016	UNESCO Institute for Statistics
2.2.2	Graduates in science & engineering, %	n/a	2017	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	n/a	2017	UNESCO Institute for Statistics
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
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	2019	The Conference Board
7.1.2	Global brand value, top 5000, % GDP	n/a	2019	Brand Finance
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2018	PwC
7.3.4	Mobile app creation/bn PPP$ GDP	n/a	2019	App Annie

Outdated data

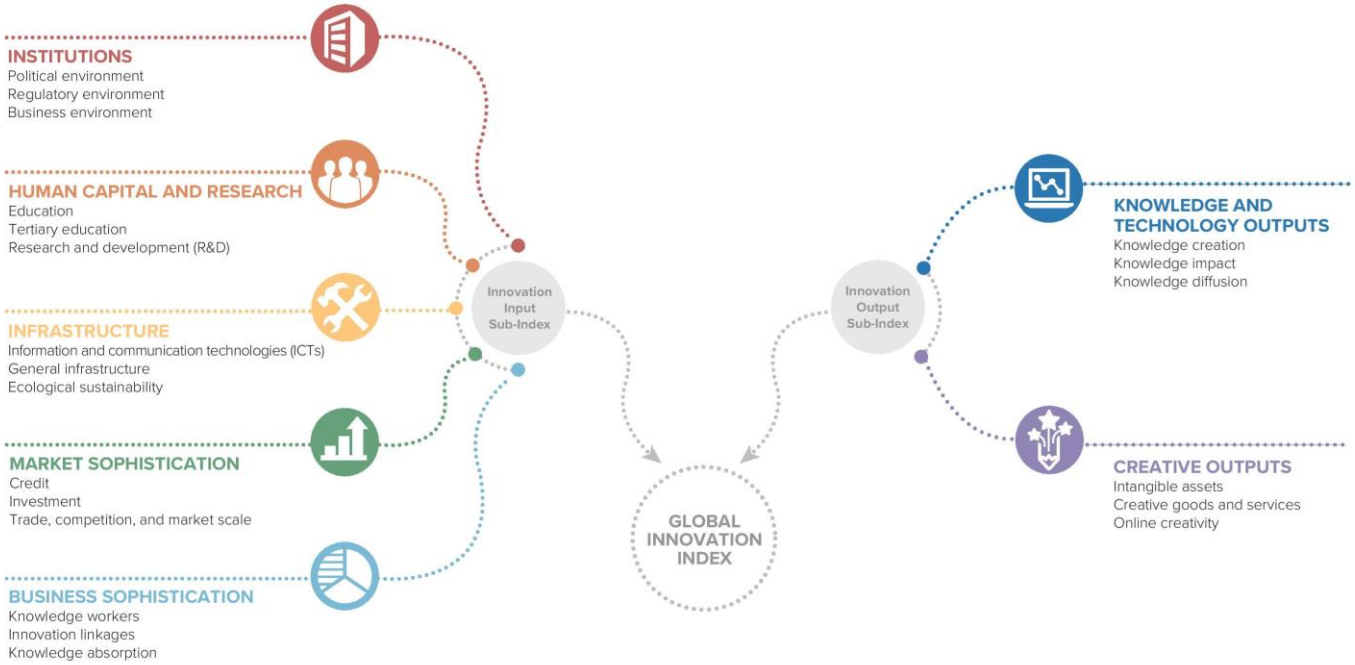
Code	Indicator name	Country year	Model year	Source
4.2.2	Market capitalization, % GDP	2012	2018	World Federation of Exchanges
4.3.1	Applied tariff rate, weighted avg., %	2017	2018	World Bank
6.2.5	High- and medium-high-tech manufacturing, %	2015	2017	United Nations Industrial Development Organization
7.2.2	National feature films/mn pop. 15–69	2015	2017	UNESCO Institute for Statistics
7.2.4	Printing and other media, % manufacturing	2015	2017	United Nations Industrial Development Organization

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 13th 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.