GLOBAL INNOVATION INDEX 2020

BULGARIA

37th Bulgaria ranks 37th 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 Bulgaria 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 Bulgaria in the GII 2020 is between ranks 36 and 39.

Rankings of Bulgaria (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	37	45	30
2019	40	45	38
2018	37	44	34

- Bulgaria performs better in innovation outputs than innovation inputs in 2020.
- This year Bulgaria ranks 45th in innovation inputs, the same as last year and lower compared to 2018.
- As for innovation outputs, Bulgaria ranks 30th. This position is higher than last year and higher compared to 2018.

3rd Bulgaria ranks 3rd among the 37 upper middle-income group economies.

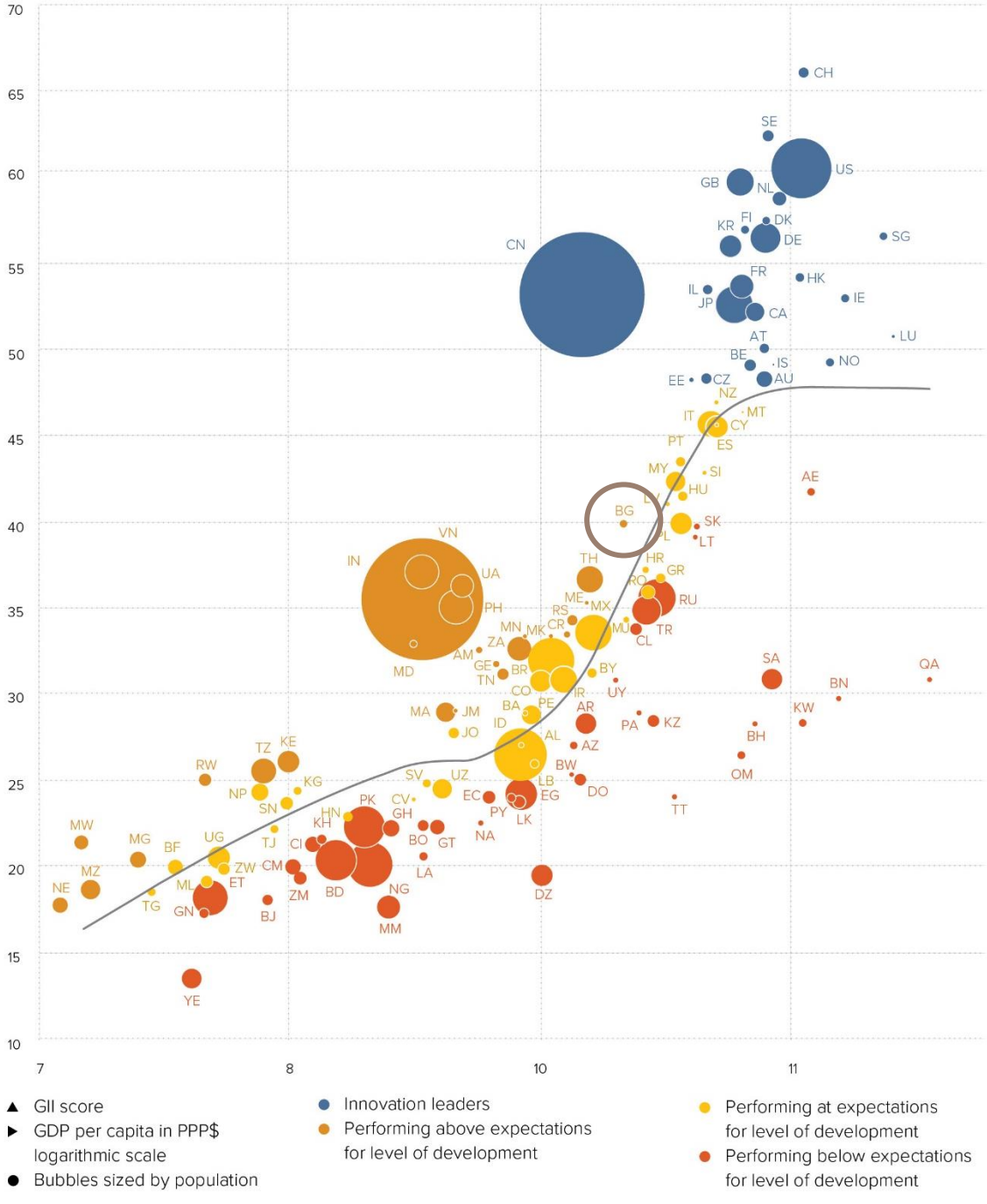
24th Bulgaria ranks 24th among the 39 economies in Europe.

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, Bulgaria is performing above expectations for its level of development.

The positive relationship between innovation and development

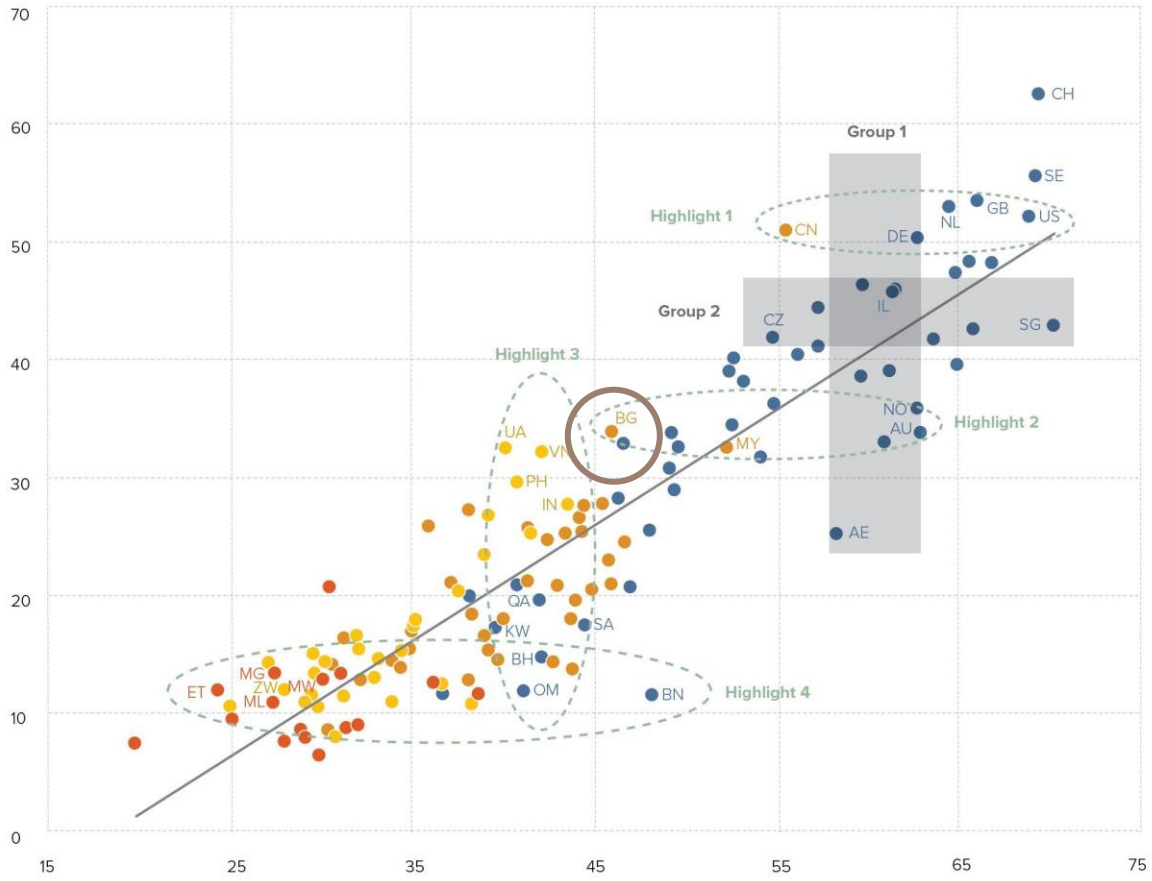


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

Innovation input to output performance, 2020



▲ Output score
► Input score

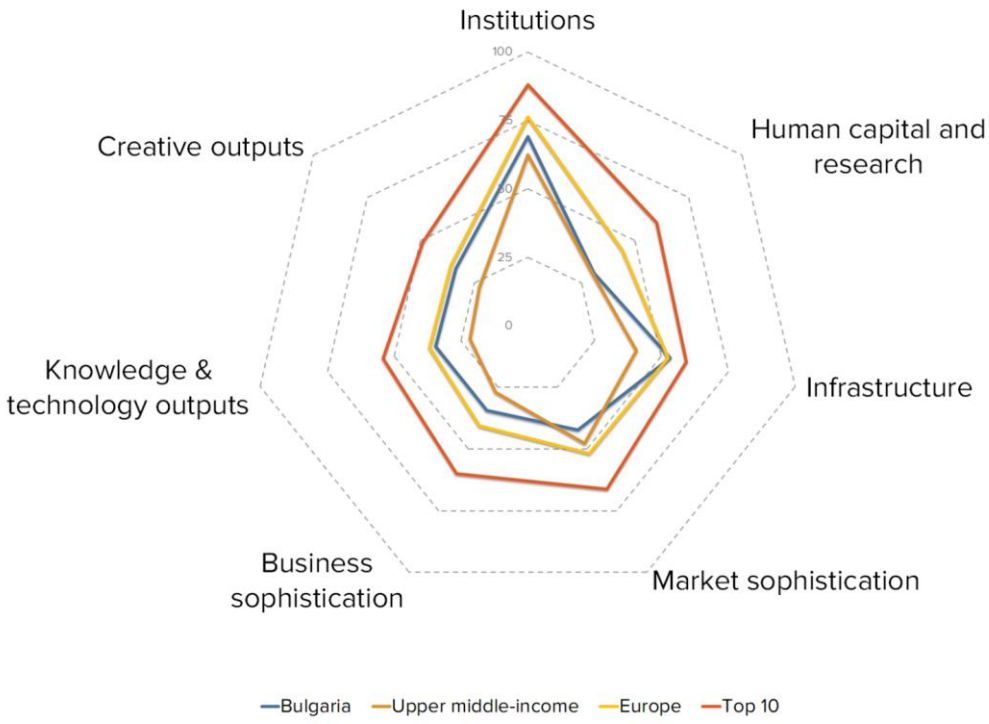
● High income group
● Upper middle-income group
● Lower middle-income group
● Low income group

— 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 BULGARIA AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND EUROPE

Bulgaria's scores in the seven GII pillars



Upper middle-income group economies

Bulgaria has high scores in six out of the seven GII pillars: Institutions, Human capital & research, Infrastructure, Business sophistication, Knowledge & technology outputs and Creative outputs, which are above average for the upper middle income group.

Conversely, Bulgaria scores below average for its income group in one pillar: Market sophistication.

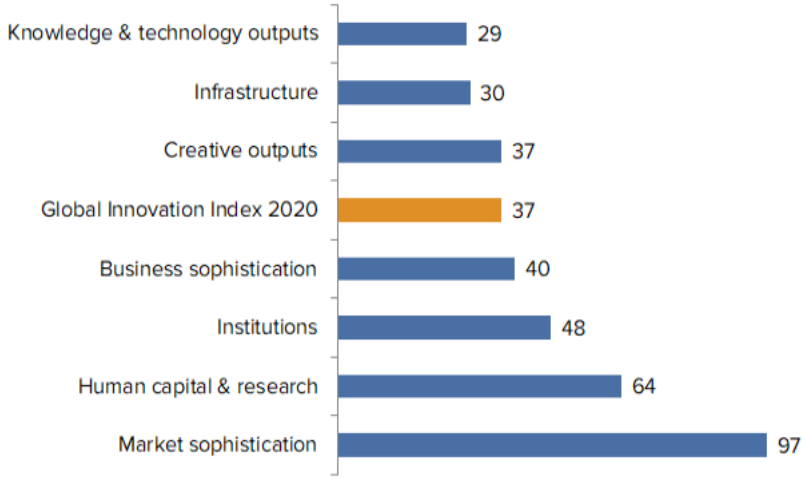
Europe

Compared to other economies in Europe, Bulgaria performs:

- above average in one of the seven GII pillars: Infrastructure; and
- below average in six out of the seven GII pillars: Institutions, Human capital & research, Market sophistication, Business sophistication, Knowledge & technology outputs and Creative outputs.

OVERVIEW OF BULGARIA RANKINGS IN THE SEVEN GII AREAS

Bulgaria performs best in Knowledge & technology outputs and its weakest performance is in Market 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 Bulgaria in the GII 2020.

Strengths

Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal, salary weeks	16
3.3	Ecological sustainability	6
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2
5.2.3	GERD financed by abroad, % GDP	14
6.1.3	Utility models by origin/bn PPP$ GDP	13
6.2	Knowledge impact	7
6.2.2	New businesses/th pop. 15–64	14
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1
7.1	Intangible assets	21
7.1.1	Trademarks by origin/bn PPP$ GDP	16
7.1.3	Industrial designs by origin/bn PPP$ GDP	23
7.2.1	Cultural & creative services exports, % total trade	14
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	24

Weaknesses

Code	Indicator name	Rank
1.3.1	Ease of starting a business*	86
2.1.4	PISA scales in reading, maths & science	50
2.2.2	Graduates in science & engineering, %	70
2.3.3	Global R&D companies, top 3, mn US$	42
3.2.3	Gross capital formation, % GDP	86
3.3.1	GDP/unit of energy use	92
4	Market sophistication	97
4.1	Credit	91
4.1.3	Microfinance gross loans, % GDP	81
4.2	Investment	102
4.2.2	Market capitalization, % GDP	62
4.3.2	Intensity of local competition†	81
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	80

STRENGTHS

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

- Institutions (48): the indicator Cost of redundancy dismissal (16) is a strength.
- Infrastructure (30): demonstrates strengths in the sub-pillar Ecological sustainability (6) and in the indicator ISO 14001 environmental certificates (2).
- Business sophistication (40): the indicator GERD financed by abroad (14) demonstrates a strength.
- Knowledge & technology outputs (29): exhibits strengths in the sub-pillar Knowledge impact (7) and in the indicators Utility models by origin (13), New businesses (14) and ISO 9001 quality certificates (1).
- Creative outputs (37): shows strengths in the sub-pillar Intangible assets (21) and in the indicators Trademarks by origin (16), Industrial designs by origin (23), Cultural & creative services exports (14) and Generic top-level domains (24).

WEAKNESSES

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

- Institutions (48): the indicator Ease of starting a business (86) is a weakness.
- Human capital & research (64): shows weaknesses in the indicators PISA scales in reading, maths & science (50), Graduates in science & engineering (70) and Global R&D companies (42).
- Infrastructure (30): displays weaknesses in the indicators Gross capital formation (86) and GDP/unit of energy use (92).
- Market sophistication (97): shows weaknesses in the sub-pillars Credit (91) and Investment (102) and in the indicators Microfinance gross loans (81), Market capitalization (62) and Intensity of local competition (81).
- Business sophistication (40): the indicator JV–strategic alliance deals (80) is a weakness.

BULGARIA

GII 2020 rank

37

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2019 rank
30	45	Upper middle	EUR	7.0	171.2	21,472.2	40

		Score/Value	Rank	
INSTITUTIONS		**69.1**	**48**	
1.1	**Political environment**	**60.7**	**56**	
1.1.1	Political and operational stability*	69.6	70	
1.1.2	Government effectiveness*	56.2	56	
1.2	**Regulatory environment**	**75.1**	**37**	◆
1.2.1	Regulatory quality*	57.0	43	◆
1.2.2	Rule of law*	45.9	65	
1.2.3	Cost of redundancy dismissal, salary weeks	8.6	16	●
1.3	**Business environment**	**71.6**	**64**	
1.3.1	Ease of starting a business*	85.4	86	○
1.3.2	Ease of resolving insolvency*	57.8	56	
HUMAN CAPITAL & RESEARCH		**31.0**	**64**	
2.1	**Education**	**43.5**	**73**	
2.1.1	Expenditure on education, % GDP 🕒	4.1	70	
2.1.2	Government funding/pupil, secondary, % GDP/cap 🕒	21.8	38	
2.1.3	School life expectancy, years	14.4	62	
2.1.4	PISA scales in reading, maths, & science	426.7	50	○
2.1.5	Pupil-teacher ratio, secondary 🕒	12.6	58	
2.2	**Tertiary education**	**37.4**	**54**	
2.2.1	Tertiary enrolment, % gross	71.0	26	◆
2.2.2	Graduates in science & engineering, %	20.5	70	○
2.2.3	Tertiary inbound mobility, %	5.5	40	
2.3	**Research & development (R&D)**	**12.1**	**51**	
2.3.1	Researchers, FTE/mn pop	2,339.8	37	◆
2.3.2	Gross expenditure on R&D, % GDP	0.8	48	
2.3.3	Global R&D companies, avg. exp. top 3, mn $US	0.0	42	○ ◇
2.3.4	QS university ranking, average score top 3*	5.0	68	
INFRASTRUCTURE		**53.2**	**30**	◆
3.1	**Information & communication technologies (ICTs)**	**76.2**	**44**	◆
3.1.1	ICT access*	71.3	58	
3.1.2	ICT use*	69.9	42	◆
3.1.3	Government's online service*	76.4	55	
3.1.4	E-participation*	87.1	35	
3.2	**General infrastructure**	**26.8**	**67**	
3.2.1	Electricity output, kWh/mn pop	6,348.6	32	◆
3.2.2	Logistics performance*	45.2	51	
3.2.3	Gross capital formation, % GDP	21.4	86	○
3.3	**Ecological sustainability**	**56.8**	**6**	● ◆
3.3.1	GDP/unit of energy use	6.8	92	○
3.3.2	Environmental performance*	57.0	39	◆
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	12.0	2	● ◆
MARKET SOPHISTICATION		**42.2**	**97**	○
4.1	**Credit**	**34.6**	**91**	○
4.1.1	Ease of getting credit*	65.0	61	
4.1.2	Domestic credit to private sector, % GDP	51.3	67	
4.1.3	Microfinance gross loans, % GDP	0.0	81	○
4.2	**Investment**	**28.0**	**102**	○
4.2.1	Ease of protecting minority investors*	74.0	24	
4.2.2	Market capitalization, % GDP 🕒	14.5	62	○
4.2.3	Venture capital deals/bn PPP$ GDP	0.0	51	
4.3	**Trade, competition, and market scale**	**63.9**	**61**	
4.3.1	Applied tariff rate, weighted avg., %	1.7	22	
4.3.2	Intensity of local competition+	65.1	81	○
4.3.3	Domestic market scale, bn PPP$	171.2	72	

		Score/Value	Rank	
BUSINESS SOPHISTICATION		**34.3**	**40**	◆
5.1	**Knowledge workers**	**43.4**	**39**	
5.1.1	Knowledge-intensive employment, %	31.6	43	◆
5.1.2	Firms offering formal training, % 🕒	42.7	24	
5.1.3	GERD performed by business, % GDP	0.5	37	
5.1.4	GERD financed by business, %	43.2	39	
5.1.5	Females employed w/advanced degrees, %	19.1	32	◆
5.2	**Innovation linkages**	**26.9**	**40**	◆
5.2.1	University/industry research collaboration+	42.3	63	
5.2.2	State of cluster development+	52.8	41	
5.2.3	GERD financed by abroad, % GDP	0.2	14	● ◆
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	80	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.2	48	
5.3	**Knowledge absorption**	**32.7**	**49**	
5.3.1	Intellectual property payments, % total trade	0.5	64	
5.3.2	High-tech imports, % total trade	7.1	74	
5.3.3	ICT services imports, % total trade	1.1	68	
5.3.4	FDI net inflows, % GDP	2.7	62	
5.3.5	Research talent, % in business enterprise	48.5	26	◆
KNOWLEDGE & TECHNOLOGY OUTPUTS		**34.5**	**29**	◆
6.1	**Knowledge creation**	**19.9**	**50**	
6.1.1	Patents by origin/bn PPP$ GDP	1.3	57	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.3	43	
6.1.3	Utility models by origin/bn PPP$ GDP 🕒	1.7	13	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.1	51	
6.1.5	Citable documents H-index	15.9	52	
6.2	**Knowledge impact**	**48.3**	**7**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	2.6	35	
6.2.2	New businesses/th pop. 15-64	10.1	14	● ◆
6.2.3	Computer software spending, % GDP	0.0	56	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	36.6	1	● ◆
6.2.5	High- and medium-high-tech manufacturing, %	23.5	47	
6.3	**Knowledge diffusion**	**35.3**	**30**	◆
6.3.1	Intellectual property receipts, % total trade	0.2	43	
6.3.2	High-tech net exports, % total trade	4.8	33	
6.3.3	ICT services exports, % total trade	3.4	25	◆
6.3.4	FDI net outflows, % GDP	1.3	49	
CREATIVE OUTPUTS		**33.5**	**37**	◆
7.1	**Intangible assets**	**43.8**	**21**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	91.9	16	●
7.1.2	Global brand value, top 5,000, % GDP	n/a	n/a	
7.1.3	Industrial designs by origin/bn PPP$ GDP	5.8	23	●
7.1.4	ICTs & organizational model creation+	53.7	64	
7.2	**Creative goods and services**	**19.8**	**55**	
7.2.1	Cultural & creative services exports, % total trade	1.4	14	● ◆
7.2.2	National feature films/mn pop. 15-69	4.7	45	
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a	
7.2.4	Printing and other media, % manufacturing	1.1	46	
7.2.5	Creative goods exports, % total trade	1.0	44	
7.3	**Online creativity**	**26.5**	**41**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	23.4	24	● ◆
7.3.2	Country-code TLDs/th pop. 15-69	3.7	59	
7.3.3	Wikipedia edits/mn pop. 15-69	74.3	33	◆
7.3.4	Mobile app creation/bn PPP$ GDP	6.1	52	

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 Bulgaria.

Missing data

Code	Indicator name	Country year	Model year	Source
7.1.2	Global brand value, top 5,000, % GDP	n/a	2019	Brand Finance
7.2.3	Entertainment & Media market/th pop. 15–69	n/a	2018	PwC

Outdated data

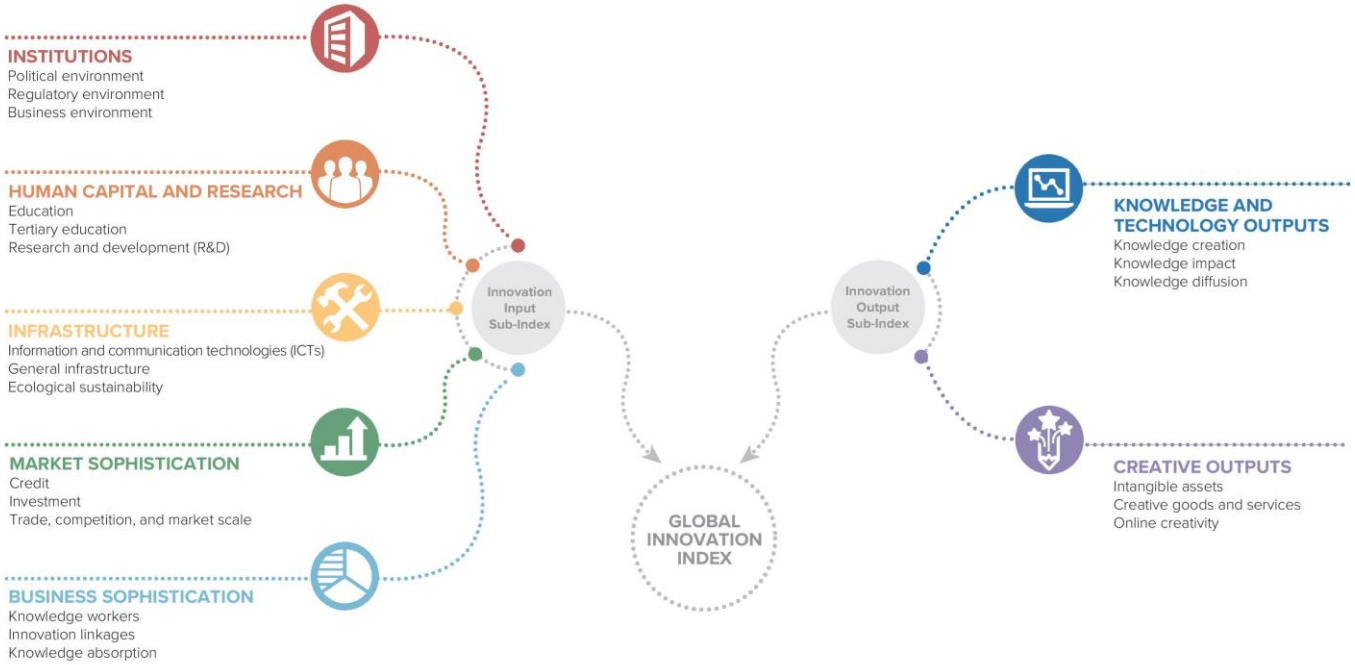
Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	2013	2018	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	2013	2016	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2016	2018	UNESCO Institute for Statistics
4.2.2	Market capitalization, % GDP	2011	2018	World Federation of Exchanges
5.1.2	Firms offering formal training, %	2012	2018	World Bank
6.1.3	Utility models by origin/bn PPP$ GDP	2017	2018	World Intellectual Property 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.