

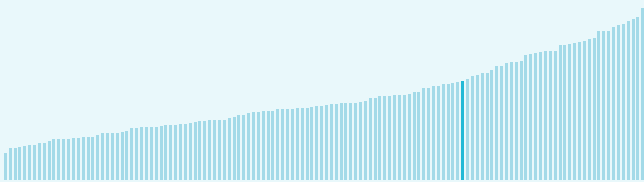
Global Innovation Index 2023



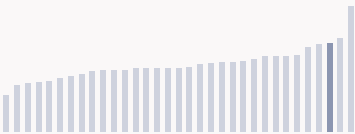
The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities**. Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation**.

Bulgaria ranking in the Global Innovation Index 2023

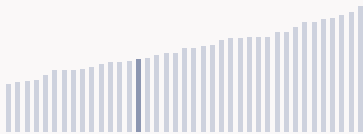
> Bulgaria ranks **38th** among the 132 economies featured in the GII 2023.



> Bulgaria ranks **3rd** among the 33 upper-middle-income group economies.



> Bulgaria ranks **25th** among the 39 economies in Europe.



> Bulgaria GII Ranking (2020-2023)

The table shows the rankings of Bulgaria 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 Bulgaria in the GII 2023 is between ranks 36 and 40.

	GII Position	Innovation Inputs	Innovation Outputs
2020	37th	45th	30th
2021	35th	46th	27th
2022	35th	47th	30th
2023	38th	45th	34th

Bulgaria performs better in innovation outputs than innovation inputs in 2023.

- This year Bulgaria ranks 45th in innovation inputs. This position is higher than last year.
- Bulgaria ranks 34th in innovation outputs. This position is lower than last year.

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→ 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's performance is at expectations for its level of development.

> Innovation overperformers relative to their economic development

↑ **GII Score**



- Innovation leader
- Performing above expectations for level of development
- Performing at expectations for level of development
- Performing below expectations for level of development

Size legend (Population)



→ GDP per capita, PPP logarithmic scale (thousands of \$)

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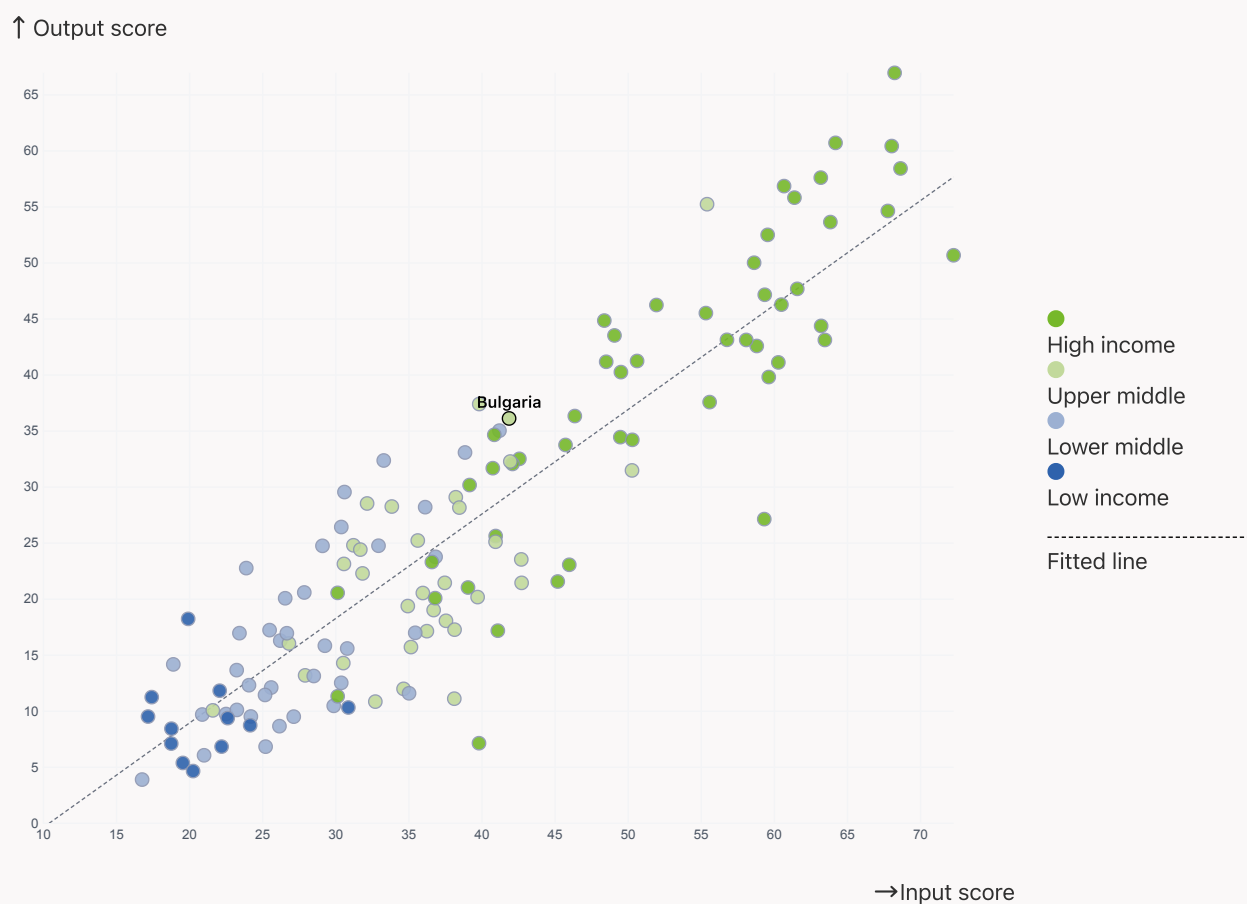
→ Effectively translating innovation investments into innovation outputs

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.

> Relationship between innovation inputs and outputs



Global Innovation Index 2023



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



* Knowledge and technology outputs, Creative outputs

** Institutions, Human capital and research

> Highest rankings



Bulgaria ranks highest in Infrastructure (28th) and Knowledge and technology outputs, Creative outputs (34th).

> Lowest rankings



Bulgaria ranks lowest in Institutions, Human capital and research (66th), Market sophistication (60th) and Business sophistication (42nd).



The full WIPO Intellectual Property Statistics profile for Bulgaria can be found on [this link](#).

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→ Benchmark of Bulgaria against other country groupings for each of the seven areas of the GII Index

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

> Upper-Middle-Income economies

Bulgaria performs above the upper-middle-income group average in all the pillars.



> Europe

Bulgaria performs below the regional average in Knowledge and technology outputs, Creative outputs, Business sophistication, Market sophistication, Human capital and research, Institutions.



Knowledge and technology outputs

Top 10 | Score: 58.96

Europe | Score: 38.80

Bulgaria | Score: 33.90

Upper middle income | Score: 22.36

Creative outputs

Top 10 | 56.09

Europe | 39.87

Bulgaria | 38.24

Upper middle income | 23.16

Business sophistication

Top 10 | 64.39

Europe | 44.61

Bulgaria | 35.96

Upper middle income | 29.27

Market sophistication

Top 10 | 61.93

Europe | 43.65

Bulgaria | 36.72

Upper middle income | 35.45

Human capital and research

Top 10 | 60.28

Europe | 44.05

Bulgaria | 31.11

Upper middle income | 29.68

Infrastructure

Top 10 | 62.83

Bulgaria | 56.16

Europe | 54.69

Upper middle income | 40.40

Institutions

Top 10 | 79.85

Europe | 61.69

Bulgaria | 49.54

Upper middle income | 47.71

Global Innovation Index 2023



→ Innovation strengths and weaknesses in Bulgaria

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



> Bulgaria's main innovation strengths are **ISO 14001 environment/bn PPP\$ GDP (rank 1)**, **ISO 9001 quality/bn PPP\$ GDP (rank 1)** and **GERD financed by abroad, % GDP (rank 10)**.

Strengths

Rank	Code	Indicator name
1	3.3.3	ISO 14001 environment/bn PPP\$ GDP
1	6.3.5	ISO 9001 quality/bn PPP\$ GDP
10	5.2.3	GERD financed by abroad, % GDP
16	1.2.3	Cost of redundancy dismissal
16	7.2.1	Cultural and creative services exports, % total trade
19	4.3.2	Domestic industry diversification
19	6.3.4	ICT services exports, % total trade
19	7.1.2	Trademarks by origin/bn PPP\$ GDP
20	6.2.1	Labor productivity growth, %
24	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69
24	3.1.1	ICT access

Weaknesses

Rank	Code	Indicator name
101	3.2.3	Gross capital formation, % GDP
90	1.3.1	Policies for doing business
86	3.3.1	GDP/unit of energy use
81	5.1.2	Firms offering formal training, %
76	2.2.2	Graduates in science and engineering, %
75	4.2.4	VC received, value, % GDP
74	7.1.3	Global brand value, top 5,000
63	1.3.2	Entrepreneurship policies and culture
53	4.2.1	Market capitalization, % GDP
48	6.2.2	Unicorn valuation, % GDP
40	2.3.3	Global corporate R&D investors, top 3, mn US\$

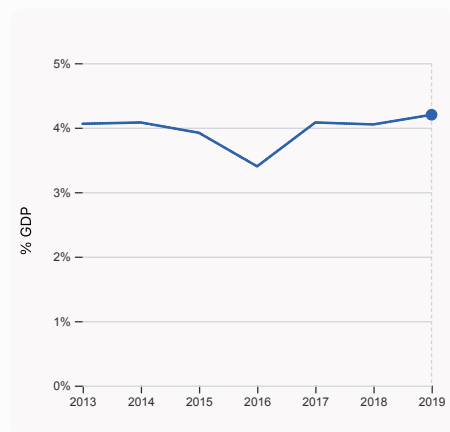
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→ Bulgaria's innovation system

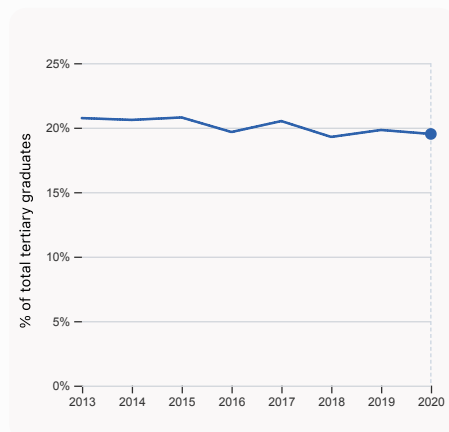
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Bulgaria



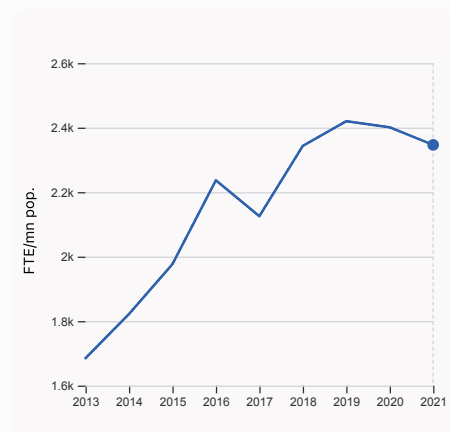
2.1.1 Expenditure on education, % GDP

was equal to 4.2% GDP in 2019, up by 0.15 percentage points from the year prior – and equivalent to an indicator rank of 65.



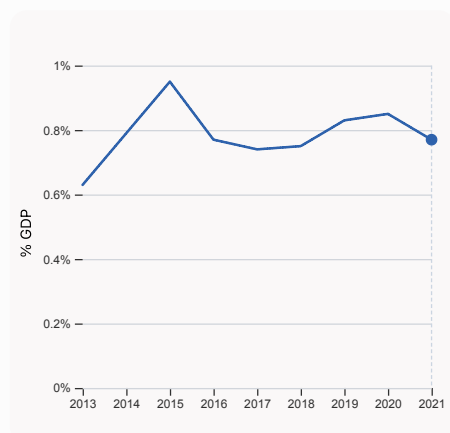
2.2.2 Graduates in science and engineering, %

was equal to 19.51% of total tertiary graduates in 2020, down by 0.31 percentage points from the year prior – and equivalent to an indicator rank of 76.



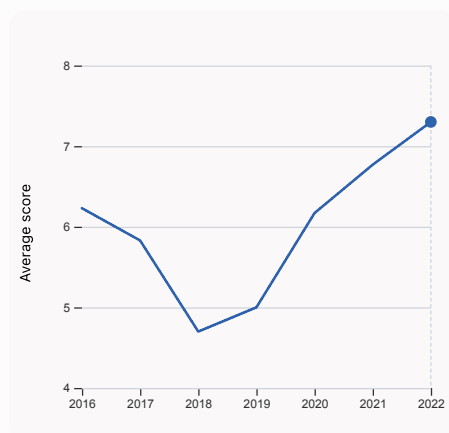
2.3.1 Researchers, FTE/mn pop.

was equal to 2,346.55 FTE/mn pop. in 2021, down by 2.27% from the year prior – and equivalent to an indicator rank of 37.



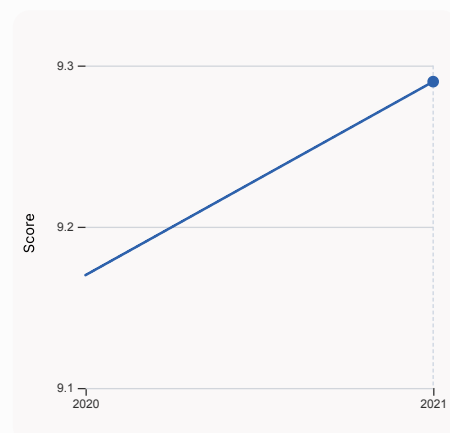
2.3.2 Gross expenditure on R&D, % GDP

was equal to 0.77% GDP in 2021, down by 0.08 percentage points from the year prior – and equivalent to an indicator rank of 47.



2.3.4 QS university ranking, top 3

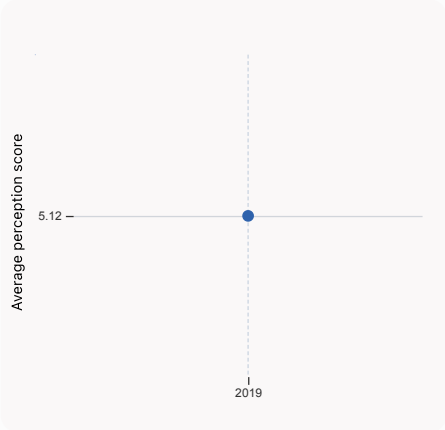
was equal to an average score of 7.3 for the top 3 universities in 2022, up by 7.83% from the year prior – and equivalent to an indicator rank of 69.



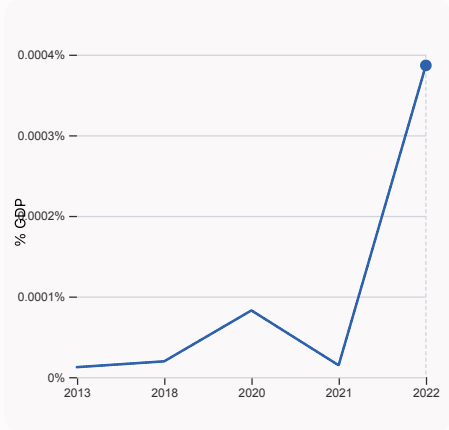
3.1.1 ICT access

was equal to a score of 9.29 in 2021, up by 1.31% from the year prior – and equivalent to an indicator rank of 24.

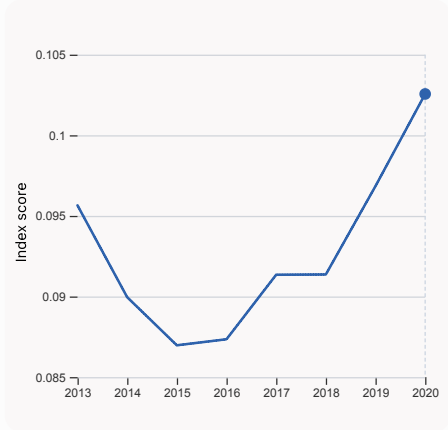
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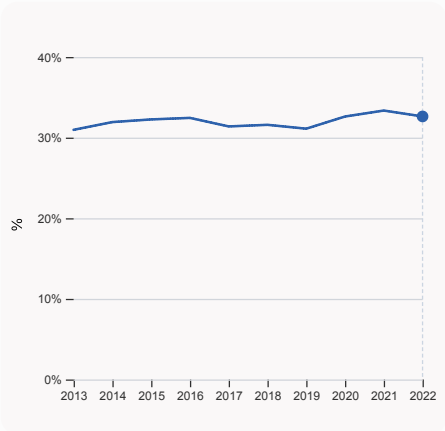
4.1.1 Finance for startups and scaleups
was equal to an average perception score of 5.12 in 2019, equivalent to an indicator rank of 29.



4.2.4 VC received, value, % GDP
was equal to 0.00039% GDP in 2022, up by 0.00037 percentage points from the year prior – and equivalent to an indicator rank of 75.



4.3.2 Domestic industry diversification
was equal to an index score of 0.103 in 2020, up by 5.9% from the year prior – and equivalent to an indicator rank of 19.

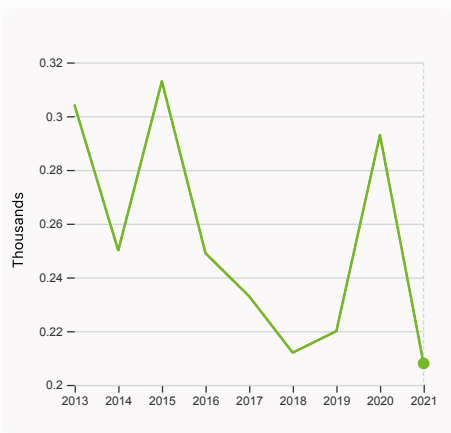


5.1.1 Knowledge-intensive employment, %
was equal to 32.63% in 2022, down by 0.73 percentage points from the year prior – and equivalent to an indicator rank of 45.

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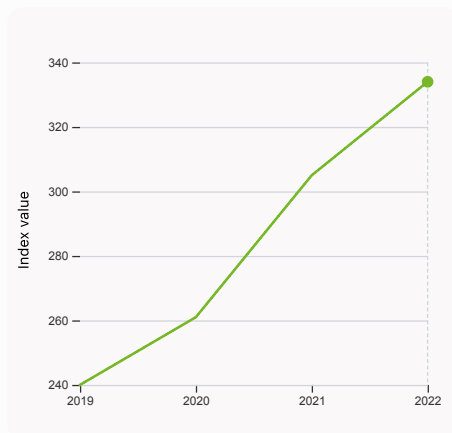


> Innovation outputs in Bulgaria



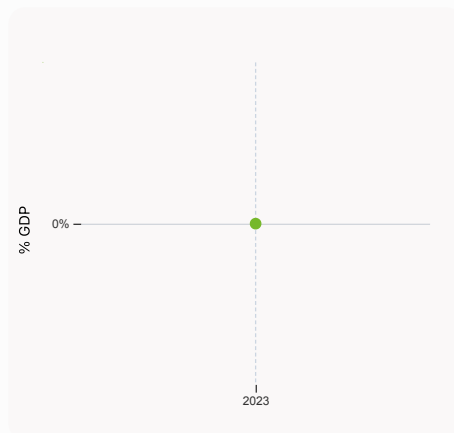
6.1.1 Patents by origin

was equal to 0.21 Thousands in 2021, down by 29.01% from the year prior – and equivalent to an indicator rank of 54.



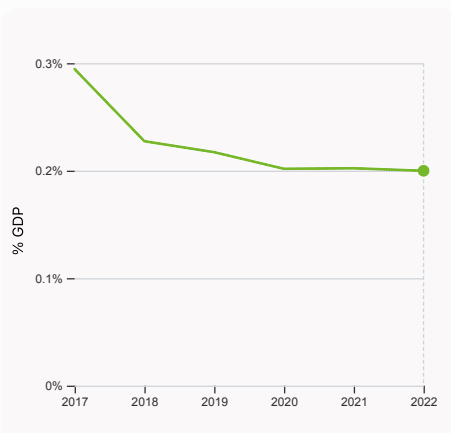
6.1.5 Citable documents H-index

was equal to an index value of 334 in 2022, up by 9.51% from the year prior – and equivalent to an indicator rank of 53.



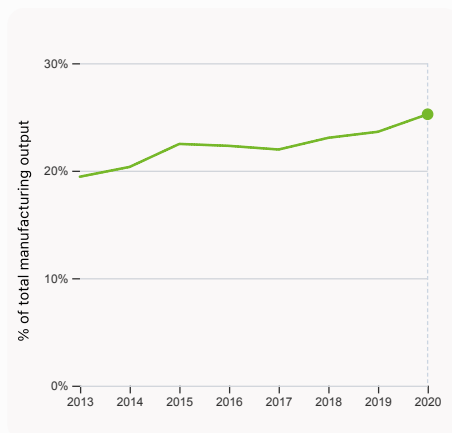
6.2.2 Unicorn valuation, % GDP

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



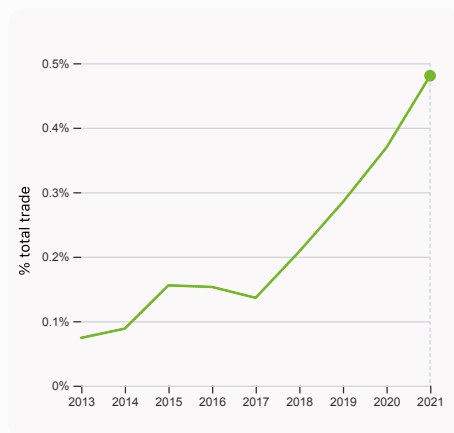
6.2.3 Software spending, % GDP

was equal to 0.2% GDP in 2022, down by 0.0024 percentage points from the year prior – and equivalent to an indicator rank of 74.



6.2.4 High-tech manufacturing, %

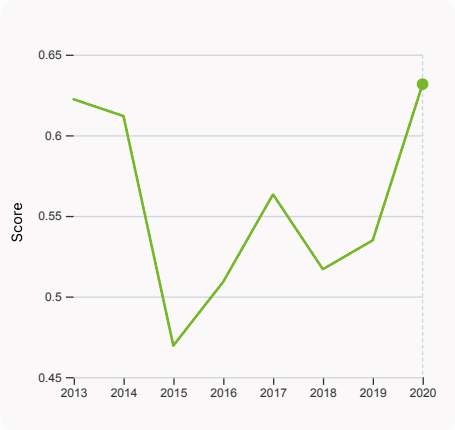
was equal to 25.25% of total manufacturing output in 2020, up by 1.63 percentage points from the year prior – and equivalent to an indicator rank of 49.



6.3.1 Intellectual property receipts, % total trade

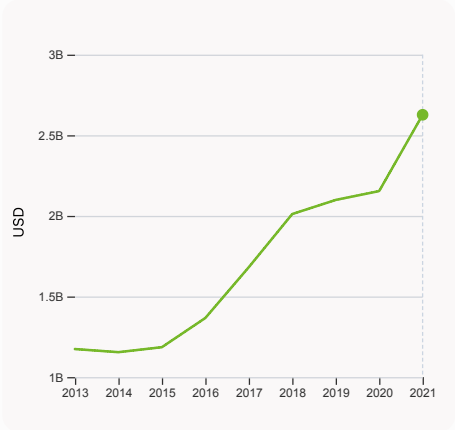
was equal to 0.481% total trade in 2021, up by 0.11 percentage points from the year prior – and equivalent to an indicator rank of 29.

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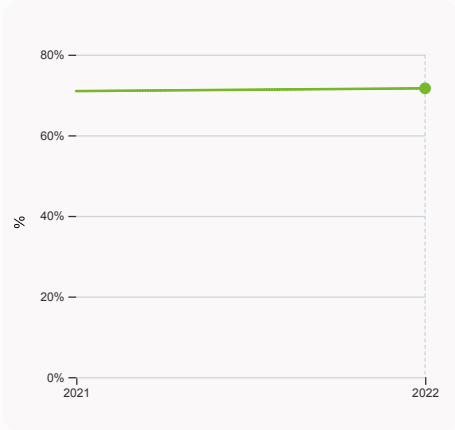
6.3.2 Production and export complexity

was equal to a score of 0.632 in 2020, up by 18.11% from the year prior – and equivalent to an indicator rank of 39.



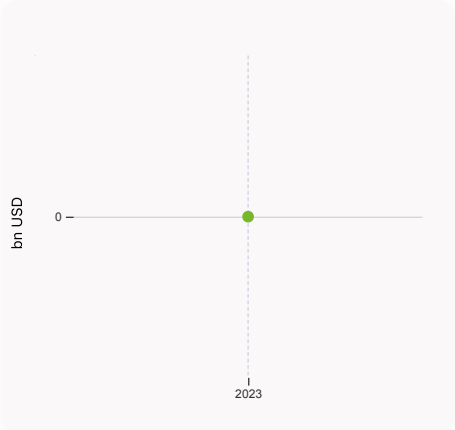
6.3.3 High-tech exports

was equal to 2,627,051,824 USD in 2021, up by 21.97% from the year prior – and equivalent to an indicator rank of 35.



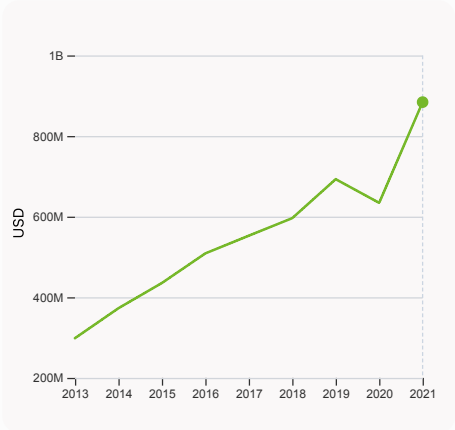
7.1.1 Intangible asset intensity, top 15, %

was equal to 71.64% in 2022, up by 0.68 percentage points from the year prior – and equivalent to an indicator rank of 17.



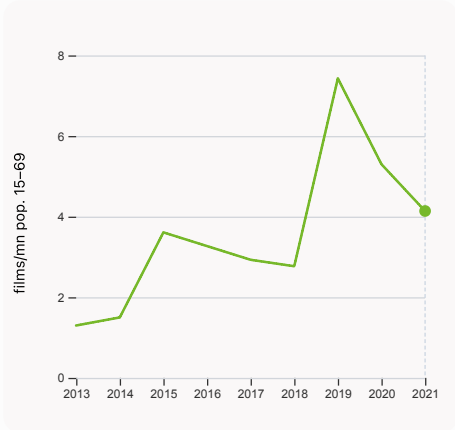
7.1.3 Global brand value, top 5,000

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



7.2.1 Cultural and creative services exports

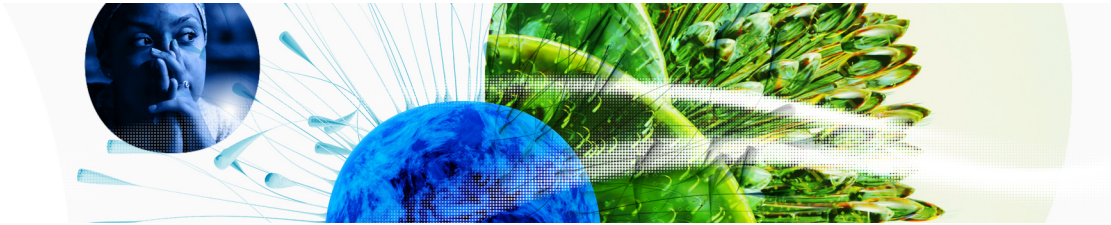
was equal to 884,134,000 USD in 2021, up by 39.4% from the year prior – and equivalent to an indicator rank of 16.



7.2.2 National feature films/mn pop. 15-69

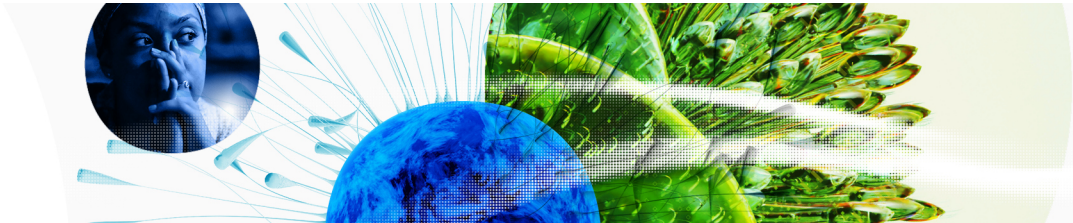
was equal to 4.14 films/mn pop. 15-69 in 2021, down by 21.89% from the year prior – and equivalent to an indicator rank of 33.

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7.3.4 Mobile app creation/bn PPP\$ GDP

was equal to 426,948.57 Apps/bn PPP\$ GDP in 2022, up by 5.29% from the year prior – and equivalent to an indicator rank of 46.



→ Bulgaria's innovation top performers

> 2.3.4 QS university ranking of Bulgaria's top universities

Rank	University	Score
561-570	SOFIA UNIVERSITY ST. KLIMENT OHRIDSKI	21.90

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2023>).

Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100]. Ranks can represent a single value "x", a tie "x=" or a range "x-y".

> 7.1.1 Top 15 intangible-asset intensive companies in Bulgaria

Rank	Firm	Intensity, %
1	AKUMIN INC	73.44
2	TCHAIKAPHARMA HIGH QUALITY MEDICINES	90.96
3	EUROHOLD BULGARIA AD	95.97

Source: Brand Finance (<https://brandirectory.com/reports/gift-2022>).

Note: Brand Finance only provides within economy ranks.

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GII 2023 rank

38

Bulgaria

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
34	45	Upper middle	EUR	6.8	198.3	29,178.0

Score / Value Rank

Score / Value Rank

Institutions 49.5 66

1.1 Institutional environment	43.2	73
1.1.1 Operational stability for businesses*	53.5	64
1.1.2 Government effectiveness*	32.9	80
1.2 Regulatory environment	72.4	39
1.2.1 Regulatory quality*	53.7	49
1.2.2 Rule of law*	38.4	63
1.2.3 Cost of redundancy dismissal	8.6	16 ●
1.3 Business environment	33.0	94
1.3.1 Policies for doing business*	38.5	90 ○
1.3.2 Entrepreneurship policies and culture*	27.5	63 ○

Human capital and research 31.1 66

2.1 Education	48.8	71
2.1.1 Expenditure on education, % GDP	4.2	65
2.1.2 Government funding/pupil, secondary, % GDP/cap	23.2	30
2.1.3 School life expectancy, years	13.6	73
2.1.4 PISA scales in reading, maths and science	426.7	50
2.1.5 Pupil-teacher ratio, secondary	11.7	51
2.2 Tertiary education	33.2	58
2.2.1 Tertiary enrolment, % gross	75.4	27
2.2.2 Graduates in science and engineering, %	19.5	76 ○
2.2.3 Tertiary inbound mobility, %	7.8	34
2.3 Research and development (R&D)	11.3	57
2.3.1 Researchers, FTE/mn pop.	2,346.5	37
2.3.2 Gross expenditure on R&D, % GDP	0.8	47
2.3.3 Global corporate R&D investors, top 3, mn US\$	0.0	40 ○ ◇
2.3.4 QS university ranking, top 3*	7.4	69

Infrastructure 56.2 28

3.1 Information and communication technologies (ICTs)	78.1	43
3.1.1 ICT access*	89.5	24 ●
3.1.2 ICT use*	82.0	53
3.1.3 Government's online service*	67.9	64
3.1.4 E-participation*	73.3	29
3.2 General infrastructure	32.5	48
3.2.1 Electricity output, GWh/mn pop.	6,856.1	29
3.2.2 Logistics performance*	50.0	50
3.2.3 Gross capital formation, % GDP	19.6	101 ○
3.3 Ecological sustainability	57.8	8
3.3.1 GDP/unit of energy use	8.2	86 ○
3.3.2 Environmental performance*	55.9	35
3.3.3 ISO 14001 environment/bn PPP\$ GDP	12.7	1 ●

Market sophistication 36.7 60

4.1 Credit	40.0	42
4.1.1 Finance for startups and scaleups*	61.8	29
4.1.2 Domestic credit to private sector, % GDP	51.5	72
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a
4.2 Investment	6.4	68
4.2.1 Market capitalization, % GDP	24.2	53 ○
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.1	43
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.0	56
4.2.4 VC received, value, % GDP	0.0	75 ○
4.3 Trade, diversification, and market scale	63.8	35
4.3.1 Applied tariff rate, weighted avg., %	1.5	20
4.3.2 Domestic industry diversification	96.9	19 ●
4.3.3 Domestic market scale, bn PPP\$	198.3	70

Business sophistication 36.0 42

5.1 Knowledge workers	37.3	54
5.1.1 Knowledge-intensive employment, %	32.6	45
5.1.2 Firms offering formal training, %	20.0	81 ○
5.1.3 GERD performed by business, % GDP	0.5	39
5.1.4 GERD financed by business, %	35.4	53
5.1.5 Females employed w/advanced degrees, %	20.1	33
5.2 Innovation linkages	33.0	38
5.2.1 University-industry R&D collaboration*	48.0	53
5.2.2 State of cluster development*	47.6	49
5.2.3 GERD financed by abroad, % GDP	0.3	10 ●
5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	47
5.2.5 Patent families/bn PPP\$ GDP	0.3	41
5.3 Knowledge absorption	37.6	52
5.3.1 Intellectual property payments, % total trade	0.6	64
5.3.2 High-tech imports, % total trade	8.0	70
5.3.3 ICT services imports, % total trade	1.3	67
5.3.4 FDI net inflows, % GDP	3.6	37
5.3.5 Research talent, % in businesses	49.8	25

Knowledge and technology outputs 33.9 34

6.1 Knowledge creation	18.7	58
6.1.1 Patents by origin/bn PPP\$ GDP	1.2	54
6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	47
6.1.3 Utility models by origin/bn PPP\$ GDP	1.2	20
6.1.4 Scientific and technical articles/bn PPP\$ GDP	n/a	n/a
6.1.5 Citable documents H-index	16.2	53
6.2 Knowledge impact	30.0	57
6.2.1 Labor productivity growth, %	2.9	20 ●
6.2.2 Unicorn valuation, % GDP	0.0	48 ○ ◇
6.2.3 Software spending, % GDP	0.2	74
6.2.4 High-tech manufacturing, %	25.3	49
6.3 Knowledge diffusion	52.9	12
6.3.1 Intellectual property receipts, % total trade	0.4	29
6.3.2 Production and export complexity	65.8	39
6.3.3 High-tech exports, % total trade	5.2	35
6.3.4 ICT services exports, % total trade	5.4	19 ●
6.3.5 ISO 9001 quality/bn PPP\$ GDP	37.4	1 ●

Creative outputs 38.2 34

7.1 Intangible assets	47.6	30
7.1.1 Intangible asset intensity, top 15, %	71.6	17
7.1.2 Trademarks by origin/bn PPP\$ GDP	78.0	19 ●
7.1.3 Global brand value, top 5,000	0.0	74 ○ ◇
7.1.4 Industrial designs by origin/bn PPP\$ GDP	4.7	23
7.2 Creative goods and services	24.7	42
7.2.1 Cultural and creative services exports, % total trade	1.7	16 ●
7.2.2 National feature films/mn pop. 15-69	4.1	33
7.2.3 Entertainment and media market/th pop. 15-69	n/a	n/a
7.2.4 Creative goods exports, % total trade	1.0	46
7.3 Online creativity	33.0	36
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	28.4	24 ●
7.3.2 Country-code TLDs/th pop. 15-69	4.6	57
7.3.3 GitHub commits/mn pop. 15-69	27.9	36
7.3.4 Mobile app creation/bn PPP\$ GDP	71.2	46

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.



➔ Data availability

The following tables list indicators that are either missing or outdated for Bulgaria.



> Bulgaria has missing data for two indicators and outdated data for three indicators.

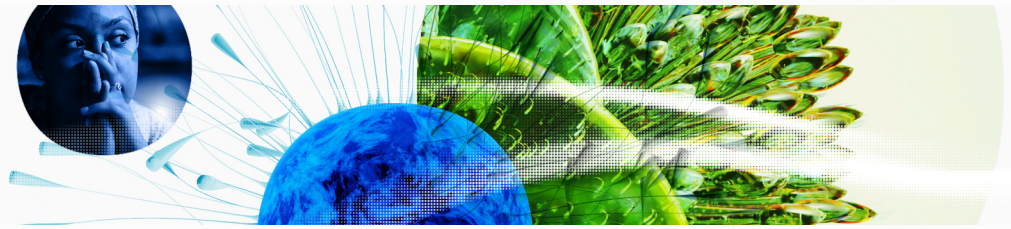
> Missing data for Bulgaria

Code	Indicator name	Economy Year	Model Year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2021	International Monetary Fund, Financial Access Survey (FAS)
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 Bulgaria

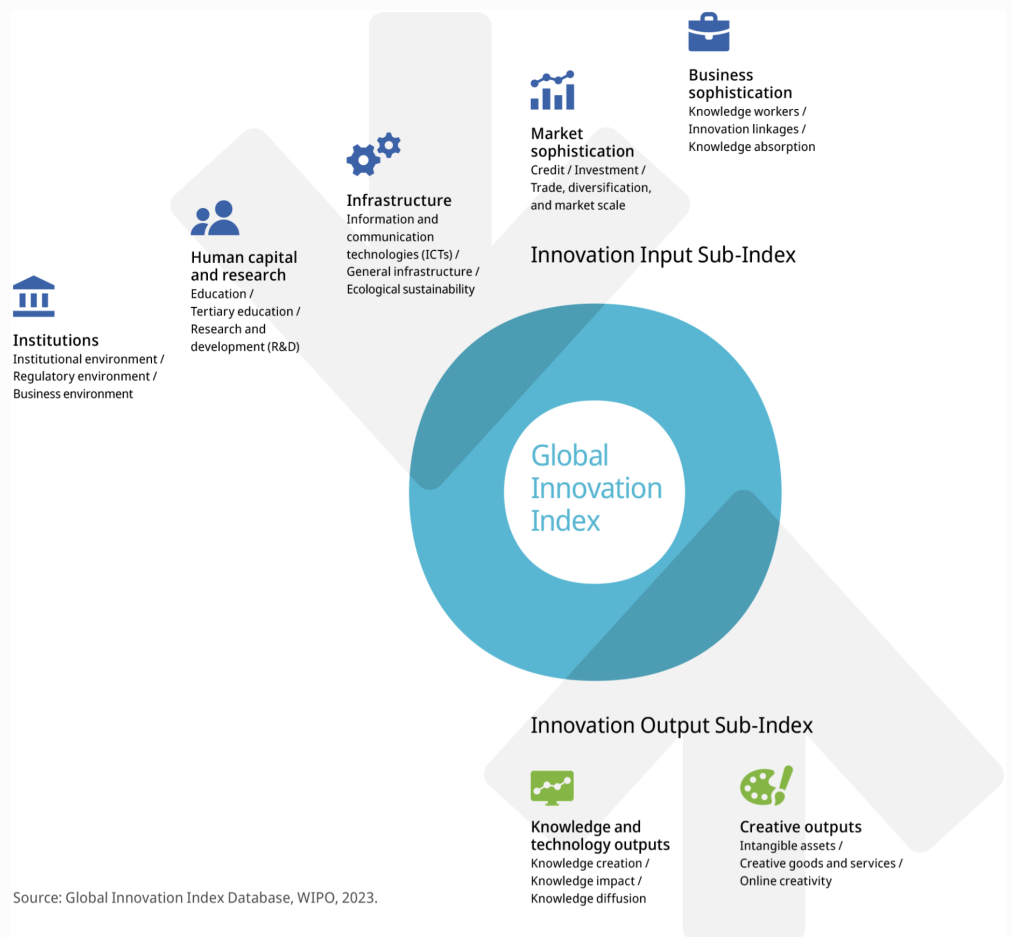
Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	2019	2022	Global Entrepreneurship Monitor
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics
4.1.1	Finance for startups and scaleups	2019	2022	Global Entrepreneurship Monitor

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.



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.