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.

<table>
<thead>
<tr>
<th>Year</th>
<th>GII Position</th>
<th>Innovation Inputs</th>
<th>Innovation Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>37th</td>
<td>45th</td>
<td>30th</td>
</tr>
<tr>
<td>2021</td>
<td>39th</td>
<td>48th</td>
<td>27th</td>
</tr>
<tr>
<td>2022</td>
<td>35th</td>
<td>47th</td>
<td>30th</td>
</tr>
<tr>
<td>2023</td>
<td>38th</td>
<td>45th</td>
<td>34th</td>
</tr>
</tbody>
</table>

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.
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

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

The chart illustrates the correlation between innovation inputs (X-axis) and outputs (Y-axis) across different income levels. The data points indicate that higher innovation inputs are associated with higher outputs, with Bulgaria lying above the fitted line, suggesting it is translating its inputs into more effective outputs compared to its income level.

Key:
- High income
- Upper middle
- Lower middle
- Low income
- Fitted line
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.

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).

* Knowledge and technology outputs, Creative outputs
** Institutions, Human capital and research
→ 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
- Europe | 54.69
- Bulgaria | 56.16
- Upper middle income | 40.40

**Institutions**
- Top 10 | 79.85
- Europe | 61.69
- Bulgaria | 49.54
- Upper middle income | 47.71
### 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).

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rank</strong></td>
<td><strong>Code</strong></td>
</tr>
<tr>
<td>1</td>
<td>3.3.3</td>
</tr>
<tr>
<td>1</td>
<td>6.3.5</td>
</tr>
<tr>
<td>10</td>
<td>5.2.3</td>
</tr>
<tr>
<td>16</td>
<td>1.2.3</td>
</tr>
<tr>
<td>16</td>
<td>7.2.1</td>
</tr>
<tr>
<td>19</td>
<td>4.3.2</td>
</tr>
<tr>
<td>19</td>
<td>6.3.4</td>
</tr>
<tr>
<td>19</td>
<td>7.1.2</td>
</tr>
<tr>
<td>20</td>
<td>6.2.1</td>
</tr>
<tr>
<td>24</td>
<td>7.3.1</td>
</tr>
<tr>
<td>24</td>
<td>3.1.1</td>
</tr>
</tbody>
</table>
Global Innovation Index 2023

† 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.
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.
> 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.
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.
Global Innovation Index 2023

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

<table>
<thead>
<tr>
<th>Rank</th>
<th>University</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>561-570</td>
<td>SOFIA UNIVERSITY ST. KLIMENT OHRIDSKI</td>
<td>21.90</td>
</tr>
</tbody>
</table>

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=x* or a range *x-y*.

7.1.1 Top 15 intangible-asset intensive companies in Bulgaria

<table>
<thead>
<tr>
<th>Rank</th>
<th>Firm</th>
<th>Intensity, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AKUMIN INC</td>
<td>73.44</td>
</tr>
<tr>
<td>2</td>
<td>TCHAIKAPHARMA HIGH QUALITY MEDICINES</td>
<td>90.96</td>
</tr>
<tr>
<td>3</td>
<td>EUROHOLD BULGARIA AD</td>
<td>95.97</td>
</tr>
</tbody>
</table>

Note: Brand Finance only provides within economy ranks.
Global Innovation Index 2023

Bulgaria

Output rank: 34
Input rank: 45
Income region: Upper middle
Score: 6.8
Population (mn): 6.8
GDP, PPP$ (bn): 198.3
GDP per capita, PPP$: 29,178.0

Business sophistication

<table>
<thead>
<tr>
<th>Score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>36.0</td>
<td>42</td>
</tr>
</tbody>
</table>

5.1 Knowledge workers
5.1.1 Knowledge-intensive employment, %
5.1.2 Firms offering formal training, %
5.1.3 GERD performed by business, % GDP
5.1.4 GERD financed by business, %
5.1.5 Females employed w/advanced degrees, %

6. Innovation linkages
6.1 University-industry R&D collaboration
6.2 State of cluster development
6.3 GERD financed by abroad, % GDP
6.4 Joint venture/strategic alliance deals/bn PPP$ GDP
6.5 Patent families/bn PPP$ GDP

5.3 Knowledge absorption
5.3.1 Intellectual property payments, % total trade
5.3.2 High-tech imports, % total trade
5.3.3 ICT services imports, % total trade
5.3.4 FDN net inflows, % GDP
5.3.5 Research talent, % in businesses

5.4 Human capital and knowledge

<table>
<thead>
<tr>
<th>Score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.9</td>
<td>34</td>
</tr>
</tbody>
</table>

6.1 Knowledge creation
6.1.1 Patents by origin/bn PPP$ GDP
6.1.2 PCT patents by origin/bn PPP$ GDP
6.3.1 Utility models by origin/bn PPP$ GDP
6.4.1 Scientific and technical articles/bn PPP$ GDP
6.5.1 Obtained documents H-index

6.2 Knowledge impact
6.2.1 Labor productivity growth, %
6.2.2 Uncorn valuation, %
6.2.3 Software spending, % GDP
6.2.4 High-tech manufacturing, %

6.3 Knowledge diffusion
6.3.1 Intellectual property receipts, % total trade
6.3.2 Production and export complexity
6.3.3 High-tech exports, % total trade
6.3.4 ICT services exports, % total trade
6.3.5 ISO 9001 quality/bn PPP$ GDP

5.5 Creative outputs

<table>
<thead>
<tr>
<th>Score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.2</td>
<td>34</td>
</tr>
</tbody>
</table>

7.1 Intangible assets
7.1.1 Intangible asset intensity, top 15, %
7.1.2 Trademarks by origin/bn PPP$ GDP
7.1.3 Global brand value, top 5,000
7.1.4 Industrial designs by origin/bn PPP$ GDP

7.2 Creative goods and services
7.2.1 Cultural and creative services exports, % total trade
7.2.2 National feature films/mn pop, 15-69
7.2.3 Entertainment and media market/sh pop, 15-69
7.2.4 Creative goods exports, % total trade

7.3 Online creativity
7.3.1 Generic top-level domains (TLDs)/sh pop, 15-69
7.3.2 Country-code TLDs/sh pop, 15-69
7.3.3 GitHub commits/mn pop, 15-69
7.3.4 Mobile app creation/bn PPP$ GDP

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator name</th>
<th>Economy Year</th>
<th>Model Year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.3</td>
<td>Loans from microfinance institutions, % GDP</td>
<td>n/a</td>
<td>2021</td>
<td>International Monetary Fund, Financial Access Survey (FAS)</td>
</tr>
<tr>
<td>7.2.3</td>
<td>Entertainment and media market with pop. 15-69</td>
<td>n/a</td>
<td>2022</td>
<td>PwC, GEMO; United Nations, World Population Prospects; International Monetary Fund</td>
</tr>
</tbody>
</table>

## Outdated data for Bulgaria

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator name</th>
<th>Economy Year</th>
<th>Model Year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.2</td>
<td>Entrepreneurship policies and culture</td>
<td>2019</td>
<td>2022</td>
<td>Global Entrepreneurship Monitor</td>
</tr>
<tr>
<td>2.1.1</td>
<td>Expenditure on education, % GDP</td>
<td>2019</td>
<td>2021</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>4.1.1</td>
<td>Finance for startups and scaleups</td>
<td>2019</td>
<td>2022</td>
<td>Global Entrepreneurship Monitor</td>
</tr>
</tbody>
</table>
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.