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.

Romania ranking in the Global Innovation Index 2023

> Romania ranks 47th among the 132 economies featured in the GII 2023.

> Romania ranks 40th among the 50 high-income group economies.

> Romania ranks 30th among the 39 economies in Europe.

> Romania GII Ranking (2020-2023)

The table shows the rankings of Romania 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 Romania in the GII 2023 is between ranks 46 and 50.

<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>46th</td>
<td>51st</td>
<td>46th</td>
</tr>
<tr>
<td>2021</td>
<td>48th</td>
<td>54th</td>
<td>50th</td>
</tr>
<tr>
<td>2022</td>
<td>49th</td>
<td>56th</td>
<td>43rd</td>
</tr>
<tr>
<td>2023</td>
<td>47th</td>
<td>55th</td>
<td>47th</td>
</tr>
</tbody>
</table>

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

This year Romania ranks 55th in innovation inputs. This position is higher than last year.

Romania ranks 47th in innovation outputs. This position is lower than last year.
Global Innovation Index 2023

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, Romania's performance is below expectations for its level of development.

Innovation overperformers relative to their economic development

GII Score

[Diagram showing the relationship between GII score and GDP per capita, with Romania marked as an overperformer relative to its economic 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.

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

Relationship between innovation inputs and outputs

![Graph showing the relationship between innovation inputs and outputs]

- High income
- Upper middle
- Lower middle
- Low income
- Fitted line
Overview of Romania'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 Romania are those that rank above the GII (shown in blue) and the weakest are those that rank below.

**Highest rankings**
- 34th Infrastructure
- 35th Knowledge and technology outputs

**Lowest rankings**
- 47th Global Innovation Index
- 51st Business sophistication
- 58th Creative outputs
- 74th Institutions
- 75th 2 pillars *

* Human capital and research, Market sophistication

The full WIPO Intellectual Property Statistics profile for Romania can be found on this link.
Benchmark of Romania against other country groupings for each of the seven areas of the GII Index

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

### Knowledge and technology outputs

<table>
<thead>
<tr>
<th>Area</th>
<th>Top 10 Score</th>
<th>Europe Score</th>
<th>High Income Score</th>
<th>Romania Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative outputs</td>
<td>Top 10: 56.09</td>
<td>High Income: 40.27</td>
<td>Europe: 39.87</td>
<td>Romania: 28.91</td>
</tr>
<tr>
<td>Business sophistication</td>
<td>Top 10: 64.39</td>
<td>High Income: 46.38</td>
<td>Europe: 44.61</td>
<td>Romania: 32.06</td>
</tr>
<tr>
<td>Market sophistication</td>
<td>Top 10: 61.93</td>
<td>High Income: 46.42</td>
<td>Europe: 43.65</td>
<td>Romania: 32.80</td>
</tr>
<tr>
<td>Human capital and research</td>
<td>Top 10: 60.28</td>
<td>High Income: 46.30</td>
<td>Europe: 44.05</td>
<td>Romania: 29.06</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Top 10: 62.83</td>
<td>High Income: 55.85</td>
<td>Europe: 54.69</td>
<td>Romania: 54.48</td>
</tr>
<tr>
<td>Institutions</td>
<td>Top 10: 79.85</td>
<td>High Income: 68.16</td>
<td>Europe: 61.69</td>
<td>Romania: 47.58</td>
</tr>
</tbody>
</table>
Innovation strengths and weaknesses in Romania

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

> Romania’s main innovation strengths are Cost of redundancy dismissal (rank 1), ISO 14001 environment/bn PPP$ GDP (rank 8) and Labor productivity growth, % (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>1.2.3</td>
</tr>
<tr>
<td>8</td>
<td>3.3.3</td>
</tr>
<tr>
<td>10</td>
<td>6.2.1</td>
</tr>
<tr>
<td>11</td>
<td>4.1.3</td>
</tr>
<tr>
<td>12</td>
<td>7.2.1</td>
</tr>
<tr>
<td>12</td>
<td>6.3.4</td>
</tr>
<tr>
<td>15</td>
<td>6.3.5</td>
</tr>
<tr>
<td>18</td>
<td>5.3.3</td>
</tr>
<tr>
<td>19</td>
<td>6.3.2</td>
</tr>
<tr>
<td>21</td>
<td>3.3.1</td>
</tr>
</tbody>
</table>
Romania's innovation system

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

Innovation inputs in Romania

2.1.1 Expenditure on education, % GDP was equal to 3.57% GDP in 2019, up by 0.25 percentage points from the year prior – and equivalent to an indicator rank of 87.

2.2.2 Graduates in science and engineering, % was equal to 29.09% of total tertiary graduates in 2020, down by 0.92 percentage points from the year prior – and equivalent to an indicator rank of 23.

2.3.1 Researchers, FTE/mn pop. was equal to 995.38 FTE/mn pop. in 2021, up by 4.96% from the year prior – and equivalent to an indicator rank of 52.

2.3.2 Gross expenditure on R&D, % GDP was equal to 0.475% GDP in 2021, up by 0.0064 percentage points from the year prior – and equivalent to an indicator rank of 61.

2.3.4 QS university ranking, top 3 was equal to an average score of 0 for the top 3 universities in 2022, equivalent to an indicator rank of 71.

3.1.1 ICT access was equal to a score of 9.06 in 2021, up by 0.67% from the year prior – and equivalent to an indicator rank of 46.
4.1.1 Finance for startups and scaleups was equal to an average perception score of 4.07 in 2022, equivalent to an indicator rank of 58.

4.2.4 VC received, value, % GDP was equal to 0.00017% GDP in 2022, up by 0.00011 percentage points from the year prior – and equivalent to an indicator rank of 87.

4.3.2 Domestic industry diversification was equal to an index score of 0.105 in 2020, down by 1.54% from the year prior – and equivalent to an indicator rank of 23.

5.1.1 Knowledge-intensive employment, % was equal to 28.24% in 2022, up by 1.05 percentage points from the year prior – and equivalent to an indicator rank of 50.
6.1.1 Patents by origin
was equal to 0.8 Thousands in 2021, down by 7.91% from the year prior – and equivalent to an indicator rank of 53.

6.1.5 Citable documents H-index
was equal to an index value of 398 in 2022, up by 9.34% from the year prior – and equivalent to an indicator rank of 42.

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 0.305% GDP in 2022, up by 0.081 percentage points from the year prior – and equivalent to an indicator rank of 43.

6.2.4 High-tech manufacturing, %
was equal to 4.375% of total manufacturing output in 2020, up by 0.28 percentage points from the year prior – and equivalent to an indicator rank of 21.

6.3.1 Intellectual property receipts, % total trade
was equal to 0.073% total trade in 2021, down by 0.061 percentage points from the year prior – and equivalent to an indicator rank of 58.
6.3.2 Production and export complexity
was equal to a score of 1.27 in 2020, up by 4.96% from the year prior – and equivalent to an indicator rank of 19.

6.3.3 High-tech exports
was equal to 8,026,987,950 USD in 2021, up by 14.92% from the year prior – and equivalent to an indicator rank of 28.

7.1.1 Intangible asset intensity, top 15, %
was equal to 49.68% in 2022, down by 0.14 percentage points from the year prior – and equivalent to an indicator rank of 49.

7.1.3 Global brand value, top 5,000
was equal to 4.53 bn USD in 2023, down by 14.51% from the year prior – and equivalent to an indicator rank of 49.

7.2.1 Cultural and creative services exports
was equal to 2,218,133,000 USD in 2021, up by 18.44% from the year prior – and equivalent to an indicator rank of 12.

7.2.2 National feature films/mn pop. 15-69
was equal to 1.31 films/mn pop. 15–69 in 2021, up by 51.67% from the year prior – and equivalent to an indicator rank of 55.
7.3.4 Mobile app creation/bn PPP$ GDP
was equal to 353,210.55 Apps/bn PPP$ GDP in 2022, down by 6.49% from the year prior – and equivalent to an indicator rank of 53.
→ Romania's innovation top performers

> 2.3.4 QS university ranking of Romania's top universities

<table>
<thead>
<tr>
<th>Rank</th>
<th>University</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1001-1200</td>
<td>BABES-BOLYAI UNIVERSITY</td>
<td>10.10</td>
</tr>
<tr>
<td>1001-1200</td>
<td>UNIVERSITY OF BUCHAREST</td>
<td>9.60</td>
</tr>
<tr>
<td>1201-1400</td>
<td>UNIVERSITATEA DE VEST DIN TIMISOARA / WEST UNIVERSITY OF TIMISOARA</td>
<td>6.20</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 0.001. Ranks can represent a single value “n”, a tie “n=” or a range “n–n”.

> 7.1.1 Top 15 intangible-asset intensive companies in Romania

<table>
<thead>
<tr>
<th>Rank</th>
<th>Firm</th>
<th>Intensity, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHIMCOMPLEX BORZESTI SA ONESTI</td>
<td>76.78</td>
</tr>
<tr>
<td>2</td>
<td>DIGI COMMUNICATIONS NV</td>
<td>50.54</td>
</tr>
<tr>
<td>3</td>
<td>SOCIETATEA ENERGETICA ELECTRICA SA</td>
<td>87.82</td>
</tr>
</tbody>
</table>

Source: Brand Finance [https://brandirectory.com/reports/gfi-2022].
Note: Brand Finance only provides within economy ranks.

> 7.1.3 Top 5,000 companies in Romania with highest global brand value

<table>
<thead>
<tr>
<th>Rank</th>
<th>Brand</th>
<th>Industry</th>
<th>Brand Value, mn USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DACIA</td>
<td>Automobiles</td>
<td>1,102.1</td>
</tr>
<tr>
<td>2</td>
<td>PETROM</td>
<td>Oil &amp; Gas</td>
<td>765.5</td>
</tr>
<tr>
<td>3</td>
<td>BANCA TRANSILVANIA</td>
<td>Banking</td>
<td>512.9</td>
</tr>
</tbody>
</table>

Source: Brand Finance [https://brandirectory.com].
Note: Rank corresponds to within economy ranks.
Global Innovation Index 2023

Romania

Output rank 47
Input rank 55
Income High
Region EUR
Population (mn) 19.7
GDP, PPP$ (bn) 731.5
GDP per capita, PPP$ 38,096.8

Business sophistication

5.1 Knowledge workers 35.6 59
5.1.1 Knowledge-intensive employment, % 28.2 50
5.1.2 Firms offering formal training, % 20.5 80
5.1.3 GERD performed by, % GDP 0.3 48
5.1.4 GERD financed by, % business 55.6 21
5.1.5 females employed w/advanced degrees, % 13.3 57
5.2 Innovation linkages 17.9 86
5.2.1 University-industry R&D collaboration* 38.2 79
5.2.2 State of cluster development* 38.1 76
5.2.3 GERD financed by abroad, % GDP 0.1 49
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP 0.0 87
5.2.5 Patents families/bn PPP$ GDP 0.0 66

Knowledge and technology outputs

6.1 Knowledge creation 13.5 68
6.1.1 Patents by origin/bn PPP$ GDP 1.2 53
6.1.2 PCT patents by origin/bn PPP$ GDP 0.1 73
6.1.3 Utility models by origin/bn PPP$ GDP 0.1 57
6.1.4 Scientific and technical articles/bn PPP$ GDP n/a n/a
6.1.5 Citable documents H-index 19.8 42
6.2 Knowledge impact 39.6 31
6.2.1 Labor productivity growth, % 3.3 10
6.2.2 Unemployment, % GDP 0.0 48
6.2.3 Software spending, % GDP 0.3 43
6.2.4 High-tech manufacturing, % 43.8 21
6.3 Knowledge diffusion 4.6 21
6.3.1 Intellectual property receipts, % total trade 0.1 58
6.3.2 Production and export complexity 79.2 19
6.3.3 Hi-tech exports, % total trade 6.5 28
6.3.4 ICT services exports, % total trade 6.7 12
6.3.5 ISO 9001 quality/bn PPP$ GDP 18.3 15

Creative outputs

7.1 Intangible assets 32.4 62
7.1.1 Intangible asset intensity, top 15, % 49.7 49
7.1.2 Trademarks by origin/bn PPP$ GDP 38.3 61
7.1.3 Global brand value, top 5,000 1.5 49
7.1.4 Industrial designs by origin/bn PPP$ GDP 1.1 65
7.2 Creative goods and services 15.5 57
7.2.1 Cultural and creative services exports, % total trade 1.8 12
7.2.2 National feature films/mn pop. 15-69 1.3 55
7.2.3 Entertainment and media market/mn pop. 15-69 7.8 38
7.2.4 Creative goods exports, % total trade 0.8 50
7.3 Online creativity 21.3 45
7.3.1 Generic top-level domains (TLDs)/mn pop. 15-69 5.7 53
7.3.2 Country-code TLDs/mn pop. 15-69 13.7 36
7.3.3 GitHub commits/mn pop. 15-69 19.1 45
7.3.4 Mobile app creation/bn PPP$ GDP 70.5 53

NOTE: ● 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.
The following tables list indicators that are either missing or outdated for Romania.

> Romania has missing data for zero indicators and outdated data for one indicator.

**Outdated data for Romania**

<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>2.1.1</td>
<td>Expenditure on education, % GDP</td>
<td>2019</td>
<td>2021</td>
<td>UNESCO Institute for Statistics</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.