The GII indicators are grouped into innovation inputs and outputs. The following table reflects Belarus’s ranking over time\(^1\).

<table>
<thead>
<tr>
<th></th>
<th>GII</th>
<th>Input</th>
<th>Output</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>86</td>
<td>60</td>
<td>110</td>
<td>119</td>
</tr>
<tr>
<td>2017</td>
<td>88</td>
<td>63</td>
<td>109</td>
<td>120</td>
</tr>
<tr>
<td>2016</td>
<td>79</td>
<td>64</td>
<td>103</td>
<td>116</td>
</tr>
</tbody>
</table>

- Belarus performs better in innovation inputs than outputs.
- Over the last three years, Belarus has improved in innovation inputs, reaching the 60th position this year, up from the 63rd in 2017 and the 64th in 2016.
- This year its rank in innovation outputs slightly deteriorates, ranking 110th, down 1 spot from last year, and 7 spots from 2016.
- Belarus positions 119th globally in the Innovation Efficiency Ratio. This ranking is rather low when compared to its overall GII position (86th), showing that the economy could improve its efficiency in translating its good-quality inputs into more outputs. Indeed, this ranking is partly due to a much higher ranking in innovation inputs (60th) compared to outputs (110th).

\(^1\) Note that year-on-year comparisons of the GII ranks are imperfect and influenced by changes in the GII model and data availability.
Benchmarking Belarus to other upper-middle-income countries and the Europe region

Belarus’s scores by area

Belarus has high scores in 2 of the 7 GII areas – Human Capital & Research and Business Sophistication, in which it scores above the average of the upper-middle-income group.

Top scores in areas such as Education and Knowledge workers are behind these high rankings.

Europe region

Compared to other countries in the Europe region, Belarus performs below-average in all GII areas.

Belarus’s innovation profile

Strengths

- Belarus shows most of its GII strengths on the innovation input side, among four of the five GII input areas and especially in two areas – Human Capital & Research (34th) and Business Sophistication (53rd).

- In Human Capital & Research (34th), the top-ranked GII area for Belarus, it shows a strong performance in two of its three components – Education (20th) and Tertiary education (13th). Three of their indicators also perform strongly: Pupil-teacher ratio (12th), and Tertiary enrolment and Graduates in science & engineering, where it ranks 7th and 5th respectively.

- The area Knowledge workers (24th) is highlighted as a strength in Business Sophistication (53rd). Here the country also exhibits strengths in three of its five indicators, namely Knowledge-intensive employment (27th), Firms offering formal training (18th), and Females employed with advanced degrees, which positions 2nd in the world.

- Belarus also shows strength in the indicators Ease of starting a business (27th) in Institutions (81st) and ICT access (31st) in Infrastructure (73rd).

- On the innovation output side, Belarus achieves comparatively strong results in two indicators within Knowledge & Technology Outputs (65th): Utility models by origin (12th) and ICT services exports (23rd).
Weaknesses

- Belarus has relatively weak performance in the **Innovation Output Sub-Index**, where it ranks 110th globally. In addition, the **Innovation Efficiency Ratio**, where it ranks 119th in the world, is signaled as another major GII weakness for Belarus.

- Another important weakness is found in **Creative Outputs** (122nd) which is the lowest-ranked GII area for Belarus and is signaled as a weakness. Two of its three components present weak performance: **Intangible assets** (122nd) and **Creative goods & services** (108th). Furthermore, one indicator – **National feature films** (99th) – is relatively weak.

- Several other relative weaknesses are found in **Knowledge & Technology Outputs** (65th), where the country performs relatively weakly in three indicators: **Productivity growth** (95th), **Computer software spending** (106th), and **ISO 9001 quality certificates** (110th).

- Among **innovation inputs**, most GII weaknesses are found in **Market Sophistication** (91st), where the country shows weak rankings in one of its component **Credit** (114th) and in two indicators – **Domestic credit to private sector** (105th) and **Venture capital deals** (67th).

- In **Institutions** (81st), relative weaknesses lie in two indicators: **Regulatory quality** (120th) and **Rule of law** (109th).

- Other two weak indicators are identified on the innovation input side: **Global R&D companies expenditures** (40th) in **Human Capital & Research** (34th) and **Logistics performance** (112th) in **Infrastructure** (73rd).

- The area **Innovation linkages** (114th) is weak in **Business Sophistication** (53rd).

The following figure presents a summary of Belarus’s ranks in the 7 GII areas, as well as the overall rank in the GII 2018.

**Belarus's rank in the GII 2018 and the 7 GII areas**

<table>
<thead>
<tr>
<th>Area</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human capital and research</td>
<td>34</td>
</tr>
<tr>
<td>Business sophistication</td>
<td>53</td>
</tr>
<tr>
<td>Knowledge and technology outputs</td>
<td>65</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>73</td>
</tr>
<tr>
<td>Institutions</td>
<td>81</td>
</tr>
<tr>
<td>Global Innovation Index 2018</td>
<td>86</td>
</tr>
<tr>
<td>Market sophistication</td>
<td>91</td>
</tr>
<tr>
<td>Creative outputs</td>
<td>122</td>
</tr>
</tbody>
</table>

*Rank 1 is the highest possible in each pillar*  
*Total number of countries: 126*
**Expected vs. Observed Innovation Performance**

The GII bubble chart shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The depicted trendline gives an indication of the expected innovation performance at different levels of income. Countries located above the trendline are performing better than what would be expected based on their income level. Countries below the line are Innovation Under-performers relative to GDP.

Relative to GDP, Belarus performs below its expected level of development.
## Missing and Outdated Data

More and better data improves the ability of a country to understand its strengths and weaknesses and give policymakers greater capacity to plan and adapt public policies accordingly. The GII 2018 covers 126 countries that complied with the minimum indicator coverage of 35 indicators in the Innovation Input Sub-Index (66%) and 18 indicators in the Innovation Output Sub-Index (66%).

The following tables show data for Belarus that is not available or that is outdated.

### Missing Data

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator</th>
<th>Country Year</th>
<th>Model Year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1.2</td>
<td>Government funding/pupil, secondary, % GDP/cap</td>
<td>n/a</td>
<td>2014</td>
<td>UNESCO Institute for Statistics (UIS)</td>
</tr>
<tr>
<td>2.1.4</td>
<td>PISA scales in reading, maths &amp; science</td>
<td>n/a</td>
<td>2015</td>
<td>OECD PISA</td>
</tr>
<tr>
<td>2.3.1</td>
<td>Researchers, FTE/mn pop.</td>
<td>n/a</td>
<td>2016</td>
<td>UNESCO Institute for Statistics (UIS)</td>
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<tr>
<td>4.2.2</td>
<td>Market capitalization, % GDP</td>
<td>n/a</td>
<td>2016</td>
<td>World Bank, World Development Indicators</td>
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<tr>
<td>4.3.2</td>
<td>Intensity of local competition†</td>
<td>n/a</td>
<td>2017</td>
<td>World Economic Forum, Executive Opinion Survey</td>
</tr>
<tr>
<td>5.2.1</td>
<td>University/industry research collaboration†</td>
<td>n/a</td>
<td>2017</td>
<td>World Economic Forum, Executive Opinion Survey</td>
</tr>
<tr>
<td>5.2.2</td>
<td>State of cluster development†</td>
<td>n/a</td>
<td>2017</td>
<td>World Economic Forum, Executive Opinion Survey</td>
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<tr>
<td>5.3.5</td>
<td>Research talent, % in business enterprise</td>
<td>n/a</td>
<td>2016</td>
<td>UNESCO Institute for Statistics (UIS)</td>
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<td>7.1.3</td>
<td>ICTs &amp; business model creation†</td>
<td>n/a</td>
<td>2017</td>
<td>World Economic Forum, Executive Opinion Survey</td>
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<tr>
<td>7.1.4</td>
<td>ICTs &amp; organizational model creation†</td>
<td>n/a</td>
<td>2017</td>
<td>World Economic Forum, Executive Opinion Survey</td>
</tr>
<tr>
<td>7.2.3</td>
<td>Entertainment &amp; Media market/th pop. 15–69</td>
<td>n/a</td>
<td>2016</td>
<td>PwC's Global Entertainment and Media Outlook, 2017–2021</td>
</tr>
<tr>
<td>7.2.4</td>
<td>Printing &amp; other media, % manufacturing</td>
<td>n/a</td>
<td>2015</td>
<td>UNIDO, Industrial Statistics</td>
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### Outdated Data

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator</th>
<th>Country Year</th>
<th>Model Year</th>
<th>Source</th>
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</table>
**BELARUS**

<table>
<thead>
<tr>
<th>Output rank</th>
<th>Input rank</th>
<th>Income Region</th>
<th>Efficiency ratio</th>
<th>Population (mn)</th>
<th>GDP, PPP$</th>
<th>GDP per capita, PPP$</th>
<th>GII 2017 rank</th>
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</thead>
<tbody>
<tr>
<td>110</td>
<td>60</td>
<td>Upper-middle</td>
<td>119</td>
<td>9.5</td>
<td>175.9</td>
<td>18,930.8</td>
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</table>

### Institutions

<table>
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<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>55.5</td>
<td>81</td>
</tr>
</tbody>
</table>

1. **Political environment**
   - 11: Political stability & safety*……………………………………76.4 59
   - 11.1: Government effectiveness*……………………………………52.4 94

2. **Regulatory environment**
   - 12: Regulatory quality*……………………………………20.0 105
   - 12.1: Rule of law……………………………………22.9 109
   - 12.2: Cost of redundancy dismissal, salary weeks…………………217.8 86

3. **Business environment**
   - 13: Ease of starting a business*……………………………………92.9 27
   - 13.1: Ease of resolving insolvency*…………………………………513.6 62

#### Human capital & research

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>41.9</td>
<td>34</td>
</tr>
</tbody>
</table>

21. **Education**
   - 21.1: Expenditure on education, % GDP…………………………50.0 54
   - 21.2: Government funding/pupil, secondary, % GDP/cap……………n/a n/a
   - 21.3: School expectancy, years……………………………………15.6 n/a
   - 21.4: PISA scales in reading, maths & science………………….n/a 12
   - 21.5: Pupil-teacher ratio, secondary……………………………8.3 n/a

22. **Tertiary education**
   - 22.1: Tertiary enrolment, % gross………87.0 n/a
   - 22.2: Graduates in science & engineering, %……………………33.1 9
   - 22.3: Tertiary inbound mobility, %……………………………3.7 n/a

23. **Research & development (R&D)**
   - 23.1: Researchers, FTE/mn pop…………………………………0.0 n/a
   - 23.2: Gross expenditure on R&D, % GDP………………………0.5 60
   - 23.3: Global R&D companies, top 3, mn US$…………………22.0 40
   - 23.4: QS university ranking, average score top 3………………16.9 54

#### Infrastructure

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
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</thead>
<tbody>
<tr>
<td>42.2</td>
<td>73</td>
</tr>
</tbody>
</table>

31. **Information & communication technologies (ICTs)**
   - 31.1: ICT use*……………………………………78.7 31
   - 31.2: ICT use*……………………………………65.4 36
   - 31.3: Government’s online service*……………………………48.6 86
   - 31.4: E-participation*……………………………………55.9 74

32. **General infrastructure**
   - 32.1: Electricity output, kWh/cap……………………………3,591.4 53
   - 32.2: Logistics performance*……………………………………15.6 112
   - 32.3: Gross capital formation, % GDP…………………………24.7 44

3.3 **Ecoological sustainability**
   - 33.1: GDP/unit of energy use……………………………………61 93
   - 33.2: Environmental performance*………………………………65.0 40
   - 33.3: ISO 14001 environmental certificates/bn PPP$ GDP……0.4 89

#### Market sophistication

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>42.5</td>
<td>91</td>
</tr>
</tbody>
</table>

41. **Credit**
   - 41.1: Ease of getting credit*……………………………………50.0 79
   - 41.2: Domestic credit to private sector, % GDP…………………25.9 105
   - 41.3: Microfinance gross loans, % GDP………………………..0.1 60

42. **Investment**
   - 42.1: Ease of protecting minority investors*……………………65.0 39
   - 42.2: Market capitalization, % GDP……………………………n/a n/a
   - 42.3: Venture capital deals/bn PPP$ GDP…………………….0.0 67

43. **Trade, competition, & market scale**
   - 43.1: Applied tariff rate, weighted mean, %…………………..17 48
   - 43.2: Intensity of local competition*……………………………n/a n/a
   - 43.3: Domestic market scale, bn PPP$…………………………175.9 63

### Business sophistication

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.0</td>
<td>53</td>
</tr>
</tbody>
</table>

5.1 **Knowledge workers**
   - 5.1.1: Knowledge-intensive employment, %……………………39.4 27
   - 5.1.2: Firms offering formal training, % firms…………………511.8 18
   - 5.1.3: GERD performed by business, % GDP…………………0.3 44
   - 5.1.4: GERD financed by business, %…………………………38.7 44
   - 5.1.5: Females employed w/advanced degrees, %……………32.7 2

5.2 **Innovation linkages**
   - 5.2.1: University-industry research collaboration*……………………………………n/a n/a
   - 5.2.2: State of cluster development*……………………………n/a n/a
   - 5.2.3: GERD financed by abroad, %…………………………16.6 25
   - 5.2.4: JV-strategic alliance deals/bn PPP$ GDP…………………0.0 72
   - 5.2.5: Patent families 2+ offices/bn PPP$ GDP…………………0.1 54

5.3 **Knowledge absorption**
   - 5.3.1: Intellectual property payments, % total trade…………0.4 68
   - 5.3.2: High-tech net imports, % total trade…………………5.7 100
   - 5.3.3: ICT services imports, % total trade…………………0.8 81
   - 5.3.4: FDI net inflows, % GDP………………………………2.6 65
   - 5.3.5: Research talent, % in business enterprise………………n/a n/a

#### Knowledge & technology outputs

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.7</td>
<td>65</td>
</tr>
</tbody>
</table>

61. **Knowledge creation**
   - 61.1: Patents by origin/bn PPP$ GDP…………………………3.3 31
   - 61.2: PCT patents by origin/bn PPP$ GDP……………………2.0 56
   - 61.3: Utility models by origin/bn PPP$ GDP…………………2.1 12
   - 61.4: Scientific & technical articles/bn PPP$ GDP………5.3 76
   - 61.5: Citable documents H index……………………………9.5 70

62. **Knowledge impact**
   - 62.1: Growth rate of PPP$ GDP/winner………………………0.0 95
   - 62.2: New businesses/tn pop 15–64……………………………11 69
   - 62.3: Software spending, % GDP……………………………0.0 106
   - 62.4: ISO 9001 quality certificates/bn PPP$ GDP……………1.0 10
   - 62.5: High- & medium-high-tech manufactures, %…………0.3 42

6.3. **Knowledge diffusion**
   - 6.3.1: Intellectual property receipts, % total trade…………0.1 59
   - 6.3.2: High-tech net exports, % total trade…………………2.5 21
   - 6.3.3: ICT exports services, % total trade…………………3.9 23
   - 6.3.4: FDI net outflows, % GDP……………………………0.2 95

#### Creative outputs

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.7</td>
<td>122</td>
</tr>
</tbody>
</table>

71. **Intangible assets**
   - 71.1: Trademarks by origin/bn PPP$ GDP…………………………271 78
   - 71.2: Industrial designs by origin/bn PPP$ GDP………………12 66
   - 71.3: ITCs & business model creation*…………………………n/a n/a
   - 71.4: ITCs & organizational model creation*…………………n/a n/a

72. **Creative goods & services**
   - 72.1: Cultural & creative services exports, % total trade……0.1 62
   - 72.2: National feature films/mn pop 15–69……………………0.1 94
   - 72.3: Entertainment & Media market/tn pop 15–69………………n/a n/a
   - 72.4: Printing & other media, % manufacturing………………n/a n/a
   - 72.5: Creative goods exports, % total trade…………………0.3 64

7.3 **Online creativity**
   - 7.3.1: Generic top-level domains (TLDs)/tn pop 15–69………17 82
   - 7.3.2: Country-code TLDs/tn pop 15–69……………………5.1 48
   - 7.3.3: Wikipedia edits/mn pop. 15–69…………………………22.2 47
   - 7.3.4: Mobile app creation/bn PPP$ GDP……………………29.5 32

### NOTES:
- * indicates a strength; ○ a weakness; ◄ an income group strength; ◄ an income group weakness; * an index; ‘ a survey question.
- ◄ indicates that the country’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; see page 75 of this appendix for details.