India is rapidly climbing in the GII ranking and has constantly outperformed on innovation relative to its level of development for many years in a row (see bubble chart at page 5 of this brief). Positioning in the top half of the GII ranking, India ranks well in a number of important innovation inputs, including graduates in science and engineering, expenditures of major R&D-intensive global companies, and capital formation.

Among indicators of innovation outputs, India earns excellent positions in ICT services exports, where it ranks first in the world, and labour productivity growth, where it is 4th globally (for a complete list of relative strengths, see page 3).

India is 2nd among middle-income economies (after China) in the indicators that capture the quality of the innovation inputs and outputs. This year, its rankings are edging slightly closer to those of China, testifying the important efforts that the country is making in boosting innovation. In particular, the country ranks well in the quality of its scientific publication and local universities, because of higher scores for the Indian Institute of Science Bangalore and the Indian Institute of Technology.

The GII indicators are grouped into innovation inputs and outputs. Innovation inputs capture the efforts made by the country to boost innovation. Innovation outputs measure the results of these efforts in terms of scientific publications, patents, trademarks, production, exports and other outputs.

The table below presents India’s ranking over time in the overall GII, the Innovation Input and Output Sub-Indices – which summarize India’s performance in innovation input and output indicators—, and in the Efficiency Ratio – which captures how well the economy translates innovation inputs into more outputs.¹

¹ Note that year-on-year comparisons of the GII ranks are imperfect and influenced by changes in the GII model and data availability.
India's ranking over time

<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>57</td>
<td>63</td>
<td>57</td>
<td>49</td>
</tr>
<tr>
<td>2017</td>
<td>60</td>
<td>66</td>
<td>58</td>
<td>53</td>
</tr>
<tr>
<td>2016</td>
<td>66</td>
<td>72</td>
<td>59</td>
<td>63</td>
</tr>
</tbody>
</table>

- Over the last three years, India has improved its ranking in innovation outputs, reaching the 57th position this year, up from the 58th in 2017 and the 59th in 2016.
- Innovation inputs also improve, ranking 63rd up from 66th and 72nd positions in the past two years.
- India is also becoming increasingly efficient in translating its innovation efforts (inputs) into more and more varied outputs. This is evidenced in the trend of the Innovation Efficiency Ratio, in which it ranks 49th in 2018, improving from the 53rd and the 63rd positions in 2017 and 2016.

India is ranked 5th among the 30 lower-middle-income countries in the GII 2018.

India is the most innovative country in Central and Southern Asia.
Benchmarking India to other lower-middle-income countries and the Central and Southern Asia region

**India’s scores by area**

![India’s scores by area diagram]

**Lower-middle-income countries**

India has high scores in all 7 GII areas – **Institutions**, **Human Capital and Research**, **Infrastructure**, **Market Sophistication**, **Business Sophistication**, **Knowledge and Technology Outputs**, and **Creative Outputs**, in which it scores above the average of the lower-middle-income group.

Top scores in **Regulatory environment**, **Tertiary education**, **Information and Communication Technologies (ICTs)**, **Trade, competition and market scale**, **Innovation linkages**, **Knowledge impact**, and **Intangible assets** are behind these high rankings.

**Central and Southern Asia region**

Compared to other countries in the Central and Southern Asia region, India performs above average in all GII areas.

**India’s innovation profile**

**Strengths**

- In **Market Sophistication** (36th), India exhibits particular strength in the area **Trade, competition & market scale** (16th) and indicators **Ease of protecting minority investors** and **Domestic market scale**, ranking 4th and 3rd respectively.

- In **Human Capital and Research** (56th), India has strengths in indicators **Graduates in science and engineering** (6th), **Global R&D companies’ expenditures** (18th), and **Quality of universities** (21st).

- In **Infrastructure** (77th), India also has strength at the variable level in **Gross capital formation** (20th).

- In **Innovation Outputs**, India shows strengths in **Quality of scientific publications** (21st), **Productivity growth** (4th), **ICT services exports** (1st), and **Creative goods exports** (17th).
Weaknesses

- In **Institutions** (80th), India has relative weaknesses in *Political stability & safety* (110th) and *Ease of starting a business* (114th).

- In **Human Capital and Research** (56th), India exhibits relative weakness in the area *Education* (112th) and in indicators *PISA results* (71st), *Pupil-teacher ratio* (101st), and *Tertiary inbound mobility* (102nd).

- In **Infrastructure** (77th), the area *Ecological sustainability* (119th) and indicators *ICT use* (110th) and *Environmental performance* (123rd) are identified as weaknesses.

- In **Business Sophistication** (64th), India ranks relatively weakly in *Females employed with advanced degrees* (93rd).

- In **Innovation Outputs**, India demonstrates relative weaknesses in *New businesses* (100th) and *Entertainment & Media market* (61st).

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

**India’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>Market sophistication</td>
<td>36</td>
</tr>
<tr>
<td>Knowledge and technology outputs</td>
<td>43</td>
</tr>
<tr>
<td>Human capital and research</td>
<td>56</td>
</tr>
<tr>
<td>Global Innovation Index 2018</td>
<td>57</td>
</tr>
<tr>
<td>Business sophistication</td>
<td>64</td>
</tr>
<tr>
<td>Creative outputs</td>
<td>75</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>77</td>
</tr>
<tr>
<td>Institutions</td>
<td>80</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, India performs well above its expected level of development.
More and better data improve 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 India 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>5.1.4</td>
<td>GERD financed by business, %</td>
<td>n/a</td>
<td>2015</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>5.2.3</td>
<td>GERD financed by abroad, %</td>
<td>n/a</td>
<td>2015</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>6.1.3</td>
<td>Utility models by origin/bn PPP$ GDP</td>
<td>n/a</td>
<td>2016</td>
<td>WIPO, Intellectual Property Statistics</td>
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</tbody>
</table>

### Outdated 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>2.1.1</td>
<td>Expenditure on education, % GDP</td>
<td>2013</td>
<td>2014</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>2.1.2</td>
<td>Government funding/pupil, secondary, % GDP/cap</td>
<td>2013</td>
<td>2014</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>2.1.4</td>
<td>PISA scales in reading, maths &amp; science</td>
<td>2010</td>
<td>2015</td>
<td>OECD, PISA</td>
</tr>
<tr>
<td>2.3.1</td>
<td>Researchers, FTE/mn pop.</td>
<td>2015</td>
<td>2016</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>2.3.2</td>
<td>Gross expenditure on R&amp;D, % GDP</td>
<td>2015</td>
<td>2016</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>5.1.1</td>
<td>Knowledge-intensive employment, %</td>
<td>2012</td>
<td>2016</td>
<td>ILO, ILOSTAT</td>
</tr>
<tr>
<td>5.1.3</td>
<td>GERD performed by business, % GDP</td>
<td>2015</td>
<td>2016</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>5.1.5</td>
<td>Females employed w/advanced degrees, %</td>
<td>2012</td>
<td>2016</td>
<td>ILO, ILOSTAT</td>
</tr>
<tr>
<td>5.3.5</td>
<td>Research talent, % in business enterprise</td>
<td>2015</td>
<td>2016</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>6.2.5</td>
<td>High- &amp; medium-high-tech manufactures, %</td>
<td>2014</td>
<td>2015</td>
<td>UNIDO, Industrial Statistics</td>
</tr>
<tr>
<td>7.2.4</td>
<td>Printing &amp; other media, % manufacturing</td>
<td>2014</td>
<td>2015</td>
<td>UNIDO, Industrial Statistics</td>
</tr>
</tbody>
</table>
### India

#### Output rank | Input rank | Income region | Efficiency ratio | Population (mn) | GDP, PPP$ | GDP per capita, PPP$ | GII 2018 rank
---|---|---|---|---|---|---|---
57 | 63 | Lower-middle | CSA | 49 | 1,339.2 | 9,446.8 | 7,182.8 | 57

#### Institutions

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>55.9</td>
<td>80</td>
</tr>
</tbody>
</table>

1. Political environment 46.0 80
1.1 Political stability & safety* 42.6 110
1.2 Government effectiveness 47.7 65
2. Regulatory environment 63.6 72
2.1 Regulatory quality 36.2 91
2.2 Rule of law 42.0 66
2.3 Cost of redundancy dismissal, salary weeks 15.8 60
3. Business environment 58.1 106
3.1 Ease of starting a business* 75.4 114
3.2 Ease of resolving insolvency* 40.8 91

#### Business sophistication

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.1</td>
<td>64</td>
</tr>
</tbody>
</table>

5.1 Knowledge workers 23.0 97
5.1.1 Knowledge-intensive employment, % 14.2 91
5.1.2 Firms offering formal training, % firms 35.9 38
5.1.3 GERD performed by business, % GDP 0.3 49
5.1.4 GERD financed by business, % 0.3 49
5.1.5 Females employed w/advanced degrees, % 16.9 93

#### Human capital & research

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>32.8</td>
<td>56</td>
</tr>
</tbody>
</table>

2.1 Education 27.2 112
2.1.1 Expenditure on education, % GDP 3.8 82
2.1.2 Government funding/pupil, secondary, % GDP/cap. 16.8 65
2.1.3 School life expectancy, years 72.3 82
2.1.4 PISA scales in reading, maths & science 336.0 71
2.1.5 Pupil-teacher ratio, secondary 28.5 101
2.2 Tertiary education 36.9 45
2.2.1 Tertiary enrolment, % gross 26.9 84
2.2.2 Graduates in science & engineering, % 30.7 6
2.2.3 Tertiary inbound mobility, % 0.1 102
2.3 Research & development (R&D) 34.3 32
2.3.1 Researchers, FTE/mn pop. 276.2 74
2.3.2 Gross expenditure on R&D, % GDP 0.6 52
2.3.3 Global R&D companies, top 3, mn US$ 70.5 18
2.3.4 QS university ranking, average score top 3 49.8 21

#### Knowledge & technology outputs

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.3</td>
<td>43</td>
</tr>
</tbody>
</table>

6.1 Knowledge creation. 15.6 55
6.1.1 Patents by origin/bn PPP$ GDP 1.5 55
6.1.2 PCT patents by origin/bn PPP$ GDP 0.2 54
6.1.3 Utility models by origin/bn PPP$ GDP 0.1 54
6.1.4 Scientific & technical articles/bn PPP$ GDP 5.6 73
6.1.5 Citable documents H index. 377 1
6.2 Knowledge impact 41.4 42
6.2.1 Growth rate of PPP$ GDP/Worker, % 5.9 4
6.2.2 New businesses/th pop. 15–64 0.1 100
6.2.3 Computer software spending, % GDP 0.2 65
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP 4.3 67
6.2.5 High- & medium-high-tech manufactures, % GDP 0.3 34
6.3 Knowledge diffusion 33.9 25
6.3.1 Intellectual property receipts, % total trade 0.1 53
6.3.2 High-tech net exports, % total trade 3.2 44
6.3.3 ICT services exports, % total trade 12.3 1
6.3.4 FDI net outflows, % GDP 0.4 73

#### Infrastructure

<table>
<thead>
<tr>
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<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>40.4</td>
<td>77</td>
</tr>
</tbody>
</table>

3.1 Information & communication technologies (ICTs) 50.8 83
3.1.1 ICT access 36.0 115
3.1.2 ICT use* 16.2 110
3.1.3 Government’s online service* 74.6 33
3.1.4 E-participation* 76.3 27
3.2 General infrastructure 46.9 38
3.2.1 Electricity output, kWH/cap 1,054.9 93
3.2.2 Logistics performance* 62.7 34
3.2.3 Gross capital formation, % GDP 29.9 20

#### Market sophistication

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>53.4</td>
<td>36</td>
</tr>
</tbody>
</table>

4.1 Credit 34.3 70
4.1.1 Ease of getting credit* 75.0 26
4.1.2 Domestic credit to private sector, % GDP 49.8 68
4.1.3 Microfinance gross loans, % GDP 0.5 35
4.2 Investment 50.3 35
4.2.1 Ease of protecting minority investors* 80.0 4
4.2.2 Market capitalization, % GDP 72.8 21
4.2.3 Venture capital deals/bn PPP$ GDP 0.0 39
4.3 Trade, competition, & market scale 75.7 16
4.3.1 Applied tariff rate, weighted mean, % 6.3 96
4.3.2 Intensity of local competition* 62.2 93
4.3.3 Domestic market scale, bn PPP$ 9,446.8 3

#### Creative outputs

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.4</td>
<td>75</td>
</tr>
</tbody>
</table>

7.1 Intangible assets 36.8 85
7.1.1 Trademarks by origin/bn PPP$ GDP 30.4 85
7.1.2 Industrial designs by origin/bn PPP$ GDP 0.8 76
7.1.3 ICTs & business model creation* 55.9 82
7.1.4 ICTs & organizational model creation* 57.4 50
7.2 Creative goods & services 22.4 63
7.2.1 Cultural & creative services exports, % total trade 0.2 47
7.2.2 National feature films/mn pop. 15–69 2.1 59
7.2.3 Entertainment & Media market/th pop. 15–69 0.5 61
7.2.4 Printing & other media, % manufacturing 0.7 76
7.2.5 Creative goods exports, % total trade 3.2 17

#### Online creativity

<table>
<thead>
<tr>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5</td>
<td>67</td>
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</tbody>
</table>

7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 0.9 97
7.3.2 Country-code TLDs/th pop. 15–69 0.6 88
7.3.3 Wikipedia edits/th mn pop. 15–69 1.0 105
7.3.4 Mobile app creation/bn PPP$ GDP 19.7 44

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**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 country’s data minimum coverage (DMC) requirements were not met at the sub-piller or pillar level; see page 75 of this appendix for details.