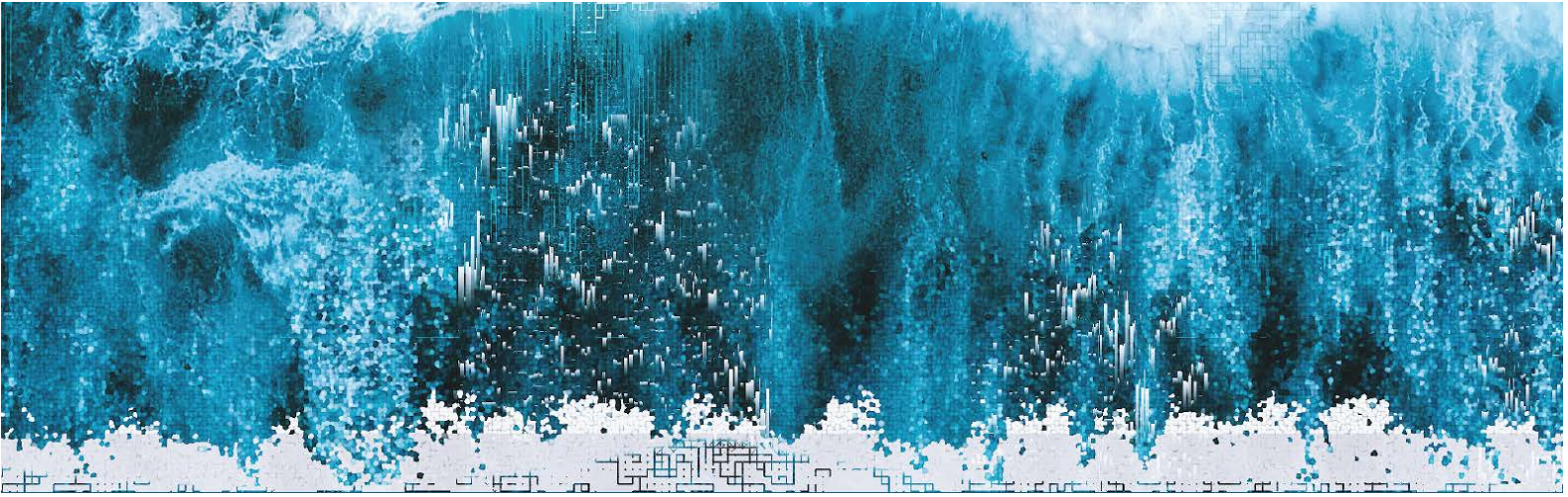


# GLOBAL INNOVATION INDEX 2018

## United Kingdom

4th The United Kingdom is ranked 4th in the GII 2018, moving up 1 position from last year.

The United Kingdom (U.K.) is constantly among the top 10 most innovative economies in the world, moving closer to the top 3 this year. With its historic universities and high quality of the scientific publications produced in the country, the U.K. makes it the 5th economy in the world in terms of the quality of its innovation inputs and outputs.

This year, the U.K. improves in a number of GII areas, related to the sophistication of its business sector, the capacity of the economy to spread new knowledge via networks and linkages, investments, and creative goods and services.

Other areas of comparative strength include also the indicator of environmental performance, computer software spending, and cultural and creative services exports (for a full list of relative strengths, see page 3 of this brief). The U.K. also stands out for its high number of clusters, with the London area in the top 20 of the most innovative clusters in terms of international patent filings.

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 the U.K.'s ranking over time in the overall GII, in the Innovation Input and Output sub-Indices, which summarize the U.K.'s performance in innovation input and output indicators, and in the Innovation Efficiency Ratio, which captures how does the economy translates innovation inputs into 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.

**United Kingdom's ranking over time**

| | GII | Input | Output | Efficiency |
|---|---|---|---|---|
| **2018** | 4 | 4 | 6 | 21 |
| **2017** | 5 | 7 | 6 | 20 |
| **2016** | 3 | 7 | 4 | 14 |

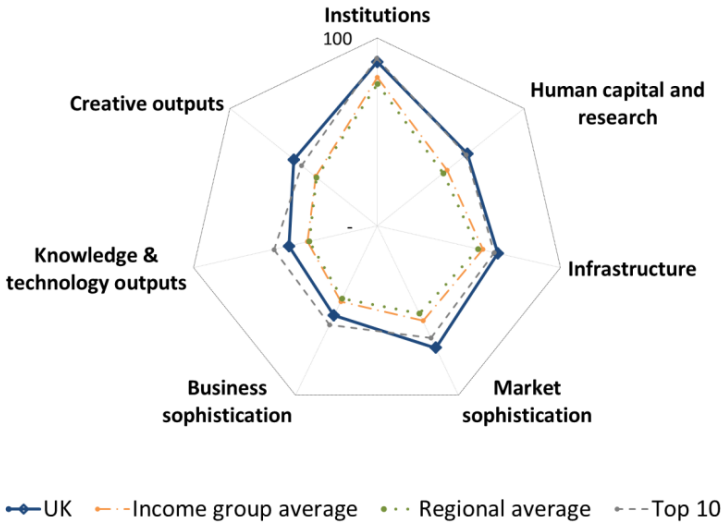
- This year the U.K. preserves its 6th global position in innovation outputs.
- It ranks 4th in innovation inputs, up from the 7th position in 2017 and 2016.
- The U.K. is becoming less effective in translating its innovation inputs into more outputs. This is showed in the trend of the Innovation Efficiency Ratio which ranks 21st this year, down from the 20th position last year and the 14th in 2016.

4th The U.K. is ranked 4th among the 47 high-income countries in the GII 2018.

4th The U.K. is ranked 4th among the 39 countries in Europe in the GII 2018.

## Benchmarking the U.K. to other high-income countries and the Europe region

The U. K.'s scores by area




### High-income countries

The U.K. has high scores in 4 GII areas –**Human Capital and Research, Infrastructure, Market Sophistication,** and **Creative Outputs**, in which it scores above the average of the top 10 countries in the GII 2018 ranking.

Top scores in *Research and Development (R&D), Information and Communication Technologies (ICTs), Trade, competition and market scale,* and *Intangible assets* are behind this high ranking.

### Europe region

Compared to other countries in the Europe region, the U.K. performs above average in all GII areas.

## The U. K.'s innovation profile

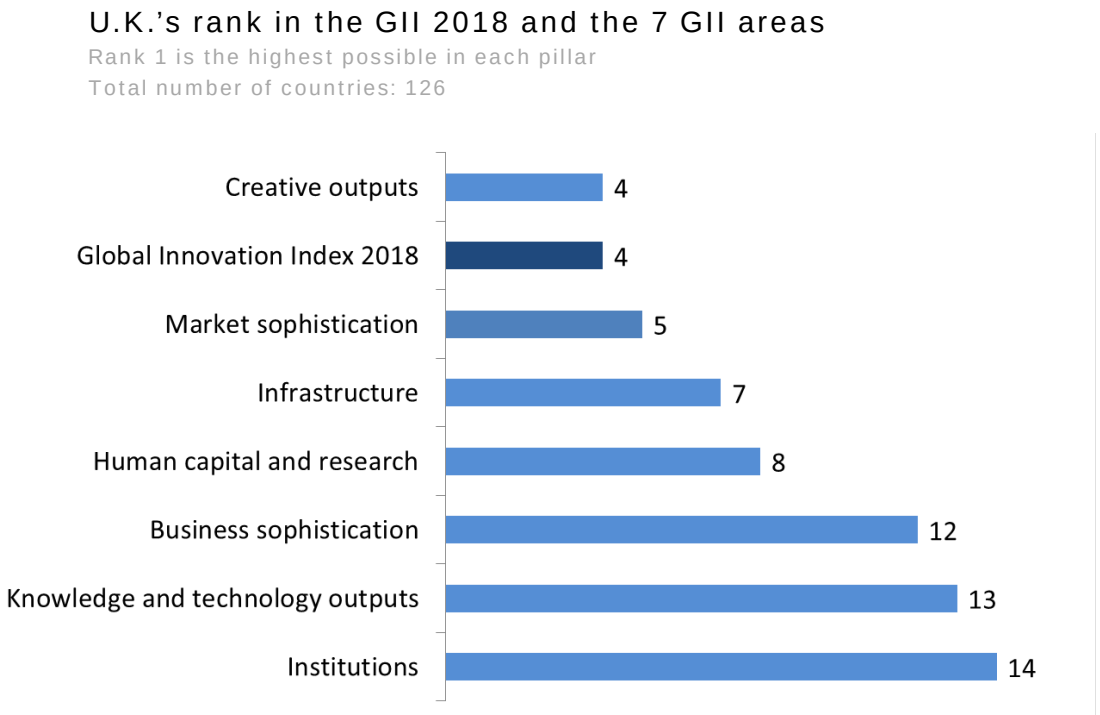
### Strengths

- **Global Innovation Index** is a strength for the U.K., ranking 4th in the world. The **Innovation Input Sub-index** (4th) and **Innovation Output Sub-index** (6th) are also highlighted as U.K.'s strengths.
- In **Human Capital and Research** (8th), the U.K. has strength in the indicator *Quality of universities* (2nd).
- In **Infrastructure** (7th), the U.K. exhibits strengths in the area *ICT access* (4th) and in indicators *ICT access* (4th), *Government's online service* (1st), *E-participation* (1st), and *Environmental performance* (6th).
- **Market Sophistication** (5th) is a strength. The area *Trade, competition & market scale (6th)* is also marked as a strength.
- In **Business Sophistication** (12th), it exhibits strengths in the indicator *State of cluster development* (5th).
- In **Knowledge and Technology Outputs** (13th), the U.K. has strengths in two indicators: *Quality of scientific publications* (1st) and *Computer software spending* (4th).
- The U.K. ranks 4th in **Creative Outputs**, which is highlighted as a comparative strength. It has strengths in the area *Creative goods and services* (2nd) and indicators *ICTs & business model creation* (4th) and *Cultural and creative services exports* (3rd).

## Weaknesses

- In **Institutions** (14th), the U.K. is relatively weak in the indicator *Political stability and safety* (44th).
- In **Human Capital and Research** (8th), the indicators *Government funding per pupil* (34th), *Pupil-teacher ratio* (71st) and *Tertiary enrolment* (44th) are identified as relative weaknesses.
- In **Infrastructure** (7th), the U.K. performs relatively weakly in the area *General infrastructure* (47th) and in the indicator *Gross capital formation* (107th).
- In **Market Sophistication** (5th), the U.K. is relatively weak in the indicator *Applied tariff rate* (19th).
- In **Business Sophistication** (12th), the indicator *Research talent in business enterprise* (32nd) is a weakness.
- Among **innovation outputs**, the U.K. is relatively weak in three indicators: *Productivity growth* (69th), *FDI outflows* (120th), and *Trademarks by origin* (41st).

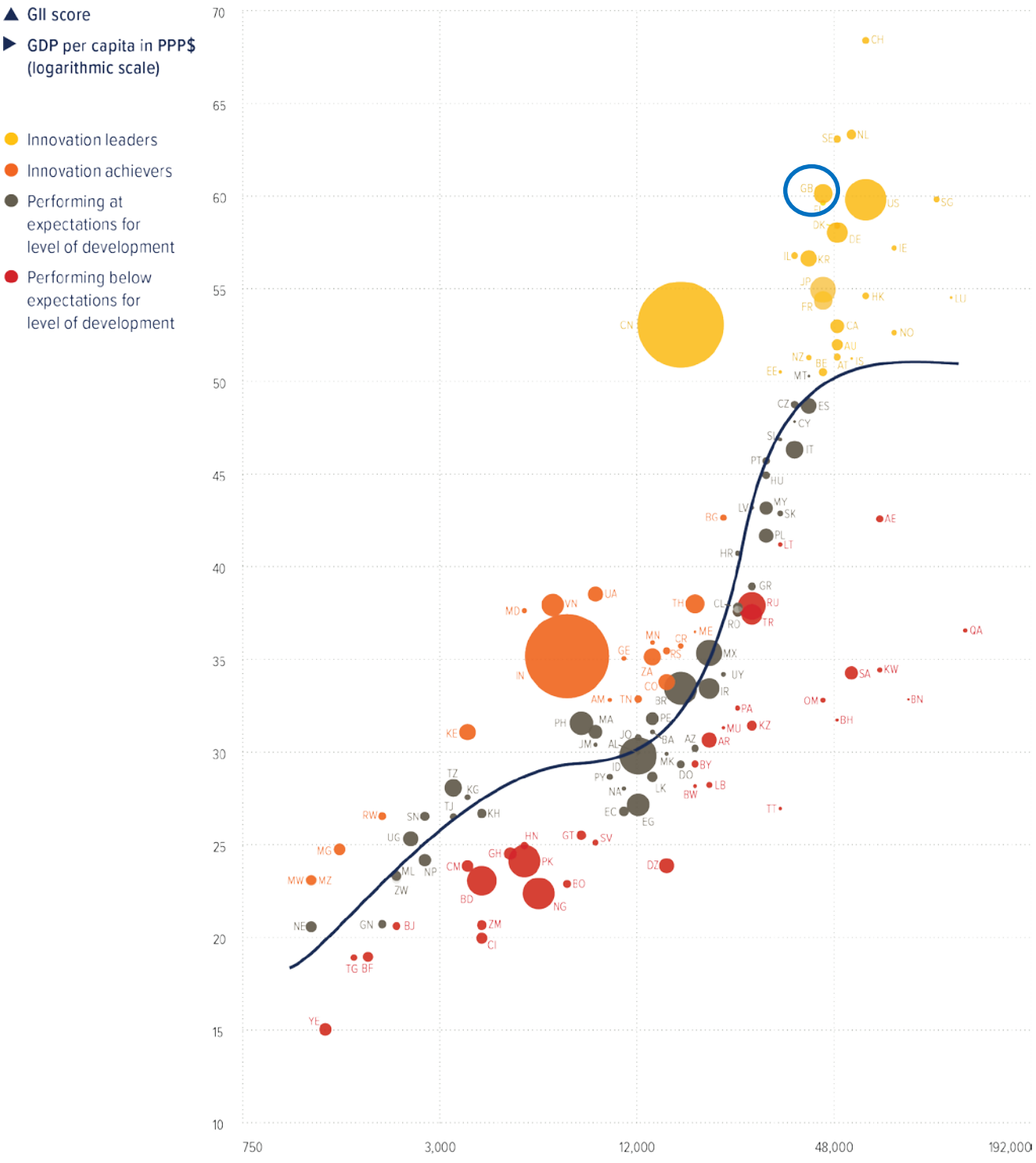
The following figure presents a summary of the U.K.'s ranks in the 7 GII areas, as well as the overall rank in the GII 2018.



## 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 that what would be expected based on their income level. Countries below the line are Innovation Under-performers relative to GDP.

Relative to GDP, the U.K. performs well above 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 the U.K. that is not available or that is outdated.

### Missing Data

| Code | Indicator | Country Year | Model Year | Source |
|---|---|---|---|---|
| 4.1.3 | Microfinance gross loans, % GDP | n/a | 2016 | Microfinance Information Exchange, Mix Market |
| 5.1.2 | Firms offering formal training, % firms | n/a | 2013 | World Bank, Enterprise Surveys |
| 6.1.3 | Utility models by origin/bn PPP$ GDP | n/a | 2016 | WIPO, Intellectual Property Statistics |

### Outdated Data

| Code | Indicator | Country Year | Model Year | Source |
|---|---|---|---|---|
| 2.1.3 | School life expectancy, years | 2015 | 2016 | UNESCO Institute for Statistics |
| 2.1.5 | Pupil-teacher ratio, secondary | 2015 | 2016 | UNESCO Institute for Statistics |
| 2.2.1 | Tertiary enrolment, % gross | 2015 | 2016 | UNESCO Institute for Statistics |
| 2.2.2 | Graduates in science & engineering, % | 2015 | 2016 | UNESCO Institute for Statistics |
| 2.2.3 | Tertiary inbound mobility, % | 2015 | 2016 | UNESCO Institute for Statistics |
| 4.2.2 | Market capitalization, % GDP | 2008 | 2016 | World Bank, World Development Indicators |

# UNITED KINGDOM

GII 2018 rank **4**

| Output rank | Input rank | Income | Region | Efficiency ratio | Population (mn) | GDP, PPP$ | GDP per capita, PPP$ | GII 2017 rank |
|---|---|---|---|---|---|---|---|---|
| 6 ● | 4 ● | High | EUR | 21 | 66.2 | 2,880.3 | 44,117.7 | 5 |

| | | Score/Value | Rank | |
|---|---|---|---|---|
| | **Institutions** | **87.4** | **14** | |
| 1.1 | Political environment | 81.2 | 17 | |
| 1.1.1 | Political stability & safety* | 73.4 | 44 | ○ |
| 1.1.2 | Government effectiveness* | 85.2 | 14 | |
| 1.2 | Regulatory environment | 93.4 | 9 | |
| 1.2.1 | Regulatory quality* | 89.2 | 10 | |
| 1.2.2 | Rule of law* | 88.6 | 15 | |
| 1.2.3 | Cost of redundancy dismissal, salary weeks | 9.3 | 26 | |
| 1.3 | Business environment | 87.4 | 13 | |
| 1.3.1 | Ease of starting a business* | 94.6 | 12 | |
| 1.3.2 | Ease of resolving insolvency* | 80.2 | 13 | |
| | **Human capital & research** | **61.3** | **8** | |
| 2.1 | Education | 56.9 | 33 | |
| 2.1.1 | Expenditure on education, % GDP | 5.6 | 30 | |
| 2.1.2 | Government funding/pupil, secondary, % GDP/cap | 23.4 | 34 | ○ |
| 2.1.3 | School life expectancy, years[d] | 17.4 | 12 | |
| 2.1.4 | PISA scales in reading, maths & science | 499.9 | 21 | |
| 2.1.5 | Pupil-teacher ratio, secondary[d] | 15.5 | 71 | ○ ◇ |
| 2.2 | Tertiary education | 58.3 | 6 | |
| 2.2.1 | Tertiary enrolment, % gross[d] | 57.3 | 44 | ○ |
| 2.2.2 | Graduates in science & engineering, %[d] | 26.1 | 24 | |
| 2.2.3 | Tertiary inbound mobility, %[d] | 18.5 | 6 | ◆ |
| 2.3 | Research & development (R&D) | 68.8 | 11 | |
| 2.3.1 | Researchers, FTE/mn pop. | 4,429.6 | 18 | |
| 2.3.2 | Gross expenditure on R&D, % GDP | 1.7 | 20 | |
| 2.3.3 | Global R&D companies, top 3, mn US$ | 86.9 | 7 | |
| 2.3.4 | QS university ranking, average score top 3* | 95.2 | 2 | ● ◆ |
| | **Infrastructure** | **65.8** | **7** | ◆ |
| 3.1 | Information & communication technologies (ICTs) | 93.8 | 1 | ● ◆ |
| 3.1.1 | ICT access* | 91.5 | 4 | ● |
| 3.1.2 | ICT use* | 83.8 | 7 | |
| 3.1.3 | Government's online service* | 100.0 | 1 | ● ◆ |
| 3.1.4 | E-participation* | 100.0 | 1 | ● ◆ |
| 3.2 | General infrastructure | 43.7 | 47 | ○ ◇ |
| 3.2.1 | Electricity output, kWh/cap | 5,118.6 | 41 | |
| 3.2.2 | Logistics performance* | 92.8 | 8 | |
| 3.2.3 | Gross capital formation, % GDP | 17.0 | 107 | ○ ◇ |
| 3.3 | Ecological sustainability | 59.7 | 8 | ◆ |
| 3.3.1 | GDP/unit of energy use | 14.3 | 14 | |
| 3.3.2 | Environmental performance* | 79.9 | 6 | ● |
| 3.3.3 | ISO 14001 environmental certificates/bn PPP$ GDP | 6.0 | 19 | |
| | **Market sophistication** | **72.0** | **5** | ● ◆ |
| 4.1 | Credit | 66.5 | 12 | |
| 4.1.1 | Ease of getting credit* | 75.0 | 26 | |
| 4.1.2 | Domestic credit to private sector, % GDP | 134.4 | 14 | |
| 4.1.3 | Microfinance gross loans, % GDP | n/a | n/a | |
| 4.2 | Investment | 67.7 | 8 | |
| 4.2.1 | Ease of protecting minority investors* | 75.0 | 10 | |
| 4.2.2 | Market capitalization, % GDP[d] | 94.9 | 11 | |
| 4.2.3 | Venture capital deals/bn PPP$ GDP | 0.2 | 5 | ◆ |
| 4.3 | Trade, competition, & market scale | 81.7 | 6 | ● |
| 4.3.1 | Applied tariff rate, weighted mean, % | 1.6 | 19 | ○ |
| 4.3.2 | Intensity of local competition† | 78.9 | 14 | |
| 4.3.3 | Domestic market scale, bn PPP$ | 2,880.3 | 9 | |

| | | Score/Value | Rank | |
|---|---|---|---|---|
| | **Business sophistication** | **53.0** | **12** | |
| 5.1 | Knowledge workers | 66.0 | 12 | |
| 5.1.1 | Knowledge-intensive employment, % | 48.5 | 8 | |
| 5.1.2 | Firms offering formal training, % firms | n/a | n/a | |
| 5.1.3 | GERD performed by business, % GDP | 1.1 | 18 | |
| 5.1.4 | GERD financed by business, % | 49.0 | 24 | |
| 5.1.5 | Females employed w/advanced degrees, % | 22.6 | 17 | |
| 5.2 | Innovation linkages | 50.8 | 10 | |
| 5.2.1 | University/industry research collaboration† | 73.1 | 6 | |
| 5.2.2 | State of cluster development† | 72.6 | 5 | ● ◆ |
| 5.2.3 | GERD financed by abroad, % | 17.1 | 23 | |
| 5.2.4 | JV–strategic alliance deals/bn PPP$ GDP | 0.1 | 16 | |
| 5.2.5 | Patent families 2+ offices/bn PPP$ GDP | 2.0 | 21 | |
| 5.3 | Knowledge absorption | 42.4 | 24 | |
| 5.3.1 | Intellectual property payments, % total trade | 1.5 | 20 | |
| 5.3.2 | High-tech net imports, % total trade | 13.4 | 16 | |
| 5.3.3 | ICT services imports, % total trade | 1.7 | 34 | |
| 5.3.4 | FDI net inflows, % GDP | 5.0 | 31 | |
| 5.3.5 | Research talent, % in business enterprise | 37.8 | 32 | ○ ◇ |
| | **Knowledge & technology outputs** | **48.2** | **13** | |
| 6.1 | Knowledge creation | 58.0 | 9 | |
| 6.1.1 | Patents by origin/bn PPP$ GDP | 6.8 | 17 | |
| 6.1.2 | PCT patents by origin/bn PPP$ GDP | 1.9 | 19 | |
| 6.1.3 | Utility models by origin/bn PPP$ GDP | n/a | n/a | |
| 6.1.4 | Scientific & technical articles/bn PPP$ GDP | 25.3 | 16 | |
| 6.1.5 | Citable documents H index | 100.0 | 1 | ● ◆ |
| 6.2 | Knowledge impact | 56.6 | 8 | ◆ |
| 6.2.1 | Growth rate of PPP$ GDP/worker, % | 0.4 | 69 | ○ |
| 6.2.2 | New businesses/th pop. 15–64 | 15.7 | 6 | ◆ |
| 6.2.3 | Computer software spending, % GDP | 0.8 | 4 | ● |
| 6.2.4 | ISO 9001 quality certificates/bn PPP$ GDP | 13.6 | 23 | |
| 6.2.5 | High- & medium-high-tech manufactures, % | 0.4 | 20 | |
| 6.3 | Knowledge diffusion | 30.1 | 30 | ◇ |
| 6.3.1 | Intellectual property receipts, % total trade | 2.0 | 11 | |
| 6.3.2 | High-tech net exports, % total trade | 9.8 | 20 | |
| 6.3.3 | ICT services exports, % total trade | 3.1 | 31 | |
| 6.3.4 | FDI net outflows, % GDP | (1.3) | 120 | ○ ◇ |
| | **Creative outputs** | **56.5** | **4** | ● ◆ |
| 7.1 | Intangible assets | 57.3 | 18 | |
| 7.1.1 | Trademarks by origin/bn PPP$ GDP | 54.1 | 41 | ○ |
| 7.1.2 | Industrial designs by origin/bn PPP$ GDP | 5.4 | 23 | |
| 7.1.3 | ICTs & business model creation† | 82.4 | 4 | ● |
| 7.1.4 | ICTs & organizational model creation† | 79.4 | 7 | |
| 7.2 | Creative goods & services | 57.0 | 2 | ● ◆ |
| 7.2.1 | Cultural & creative services exports, % total trade | 2.2 | 3 | ● ◆ |
| 7.2.2 | National feature films/mn pop. 15–69 | 6.6 | 27 | |
| 7.2.3 | Entertainment & Media market/th pop. 15–69 | 65.6 | 9 | |
| 7.2.4 | Printing & other media, % manufacturing | 2.2 | 14 | ◆ |
| 7.2.5 | Creative goods exports, % total trade | 3.3 | 16 | |
| 7.3 | Online creativity | 54.5 | 7 | |
| 7.3.1 | Generic top-level domains (TLDs)/th pop. 15–69 | 61.0 | 12 | |
| 7.3.2 | Country-code TLDs/th pop. 15–69 | 76.2 | 8 | |
| 7.3.3 | Wikipedia edits/mn pop. 15–69 | 69.3 | 13 | |
| 7.3.4 | Mobile app creation/bn PPP$ GDP | 34.0 | 23 | |

**NOTES:** ● indicates a strength; ○ a weakness; ◆ a strength **relative to the other top 25–ranked GII economies;** ◇ a weakness **relative to the other top 25;** * an index; † a survey question. [d] 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 pagepage 75 of this appendix for details.