The GII indicators are grouped into innovation inputs and outputs. The following table reflects the Netherlands’ rankings over time\(^1\).

<table>
<thead>
<tr>
<th>Year</th>
<th>GII</th>
<th>Input</th>
<th>Output</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>2</td>
<td>9</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2017</td>
<td>3</td>
<td>9</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2016</td>
<td>9</td>
<td>12</td>
<td>9</td>
<td>20</td>
</tr>
</tbody>
</table>

- Overall, the Netherlands demonstrates stability in its rankings over the last two years. Its position in innovation inputs, outputs and innovation efficiency is the same as in 2017.
- The Netherlands presents a very strong performance in innovation outputs, ranking number 2 globally and improving considerably since 2016.
- Innovation inputs have also improved since 2016, moving from the 12th to the 9th spot this year.
- The Netherlands proves to be among the most efficient countries in the world in translating its innovation inputs into more and more varied outputs. It ranks 4th in the Innovation Efficiency Ratio, gaining 16 spots from 2016. This increase is influenced by the significant improvement in innovation outputs since 2017.

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

The Netherlands’ scores by area

High-income countries

The Netherlands ranks 2nd among the 47 high-income countries in the GII 2018. The country has high scores in 4 out of 7 GII areas – Institutions, Business Sophistication, Knowledge & Technology Outputs, and Creative Outputs, in which it scores above the average of the top 10 countries in the GII 2018.

Top scores in the areas Regulatory environment, Knowledge absorption, Knowledge diffusion, and Online creativity, are behind these high rankings.

Europe region

The Netherlands ranks 2nd among the 39 countries in Europe. Compared to other countries in Europe, it performs above-average in all 7 GII areas.

The Netherlands’ innovation profile

Strengths

- The Global Innovation Index is highlighted as a strength for the Netherlands, as the country is the 2nd most innovative economy in the world. The Netherlands also shows strength in the Innovation Output Sub-Index – also ranked 2nd. The Innovation Efficiency Ratio is another important strength for the Netherlands, which proves to be the 4th most efficient economy in translating innovation inputs into outputs.

- The Netherlands is also strong in both the areas that capture the output side of the innovation process in the GII. It achieves remarkable results in Knowledge & Technology Outputs (2nd). Here it shows strength in the area Knowledge diffusion (2nd) and in two of its four indicators – Intellectual property receipts and FDI outflows, both ranking 1st globally.

- Creative Outputs ranks 3rd this year, moving up two spots from last year. Here the country exhibits strong performance in the area Online creativity (1st) and two of its four indicators, namely Generic top-level domains (TLDs) (6th) and Country-code TLDs (1st). Other two indicators have also strong ranks: ICTs & business model creation (3rd) and ICTs & organizational model creation (4th).

- On the innovation input side, a major strength for the Netherlands is Business Sophistication which positions 1st globally. Here the Netherlands exhibits strengths in two of its three components: the areas Innovation linkages (6th) and Knowledge absorption (1st).
At the indicator level, University-industry research collaboration (5th), State of cluster development (4th), Intellectual property payments (1st), and ICT services imports (1st) are marked as comparative strengths.

- The country also demonstrates strengths in Institutions (7th) and Infrastructure (14th). In the former, it performs strongly in the area Business environment (6th) and in indicator Regulatory quality (4th). In the latter, the area Information and communication technologies (ICTs) (3rd) and indicator Logistics performance (4th) are highlighted as strengths.

**Weaknesses**

- The weaknesses for the Netherlands are mostly scattered across the various input areas of the GII, except for the area Business Sophistication that does not present any weakness.

- In Institutions (7th), a weakness is found in indicator Cost of redundancy dismissal (61st).

- In Human Capital & Research (12th), the area Tertiary education (48th) and indicators Pupil-teacher ratio (63rd) and Graduates in science & engineering (82nd) are identified as weaknesses.

- In Infrastructure (14th), indicators Gross capital formation (79th) and GDP per unit of energy use (44th) present a relatively weak performance.

- In Market Sophistication (20th) the Netherlands demonstrates relative weaknesses in indicators Ease of getting credit (88th), Ease of protecting minority investors (61st), and Applied tariff rate (19th).

- On the innovation output side, relative weaknesses are only found in two indicators: Productivity growth (55th) in Knowledge & Technology Outputs (2nd) and Printing & other media (46th) in Creative Outputs (3rd).

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

**The Netherlands’ rank in the GII 2018 and the 7 GII areas**

<table>
<thead>
<tr>
<th>Area</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business sophistication</td>
<td>1</td>
</tr>
<tr>
<td>Knowledge and technology outputs</td>
<td>2</td>
</tr>
<tr>
<td>Global Innovation Index 2018</td>
<td>2</td>
</tr>
<tr>
<td>Creative outputs</td>
<td>3</td>
</tr>
<tr>
<td>Institutions</td>
<td>7</td>
</tr>
<tr>
<td>Human capital and research</td>
<td>12</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>14</td>
</tr>
<tr>
<td>Market sophistication</td>
<td>20</td>
</tr>
</tbody>
</table>
**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, the Netherlands performs well above its expected level of development.
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 Netherlands 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</td>
</tr>
<tr>
<td>4.1.3</td>
<td>Microfinance gross loans, % GDP</td>
<td>n/a</td>
<td>2016</td>
<td>Microfinance Information Exchange, Mix Market</td>
</tr>
<tr>
<td>5.1.2</td>
<td>Firms offering formal training, % firms</td>
<td>n/a</td>
<td>2013</td>
<td>World Bank, Enterprise Surveys</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>
</tr>
</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>2.2.2</td>
<td>Graduates in science &amp; engineering, %</td>
<td>2014</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>7.2.1</td>
<td>Cultural &amp; creative services exports, % total trade</td>
<td>2015</td>
<td>2016</td>
<td>WTO, Trade in Commercial Services</td>
</tr>
</tbody>
</table>
NETHERLANDS

**Output rank** 2  ●  **Input rank** 9  ●  **Income** High  ●  **Region** EUR  ●  **Efficiency ratio** 4  ●

**Population (mn)** 17.0  ●  **GDP, PPP$** 915.2  ●  **GDP per capita, PPP$** 53,634.6  ●  **Gil 2017 rank** 3

### Institutions

- **Political environment** 89.0  ●  **Political stability & safety** 85.2  ○
- **Government effectiveness** 90.9  ○
- **Regulatory environment** 91.7  ●  **Regulatory quality** 94.8  ●
- **Rule of law** 95.9  ●  **Cost of redundancy dismissal, salary weeks** 15.8  ●
- **Business environment** 89.3  ●  **Ease of starting a business** 94.3  ○
- **Ease of resolving insolvency** 84.2  ○

### Human capital & research & development

- **Education** 675.8  ○  ●  **Expenditure on education, % GDP** 5.5  ○
- **Government funding/pupil, secondary, % GDP/cap** n/a  ○
- **School life expectancy, years** 18.0  ○
- **PISA scales in reading, maths & science** 507.9  ○
- **Pupil-teacher ratio, secondary** 14.4  ○

### Infrastructure

- **Information & communication technologies (ICTs)** 89.2  ○
- **ICT access** 86.5  ○
- **Government’s online service** 92.8  ○
- **E-participation** 94.9  ○
- **Electricity output, kWh/cap** 6,747.5  ○
- **Logistics performance** 98.2  ○
- **Mass capital formation, % GDP** 20.6  ○
- **Sustainable energy** 476.7  ○
- **Environment performance** 75.5  ○
- **ISO 14001 environmental certificates/bn PPP$ GDP** 31.2

### Market sophistication

- **Credit** 461.3  ○
- **Ease of getting credit** 45.0  ○
- **Domestic credit to private sector, % GDP** 110.3  ○
- **Microfinance gross loans, % GDP** n/a  ○
- **Investment** 51.8  ○
- **Ease of protecting minority investors** 58.3  ○
- **Market capitalization, % GDP** 98.5  ○
- **Venture capital deals/bn PPP$ GDP** 0.1  ○
- **Trade, competition, & market scale** 76.8  ○
- **Applied tariff rate, weighted mean, %** 1.6  ○
- **Intensity of local competition** 82.3  ○
- **Domestic market scale, bn PPP$** 915.2  ○

### Business sophistication

- **Knowledge workers** 62.9  ○
- **Knowledge-intensive employment, %** 47.2  ○
- **Firms offering formal training, % firms** n/a  ○
- **GERD performed by business, % GDP** 1.2  ○
- **GERD financed by business, % GDP** 48.6  ○
- **Females employed w/advanced degrees, %** 19.1  ○
- **Innovation linkages** 54.4  ○
- **University-industry research collaboration** 76.1  ○
- **State of cluster development** 73.4  ○
- **GERD financed by abroad, %** 15.5  ○
- **JV-strategic alliance deals/bn PPP$ GDP** 0.1  ○
- **Patent families 2+ offices/bn PPP$ GDP** 4.9  ○

### Knowledge & technology outputs

- **Patents by origin/bn PPP$ GDP** 10.5  ○
- **PCT patents by origin/bn PPP$ GDP** 48.0  ○
- **Utility models by origin/bn PPP$ GDP** n/a  ○
- **Scientific & technical articles/bn PPP$ GDP** 22.8  ○
- **Citable documents H index** 679.8  ○
- **Knowledge impact** 471.2  ○
- **High growth rate of PPP$ GDP/worker, %** 11.1  ○
- **New businesses/th pop. 15–64** 61.0  ○
- **Computer software spending, % GDP** 0.7  ○
- **ISO 9001 quality certificates/bn PPP$ GDP** 11.8  ○
- **High & medium-high-tech manufactures, % GDP** 0.3  ○
- **Knowledge diffusion** 790.2  ○
- **Intellectual property receipts, % total trade** 42.1  ○
- **High-tech net exports, % total trade** 11.8  ○
- **ICT services exports, % total trade** 6.2  ○
- **FDI net inflows, % GDP** 175.7  ○
- **Research talent, % in business enterprise** 61.4  ○

### Creative outputs

- **Intangible assets** 575.7  ○
- **Trademarks by origin/bn PPP$ GDP** 56.2  ○
- **Industrial designs by origin/bn PPP$ GDP** 38.3  ○
- **ICTs & business model creation** 84.4  ○
- **ICTs & organizational model creation** 81.0  ○
- **Creative goods & services** 44.6  ○
- **Cultural & creative services exports, % total trade** 11.1  ○
- **National feature films/mo pop. 15–69** 7.2  ○
- **Entertainment & Media market/th pop. 15–69** 50.0  ○
- **Printing & other media, % manufacturing** 12.1  ○
- **Creative goods exports, % total trade** 4.6  ○
- **Online creativity** 671.1  ○
- **Generic top-level domains (TLDs)th pop. 15–69** 773.6  ○
- **Country-code TLDs/th pop. 15–69** 100.0  ○
- **Wikipedia edits/th pop. 15–69** 85.3  ○
- **Mobile app creation/bn PPP$ GDP** 33.0  ○

NOTES: ● indicates a strength; ○ a weakness; ● a strength relative to the other top 25–ranked GIIs; ○ a weakness relative to the other top 25;

* an index; † a survey question; 9 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.