ESTONIA

25th

Estonia ranks 25th among the 131 economies featured in the GII 2020.

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.

The following table shows the rankings of Estonia over the past three years, noting that 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 Estonia in the GII 2020 is between ranks 20 and 25.

<table>
<thead>
<tr>
<th></th>
<th>GII</th>
<th>Innovation inputs</th>
<th>Innovation outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>25</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>2019</td>
<td>24</td>
<td>27</td>
<td>19</td>
</tr>
<tr>
<td>2018</td>
<td>24</td>
<td>26</td>
<td>17</td>
</tr>
</tbody>
</table>

- Estonia performs better in innovation outputs than innovation inputs in 2020.
- This year Estonia ranks 25th in innovation inputs, higher than last year and higher compared to 2018.
- As for innovation outputs, Estonia ranks 20th. This position is lower than last year and lower compared to 2018.

24th

Estonia ranks 24th among the 49 high-income group economies.

16th

Estonia ranks 16th among the 39 economies in Europe.
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, Estonia is performing above expectations for its level of 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.

Estonia produces more innovation outputs relative to its level of innovation investments.
BENCHMARKING ESTONIA AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

Estonia’s scores in the seven GII pillars

High-income group economies

Estonia has high scores in five out of the seven GII pillars: Institutions, Infrastructure, Market sophistication, Knowledge & technology outputs and Creative outputs, which are above average for the high-income group.

Conversely, Estonia scores below average for its income group in two pillars: Human capital & research and Business sophistication.

Europe

Compared to other economies in Europe, Estonia performs:

- above average in five out of the seven GII pillars: Institutions, Infrastructure, Market sophistication, Knowledge & technology outputs and Creative outputs; and
- below average in two out of the seven GII pillars: Human capital & research and Business sophistication.
OVERVIEW OF ESTONIA RANKINGS IN THE SEVEN GII AREAS

Estonia performs best in Infrastructure and its weakest performance is in Human capital & research.

*The highest possible ranking in each pillar is 1.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Estonia in the GII 2020.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Code</strong></td>
<td><strong>Code</strong></td>
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<td>2.3.3</td>
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<td>3.3</td>
<td>4.2.1</td>
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<td>4.3.3</td>
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<td>5.2.2</td>
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<td>6.2.2</td>
<td>5.3.1</td>
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<tr>
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<td>7.1.2</td>
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<tr>
<td>7.3.3</td>
<td></td>
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<tr>
<td>7.3.4</td>
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</tbody>
</table>
STRENGTHS

GIIs strengths for Estonia are found in five of the seven GIIs pillars.

- Human capital & research (34): the indicator PISA scales in reading, maths & science (4) is a strength.
- Infrastructure (5): demonstrates strengths in the sub-pillar Ecological sustainability (1) and in the indicator ISO 14001 environmental certificates (1).
- Business sophistication (30): the indicator Females employed with advanced degrees (7) is a strength.
- Knowledge & technology outputs (23): reveals strengths in the indicators New businesses (2) and ISO 9001 quality certificates (6).
- Creative outputs (15): has strengths in the indicators ICTs & organizational model creation (5), Cultural & creative services exports (8), National feature films (5), Wikipedia edits (2) and Mobile app creation (6).

WEAKNESSES

GIIs weaknesses for Estonia are found in six of the seven GIIs pillars.

- Human capital & research (34): the indicator Global R&D companies (42) is a weakness.
- Infrastructure (5): the indicator GDP per unit of energy use (90) is a weakness.
- Market sophistication (21): shows weaknesses in the indicators Ease of protecting minority investors (77) and Domestic market scale (101).
- Business sophistication (30): demonstrates weaknesses in the indicators State of cluster development (82) and Intellectual property payments (79).
- Knowledge & technology outputs (23): displays weaknesses in the indicators Computer software spending (80), High- & medium-high-tech manufacturing (60) and Intellectual property receipts (63).
- Creative outputs (15): the indicator Global brand value (80) is a weakness.
## ESTONIA

### GII 2020 rank

<table>
<thead>
<tr>
<th>Output rank</th>
<th>Input rank</th>
<th>Income</th>
<th>Region</th>
<th>Population (mn)</th>
<th>GDP, PPP$</th>
<th>GDP per capite, PPP$</th>
<th>GII 2019 rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>25</td>
<td>High</td>
<td>EUR</td>
<td>1.3</td>
<td>47.3</td>
<td>31,300.0</td>
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</table>

### INSTITUTIONS

<table>
<thead>
<tr>
<th>Score</th>
<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>60.8</td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>

1.1 Political environment
1.1.1 Political and operational stability
1.1.2 Government effectiveness
1.2 Regulatory environment
1.2.1 Regulatory quality
1.2.2 Rule of law
1.2.3 Cost of redunancy dismissal, salary weeks
1.3 Business environment
1.3.1 Ease of starting a business
1.3.2 Ease of resolving insolvency

### HUMAN CAPITAL & RESEARCH

<table>
<thead>
<tr>
<th>Score</th>
<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>42.3</td>
<td>34</td>
<td></td>
</tr>
</tbody>
</table>

2.1 Education
2.1.1 Expenditure on education, % GDP
2.1.2 Government funding/ pupil, secondary, % GDP/ cap
2.1.3 School life expectancy, years
2.1.4 PISA scales in reading, maths, & science
2.1.5 Pupil-teacher ratio, secondary

2.2 Tertiary education
2.2.1 Tertiary enrolment, % gross
2.2.2 Graduates in science & engineering, %
2.2.3 Tertiary inBOUND mobility

2.3 Research & development (R&D)
2.3.1 Researchers, FTE/ million pop
2.3.2 Gross expenditure on R&D, % GDP
2.3.3 Global R&D companies, avg. exp. top 5, mn $US
2.3.4 QS university ranking, average score top 3

### INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Score</th>
<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>61.2</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

3.1 Information & communication technologies (ICTs)
3.1.1 ICT access
3.1.2 ICT use
3.1.3 Government's online service
3.1.4 E-participation

3.2 General infrastructure
3.2.1 Electricity output, kWh/mn pop
3.2.2 Logistics performance
3.2.3 Gross capital formation, % GDP

3.3 Ecological sustainability
3.3.1 GDP per unit of energy use
3.3.2 Environmental performance
3.3.3 ISO 14021 environmental certificates/bn PPP$ GDP

### MARKET SOPHISTICATION

<table>
<thead>
<tr>
<th>Score</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>58.0</td>
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</table>

4.1 Credit
4.1.1 Ease of getting credit
4.1.2 Domestic credit to private sector, % GDP
4.1.3 Microfinance gross loans, % GDP

4.2 Investment
4.2.1 Investment
4.2.2 Market capitalization, % GDP
4.2.3 Venture capital deals/bn PPP$ GDP

4.3 Trade, competition, and market scale
4.3.1 Applied tariff rate, weighted avg., %
4.3.2 Intensity of local competition
4.3.3 Domestic market scale, bn PPP$ GDP

### BUSINESS SOPHISTICATION

<table>
<thead>
<tr>
<th>Score</th>
<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.1</td>
<td>30</td>
<td></td>
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</tbody>
</table>

5.1 Knowledge workers
5.1.1 Knowledge-intensive employment, %
5.1.2 Firms offering formal training, %
5.1.3 GERD performed by business, % GDP
5.1.4 GERD financed by business, %
5.1.5 Females employed in advanced degrees, %

5.2 Innovation linkages
5.2.1 University-industry research collaboration
5.2.2 State of cluster development
5.2.3 GERD financed by abroad, % GDP
5.2.4 JV-strategic alliance deals/bn PPP$ GDP
5.2.5 Patent families 25+ offices/bn PPP$ GDP

5.3 Knowledge absorption
5.3.1 Intellectual property payments, % total trade
5.3.2 High tech imports, % total trade
5.3.3 ICT services imports, % total trade
5.3.4 FDI net inflows, % GDP
5.3.5 Research talent, % in business enterprise

### KNOWLEDGE & TECHNOLOGY OUTPUTS

<table>
<thead>
<tr>
<th>Score</th>
<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>37.9</td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>

6.1 Knowledge creation
6.1.1 Patents by origin/bn PPP$ GDP
6.1.2 PCT patents by origin/bn PPP$ GDP
6.1.3 Utility models by origin/bn PPP$ GDP
6.1.4 Scientific & technical articles/bn PPP$ GDP
6.1.5 Citable documents H-index

6.2 Knowledge impact
6.2.1 Growth rate of PPP$ GDP/worker, %
6.2.2 New businesses/10000, bn pop
6.2.3 Computer software spending, % GDP
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP
6.2.5 High-end and high-tech manufacturing, % GDP

6.3 Knowledge diffusion
6.3.1 Intellectual property receipts, % total trade
6.3.2 High tech net exports, % total trade
6.3.3 ICT services exports, % total trade
6.3.4 FDI outflows, % GDP

### CREATIVE OUTPUTS

<table>
<thead>
<tr>
<th>Score</th>
<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>43.0</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

7.1 Intangible assets
7.1.1 Trademarks by origin/bn PPP$ GDP
7.1.2 Global brand value, top 5000, % GDP
7.1.3 Industrial designs by origin/bn PPP$ GDP
7.1.4 ICTs & organizational model creation

7.2 Creative goods and services
7.2.1 Cultural & creative services exports, % total trade
7.2.2 National feature films/mn pop
7.2.3 Entertainment & Media market/bn pop
7.2.4 Printing and other media, % manufacturing
7.2.5 Creative goods exports, % total trade

7.3 Online creativity
7.3.1 Generic top-level domains (TLDs)/mn pop
7.3.2 Country-code TLDs/bn pop
7.3.3 Wikipedia editions/bn pop
7.3.4 Mobile app creation/bn PPP$ GDP

### NOTES
- indicates a strength
○ indicates a weakness
- strength relative to the other top 25-ranked Gil economies
○ weakness relative to the other top 25-ranked Gil economies
x an index
• a survey question
- indicates that the economy’s data are older than the base year; see Appendix II for details, including the year of the data
http://globalinnovationindex.org. Square brackets [ ] indicate that the data minimum coverage (EMG) requirements were not met at the sub-pole or pillar level.
DATA AVAILABILITY

The following tables list data that are either missing or outdated for Estonia.

### Missing data

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator name</th>
<th>Country year</th>
<th>Model year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.3</td>
<td>Microfinance gross loans, % GDP</td>
<td>n/a</td>
<td>2018</td>
<td>Microfinance Information Exchange</td>
</tr>
<tr>
<td>4.2.2</td>
<td>Market capitalization, % GDP</td>
<td>n/a</td>
<td>2018</td>
<td>World Federation of Exchanges</td>
</tr>
<tr>
<td>7.2.3</td>
<td>Entertainment &amp; Media market/th pop. 15–69</td>
<td>n/a</td>
<td>2018</td>
<td>PwC</td>
</tr>
</tbody>
</table>

### Outdated data

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator name</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>2016</td>
<td>2018</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>2.1.5</td>
<td>Pupil-teacher ratio, secondary</td>
<td>2017</td>
<td>2018</td>
<td>UNESCO Institute for Statistics</td>
</tr>
</tbody>
</table>
ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2020, the GII presents its 13th edition devoted to the theme *Who Will Finance Innovation?*

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.