

GLOBAL INNOVATION INDEX 2018

Germany

9th

Germany is ranked 9th in the GII 2018, the same position as in 2017.

The GII indicators are grouped into innovation inputs and outputs. The following table reflects Germany's ranking over time¹.

Germany's ranking over time

	GII	Input	Output	Efficiency
2018	9	17	5	9
2017	9	17	7	7
2016	10	18	8	9

- Over the last three years, Germany improved considerably in innovation outputs, ranking 5th this year, up from the 7th position in 2017 and the 8th in 2016.
- Innovation inputs maintained their 17th position from last year, up one from 2016.
- Germany ranks 9th in the Innovation Efficiency Ratio, same as in 2016, but down two spots from last year. This ratio is positively influenced by a higher ranking in innovation outputs (5th) than in inputs (17th).

9th

Germany is ranked 9th among the 47 high-income countries in the GII 2018.

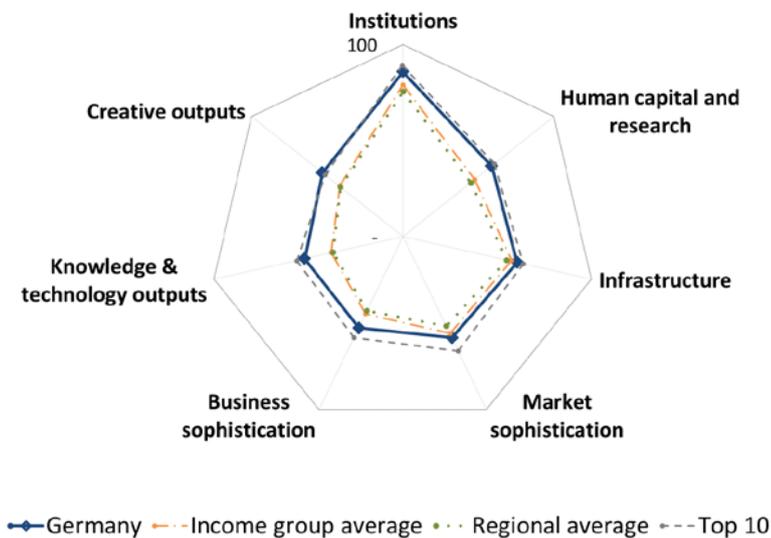
7th

Germany is ranked 7th among the 39 countries in Europe in the GII 2018.

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 Germany to other high-income countries and the Europe region

Germany's scores by area



High-income countries

Germany has high scores in the GII area **Creative Outputs**, in which it scores above the average of the top 10 countries in the GII 2018.

Top scores in the element *Intangible assets* are behind this high ranking.

Europe region

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

Germany's innovation profile

Strengths

- Germany has strength in the **Innovation Output Sub-index** in which it ranks 5th globally.
- In **Institutions** (16th), Germany exhibits strength in indicator *Ease of resolving insolvency* (4th).
- In **Human Capital and Research** (10th), the variable *Global R&D companies expenditures* is a comparative strength. In this variable, Germany ranks 2nd in the world.
- In **Infrastructure** (19th), Germany demonstrates strengths in indicators *ICT access* (6th) and *Logistics performance* (1st).
- In **Market Sophistication** (19th), Germany exhibits strengths in the area *Trade, competition & market scale* (4th) and one of its indicators, namely *Domestic market scale* (5th).
- In **Business Sophistication** (13th), Germany has strength in indicator *State of cluster development* (3rd).
- In **Knowledge and Technology Outputs** (10th), Germany shows strengths in the element *Knowledge creation* (5th) as well as in indicators *Patents by origin* (1st), *Quality of scientific publications* (3rd), and *High- & medium-high-tech manufactures* (5th).

- In **Creative Outputs** (7th), Germany exhibits strengths in the area *Intangible assets* (4th) and in indicator *Country-code TLDs* (5th).

Weaknesses

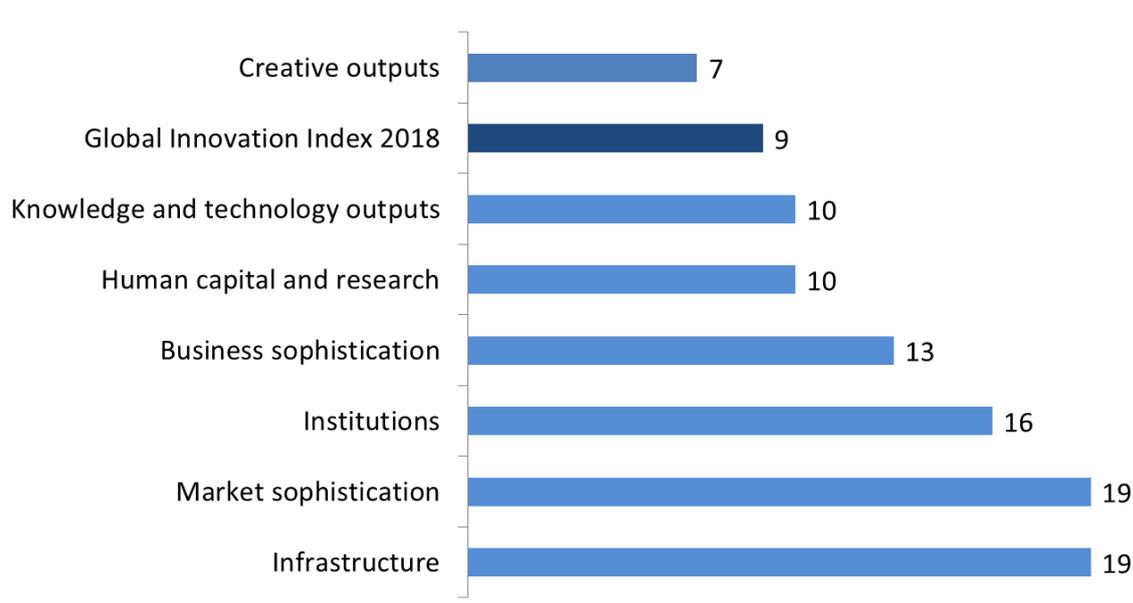
- Germany's relative weaknesses are found mostly among innovation inputs. These are scattered across the various input areas of the GII.
- In **Institutions** (16th) Germany has relative weaknesses in indicators *Cost of redundancy dismissal* (83rd) and *Ease of starting a business* (87th).
- In **Human Capital and Research** (10th) indicator *Expenditure on education* (56th) is identified as a weakness.
- In **Infrastructure** (19th) indicator *Gross capital formation* (95th) presents a relatively performance.
- In **Market Sophistication** (19th) Germany demonstrates relative weakness in the area *Investment* (68th) and one of its indicators – *Ease of protecting minority investors* (61st).
- In **Business Sophistication** (13th) it exhibits weakness in indicators *R&D financed by abroad* (58th) and *FDI inflows* (99th).
- In **Knowledge and Technology Outputs** (10th) Germany has relative weaknesses in indicators *Productivity growth* (62nd) and *New businesses* (64th).
- In **Creative Outputs** (7th) only one indicator - *Printing & other media* (60th), is signaled as a relative weakness.

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

Germany's rank in the GII 2018 and the 7 GII areas

Rank 1 is the highest possible in each pillar

Total number of countries: 126



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 Germany that is not available or that is outdated.

Missing Data

Code	Indicator	Country Year	Model Year	Source
2.2.2	Graduates in science & engineering, %	n/a	2016	UNESCO Institute for Statistics
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

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
2.2.3	Tertiary inbound mobility, %	2015	2016	UNESCO Institute for Statistics
7.2.1	Cultural & creative services exports, % total trade	2015	2016	WTO, Trade in Commercial Services



Output rank	Input rank	Income	Region	Efficiency ratio	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2017 rank
5 ●	17	High	EUR	9	82.1	4,149.6	50,425.2	9

	Score/Value	Rank
Institutions	85.9	16
1.1 Political environment.....	86.4	13
1.1.1 Political stability & safety*.....	82.2	29
1.1.2 Government effectiveness*.....	88.5	12
1.2 Regulatory environment.....	84.3	22
1.2.1 Regulatory quality*.....	90.7	9
1.2.2 Rule of law*.....	88.0	16
1.2.3 Cost of redundancy dismissal, salary weeks.....	21.6	83 ○◇
1.3 Business environment.....	86.9	15
1.3.1 Ease of starting a business*.....	83.5	87 ○◇
1.3.2 Ease of resolving insolvency*.....	90.3	4 ●◆
Human capital & research	58.7	10
2.1 Education.....	55.8	35
2.1.1 Expenditure on education, % GDP.....	4.9	56 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap.....	23.3	36
2.1.3 School life expectancy, years [Ⓞ]	17.0	17
2.1.4 PISA scales in reading, maths & science.....	508.1	11
2.1.5 Pupil-teacher ratio, secondary [Ⓞ]	12.1	44
2.2 Tertiary education.....	46.4	22
2.2.1 Tertiary enrolment, % gross [Ⓞ]	66.3	29
2.2.2 Graduates in science & engineering, %.....	n/a	n/a
2.2.3 Tertiary inbound mobility, % [Ⓞ]	7.7	29
2.3 Research & development (R&D).....	74.0	7
2.3.1 Researchers, FTE/mn pop.....	4,893.2	13
2.3.2 Gross expenditure on R&D, % GDP.....	2.9	7
2.3.3 Global R&D companies, top 3, mn US\$.....	96.5	2 ●◆
2.3.4 QS university ranking, average score top 3*.....	71.1	11
Infrastructure	60.5	19
3.1 Information & communication technologies (ICTs).....	81.8	18
3.1.1 ICT access*.....	89.3	6 ●
3.1.2 ICT use*.....	77.7	17
3.1.3 Government's online service*.....	84.1	21
3.1.4 E-participation*.....	76.3	27
3.2 General infrastructure.....	50.6	27
3.2.1 Electricity output, kWh/cap.....	7,771.0	24
3.2.2 Logistics performance*.....	100.0	1 ●◆
3.2.3 Gross capital formation, % GDP.....	19.4	95 ○
3.3 Ecological sustainability.....	49.2	31
3.3.1 GDP/unit of energy use.....	11.4	33
3.3.2 Environmental performance*.....	78.4	13
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP.....	2.4	44
Market sophistication	58.5	19
4.1 Credit.....	51.1	27
4.1.1 Ease of getting credit*.....	70.0	38
4.1.2 Domestic credit to private sector, % GDP.....	77.2	40 ◇
4.1.3 Microfinance gross loans, % GDP.....	n/a	n/a
4.2 Investment.....	40.1	68 ○◇
4.2.1 Ease of protecting minority investors*.....	58.3	61 ○
4.2.2 Market capitalization, % GDP.....	48.3	32
4.2.3 Venture capital deals/bn PPP\$ GDP.....	0.1	19
4.3 Trade, competition, & market scale.....	84.1	4 ●◆
4.3.1 Applied tariff rate, weighted mean, %.....	1.6	19
4.3.2 Intensity of local competition [†]	81.3	9
4.3.3 Domestic market scale, bn PPP\$.....	4,149.6	5 ●◆

	Score/Value	Rank
Business sophistication	52.8	13
5.1 Knowledge workers.....	66.2	11
5.1.1 Knowledge-intensive employment, %.....	44.4	15
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 GERD performed by business, % GDP.....	2.0	7
5.1.4 GERD financed by business, %.....	65.6	7
5.1.5 Females employed w/advanced degrees, %.....	13.0	51 ◇
5.2 Innovation linkages.....	49.6	14
5.2.1 University/industry research collaboration [†]	72.9	7
5.2.2 State of cluster development [†]	73.9	3 ●◆
5.2.3 GERD financed by abroad, %.....	6.2	58 ○
5.2.4 JV-strategic alliance deals/bn PPP\$ GDP.....	0.0	43 ◇
5.2.5 Patent families 2+ offices/bn PPP\$ GDP.....	5.7	8
5.3 Knowledge absorption.....	42.6	22
5.3.1 Intellectual property payments, % total trade.....	0.7	53
5.3.2 High-tech net imports, % total trade.....	11.4	26
5.3.3 ICT services imports, % total trade.....	2.0	25
5.3.4 FDI net inflows, % GDP.....	1.2	99 ○
5.3.5 Research talent, % in business enterprise.....	58.9	14
Knowledge & technology outputs	52.2	10
6.1 Knowledge creation.....	65.3	5 ●
6.1.1 Patents by origin/bn PPP\$ GDP.....	18.4	1 ●◆
6.1.2 PCT patents by origin/bn PPP\$ GDP.....	4.6	11
6.1.3 Utility models by origin/bn PPP\$ GDP.....	2.5	10
6.1.4 Scientific & technical articles/bn PPP\$ GDP.....	17.1	35
6.1.5 Citable documents H index.....	86.9	3 ●◆
6.2 Knowledge impact.....	50.3	17
6.2.1 Growth rate of PPP\$ GDP/worker, %.....	0.6	62 ○
6.2.2 New businesses/th pop. 15-64.....	1.3	64 ○
6.2.3 Computer software spending, % GDP.....	0.6	19
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP.....	16.6	21
6.2.5 High- & medium-high-tech manufactures, %.....	0.6	5 ●◆
6.3 Knowledge diffusion.....	41.1	19
6.3.1 Intellectual property receipts, % total trade.....	1.2	16
6.3.2 High-tech net exports, % total trade.....	13.9	12
6.3.3 ICT services exports, % total trade.....	2.2	48
6.3.4 FDI net outflows, % GDP.....	2.8	23 ◇
Creative outputs	53.3	7
7.1 Intangible assets.....	65.5	4 ●◆
7.1.1 Trademarks by origin/bn PPP\$ GDP.....	64.4	30
7.1.2 Industrial designs by origin/bn PPP\$ GDP.....	16.7	6 ◆
7.1.3 ICTs & business model creation [†]	78.5	12
7.1.4 ICTs & organizational model creation [†]	78.0	8
7.2 Creative goods & services.....	33.7	32
7.2.1 Cultural & creative services exports, % total trade [Ⓞ]	0.7	19
7.2.2 National feature films/mn pop. 15-69.....	3.9	49
7.2.3 Entertainment & Media market/th pop. 15-69.....	59.3	11
7.2.4 Printing & other media, % manufacturing.....	1.0	60 ○
7.2.5 Creative goods exports, % total trade.....	2.1	26
7.3 Online creativity.....	48.8	10
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69.....	54.5	14
7.3.2 Country-code TLDs/th pop. 15-69.....	81.8	5 ●◆
7.3.3 Wikipedia edits/mn pop. 15-69.....	52.1	22
7.3.4 Mobile app creation/bn PPP\$ GDP.....	23.9	43

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. Ⓞ 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.