



European  
Commission

# European Innovation Scoreboard **2023** Country profile **Germany**



*Innovation*

## European Innovation Scoreboard 2023 – Country profile Germany

European Commission

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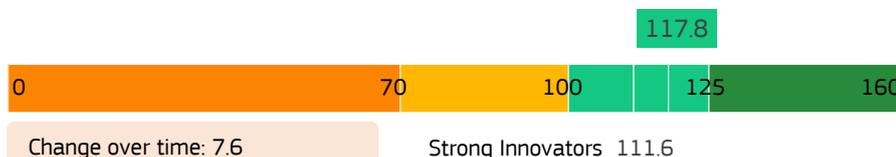
# **European Innovation Scoreboard 2023 Country profile Germany**

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The European Innovation Scoreboard report and annexes, and the indicators database are available at:  
[https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard\\_en](https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard_en)



## Germany

	Performance relative to EU in 2023	Performance change 2016-2023	Performance change 2022-2023
<b>SUMMARY INNOVATION INDEX</b>	<b>117.8</b>	<b>7.6</b>	<b>-1.3</b>
<b>Human resources</b>	<b>99.8</b>	<b>-3.4</b>	<b>-3.4</b>
Doctorate graduates	159.3	-11.4	-11.4
Population with tertiary education	71.7	1.2	1.2
Lifelong learning	62.7	4.4	4.4
<b>Attractive research systems</b>	<b>109.0</b>	<b>1.0</b>	<b>-1.3</b>
International scientific co-publications	94.1	29.3	-2.6
Most cited publications	106.5	-10.1	-1.4
Foreign doctorate students	131.9	0.0	0.0
<b>Digitalisation</b>	<b>86.5</b>	<b>19.8</b>	<b>10.8</b>
Broadband penetration	101.3	38.9	21.2
People with above basic overall digital skills	66.1	0.0	0.0
<b>Finance and support</b>	<b>91.8</b>	<b>23.3</b>	<b>-0.2</b>
R&D expenditures in the public sector	143.8	16.1	-1.6
Venture capital expenditures	87.0	53.1	3.3
Government support for business R&D	36.6	1.7	-2.0
<b>Firm investments</b>	<b>140.4</b>	<b>5.9</b>	<b>-3.4</b>
R&D expenditure in the business sector	141.7	10.8	0.0
Non-R&D Innovation expenditures	133.5	4.6	-6.3
Innovation expenditures per employee	144.7	2.2	-4.1
<b>Use of information technologies</b>	<b>120.9</b>	<b>-6.0</b>	<b>12.7</b>
Enterprises providing ICT training	128.2	-15.9	22.3
Employed ICT specialists	113.3	3.4	3.4
<b>Innovators</b>	<b>141.1</b>	<b>53.4</b>	<b>-11.5</b>
Product innovators (SMEs)	131.4	6.1	-25.9
Business process innovators (SMEs)	149.5	103.7	3.9
<b>Linkages</b>	<b>141.9</b>	<b>26.6</b>	<b>-7.6</b>
Innovative SMEs collaborating with others	117.8	42.1	-19.2
Public-private co-publications	188.6	53.1	-1.0
Job-to-job mobility of HRST	141.7	0.0	0.0
<b>Intellectual assets</b>	<b>122.0</b>	<b>-18.6</b>	<b>-6.9</b>
PCT patent applications	137.6	-11.5	-2.8
Trademark applications	105.7	7.4	-3.6
Design applications	117.1	-48.1	-14.8
<b>Employment impacts</b>	<b>128.4</b>	<b>4.2</b>	<b>-2.6</b>
Employment in knowledge-intensive activities	101.2	0.0	0.0
Employment in innovative enterprises	150.8	8.1	-5.0
<b>Sales impacts</b>	<b>117.5</b>	<b>5.8</b>	<b>0.5</b>
Medium and high-tech goods exports	112.8	0.2	2.4
Knowledge-intensive services exports	133.6	12.6	4.1
Sales of innovative products	107.3	6.2	-6.9
<b>Environmental sustainability</b>	<b>121.2</b>	<b>7.5</b>	<b>-0.7</b>
Resource productivity	126.2	45.3	5.5
Air emissions by fine particulate matter	124.0	2.4	-0.6
Environment-related technologies	112.2	-11.9	-5.2

The second column shows performance relative to that of the EU in 2023. Colours next to the column show matching colour codes: dark green: above 125% of the performance of the EU in 2023; light green: between 100% and 125%; light orange: between 70% and 100%; dark orange: below 70%. The next columns show performance change over time between 2016 and 2023 and between 2022 and 2023, with scores relative to those of the EU in 2016. Positive (negative) performance changes are shown in green (red).

**GERMANY** is a **Strong Innovator** with performance at 117.8% of the EU average. Performance is above the average of the Strong Innovators. Performance is increasing at a rate lower than that of the EU (8.5%-points). The country's performance lead over the EU is becoming smaller.

### Relative strengths

Public-private co-publications  
 Doctorate graduates  
 Employment in innovative enterprises  
 Business process innovators  
 Innovation expenditures per employee

### Relative weaknesses

Government support for business R&D  
 Lifelong learning  
 People with above basic overall digital skills  
 Population with tertiary education  
 Venture capital expenditures

### Strong increases since 2016

Business process innovators  
 Public-private co-publications  
 Venture capital expenditures

### Strong decreases since 2016

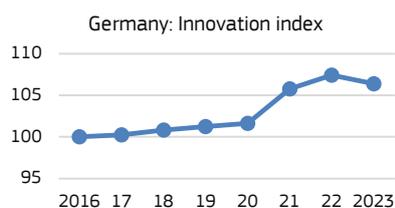
Design applications  
 Enterprises providing ICT training  
 Environment-related technologies

### Strong increases since 2022

Enterprises providing ICT training  
 Broadband penetration  
 Resource productivity

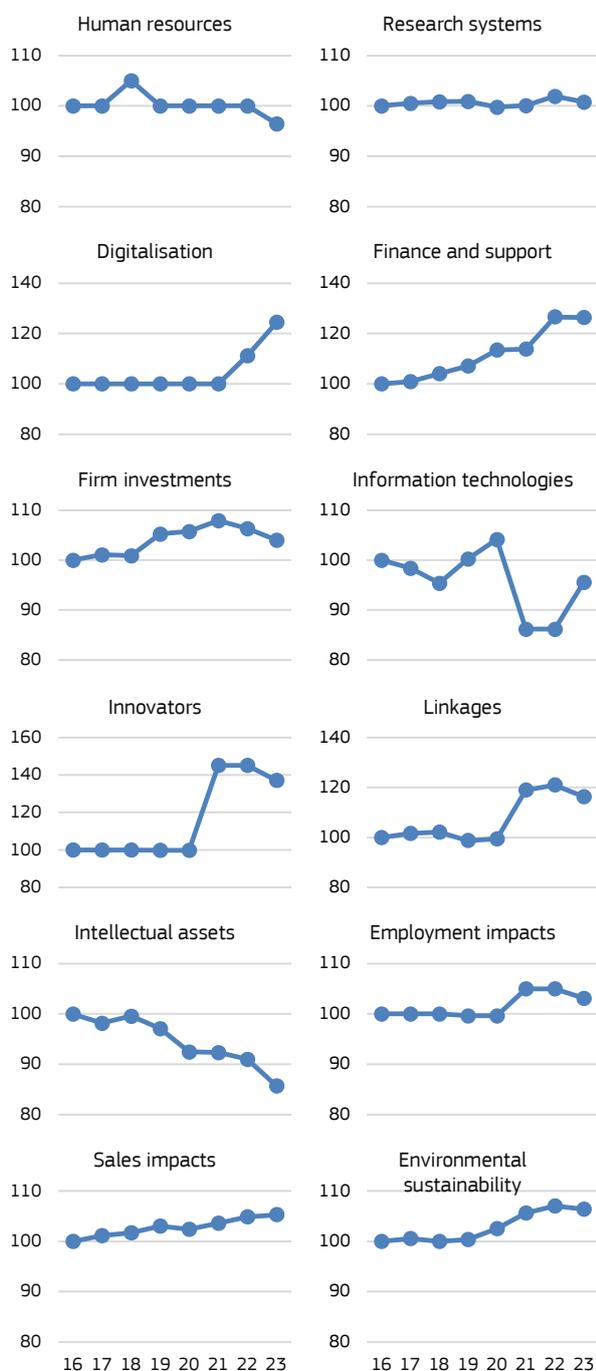
### Strong decreases since 2022

Product innovators  
 Innovative SMEs collaborating with others  
 Design applications



The graph on the left shows the evolution of **innovation performance over time** against the performance of the country in 2016. Innovation performance did not change much between 2016 and 2020 and increased strongly in 2021. After a moderate increase in 2022, performance declined in 2023.

The graphs below show the evolution of innovation performance in the different **innovation dimensions** against the performance of the country in 2016. Performance increased strongly for Digitalisation, Finance and support and Innovators, and did decline for Human resources, Information technologies and Intellectual assets.

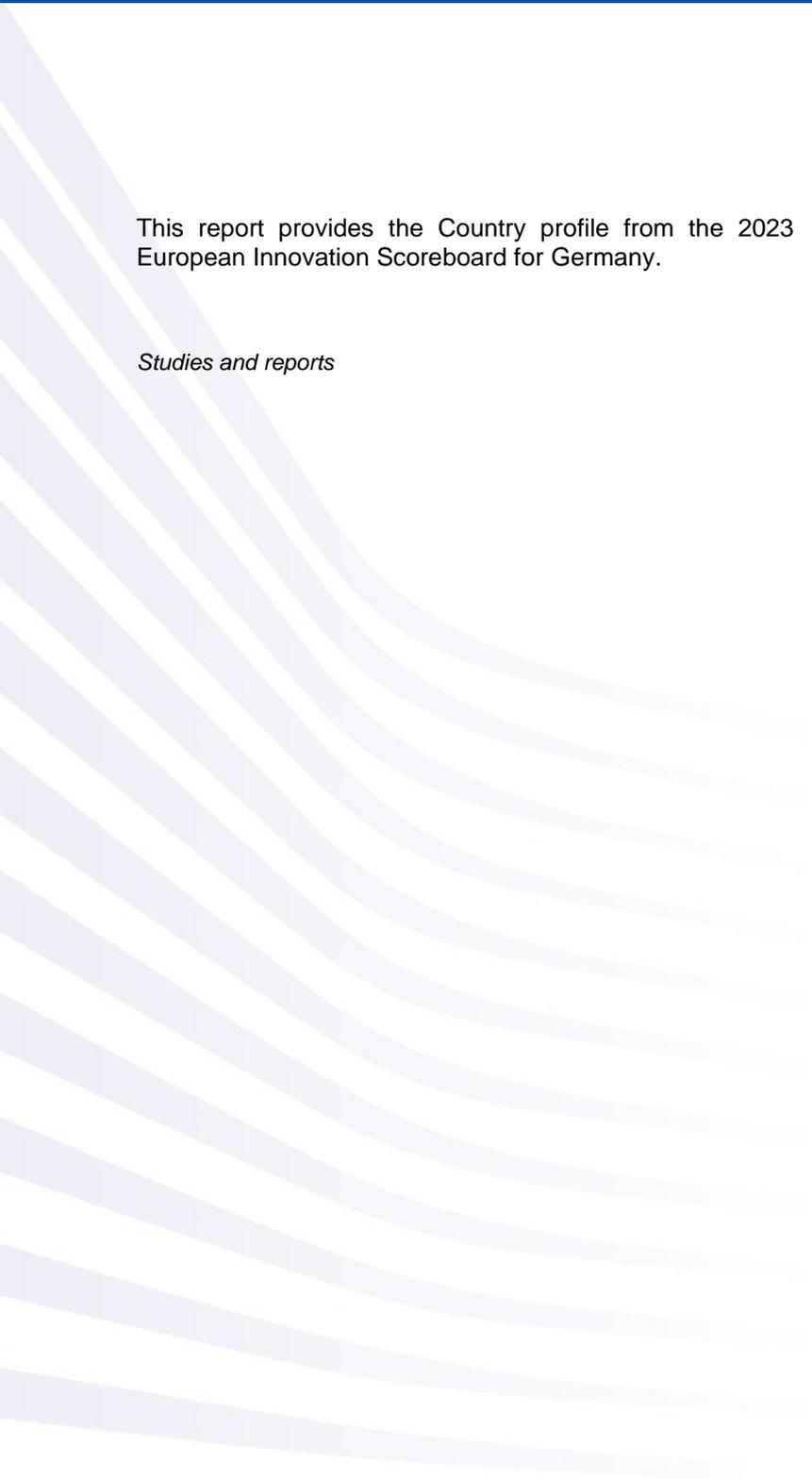


Performance is measured relative to that of the country in 2016 (=100).

**Structural differences** with the EU are shown below:

- Germany has higher per capita income but a slower growing economy. Manufacturing takes up a higher share of the economy, with large enterprises accounting for a larger share of turnover.
- FDI inflows, Top R&D spenders and buyer sophistication add positively to the innovation climate, enterprise births and entrepreneurial activities add negatively.
- Germany has above average shares of In-house product innovators without market novelties and In-house business process innovators.
- Government procurement is above the EU average as driver of research and innovation while most other Governance and policy framework indicators are at par with the EU.
- Germany shows a mixed performance on Climate change related indicators with above average performance on innovation but a below average reduction of greenhouse gas emissions.

	DE	EU
<b>Performance and structure of the economy</b>		
GDP per capita (PPS)	39,000	32,600
Average annual GDP growth (%)	1.8	4.4
Employment share Manufacturing (NACE C) (%)	19.7	16.4
of which High and Medium high-tech (%)	51.3	38.0
Employment share Services (NACE G-N) (%)	38.9	41.1
of which Knowledge-intensive services (%)	36.1	35.8
Turnover share SMEs (%)	29.0	34.1
Turnover share large enterprises (%)	61.2	49.6
Foreign-controlled enterprises – share of value added (%)	10.3	11.8
<b>Business and entrepreneurship</b>		
Enterprise births (10+ employees) (%)	0.7	1.0
Total Entrepreneurial Activity (TEA) (%)	6.4	6.8
FDI net inflows (% GDP)	2.4	2.1
Top R&D spending enterprises per 10 mln. population	31.7	20.3
Buyer sophistication (1 to 7 best)	4.6	3.7
<b>Innovation profiles</b>		
In-house product innovators with market novelties	8.5	12.2
In-house product innovators without market novelties	20.7	12.8
In-house business process innovators	23.8	16.5
Innovators that do not develop innovations themselves	10.0	6.5
Innovation active non-innovators	5.6	4.1
Non-innovators with potential to innovate	18.5	17.2
Non-innovators without disposition to innovate	12.9	30.7
<b>Governance and policy framework</b>		
Corruption Perceptions Index (0 to 100 best)	79.7	64.0
Basic school entrepreneurial education and training	3.2	3.3
Govt. procurement of advanced tech. products	4.6	3.5
Rule of law (-2.5 to 2.5 best)	1.6	1.0
<b>Climate change indicators</b>		
Circular material use rate	12.8	11.8
Greenhouse gas emissions intensity of energy consumption	86.8	82.8
Eco-Innovation Index	116.2	100.0
<b>Demography</b>		
Population size	83.2	447.1
Average annual population growth (%)	0.0	-0.1
Population density	234.6	108.8



This report provides the Country profile from the 2023 European Innovation Scoreboard for Germany.

*Studies and reports*