Global Innovation Index 2023

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**.

Poland ranking in the Global Innovation Index 2023

> Poland ranks 41st among the 132 economies featured in the GII 2023.

> Poland ranks 36th among the 50 high-income group economies.

> Poland ranks 26th among the 39 economies in Europe.

> Poland GII Ranking (2020-2023)

The table shows the rankings of Poland over the past four years. 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 Poland in the GII 2023 is between ranks 39 and 42.

	GII Position	Innovation Inputs	Innovation Outputs
2020	38th	38th	40th
2021	40th	37th	42nd
2022	38th	41st	36th
2023	41st	50th	36th

Poland performs better in innovation outputs than innovation inputs in 2023.

This year **Poland ranks 50th in innovation inputs.** This position is lower than last year.

Poland ranks 36th in innovation outputs. This position is the same as last year.

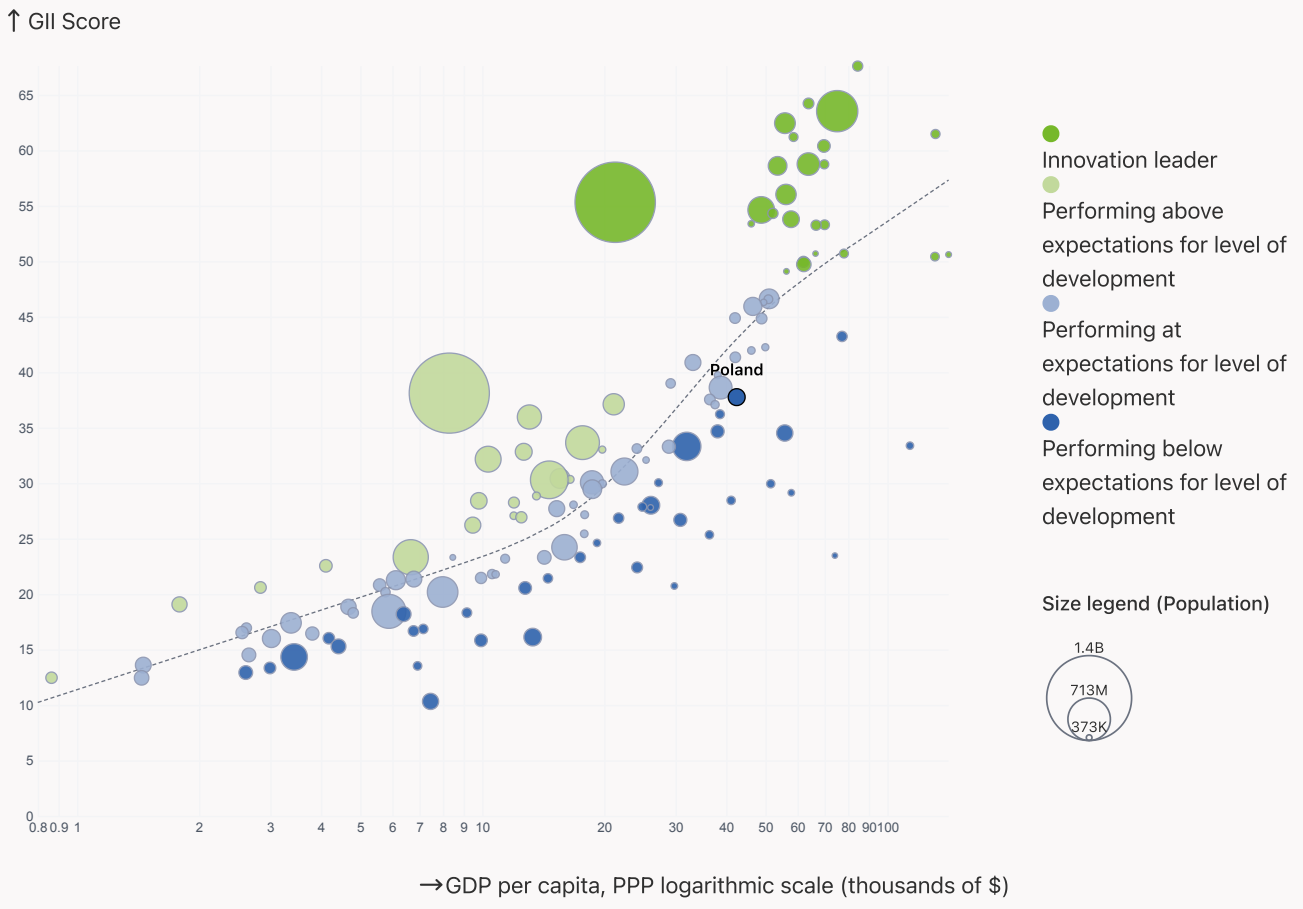
Global Innovation Index 2023

→ 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, Poland's performance is below expectations for its level of development.

> Innovation overperformers relative to their economic development



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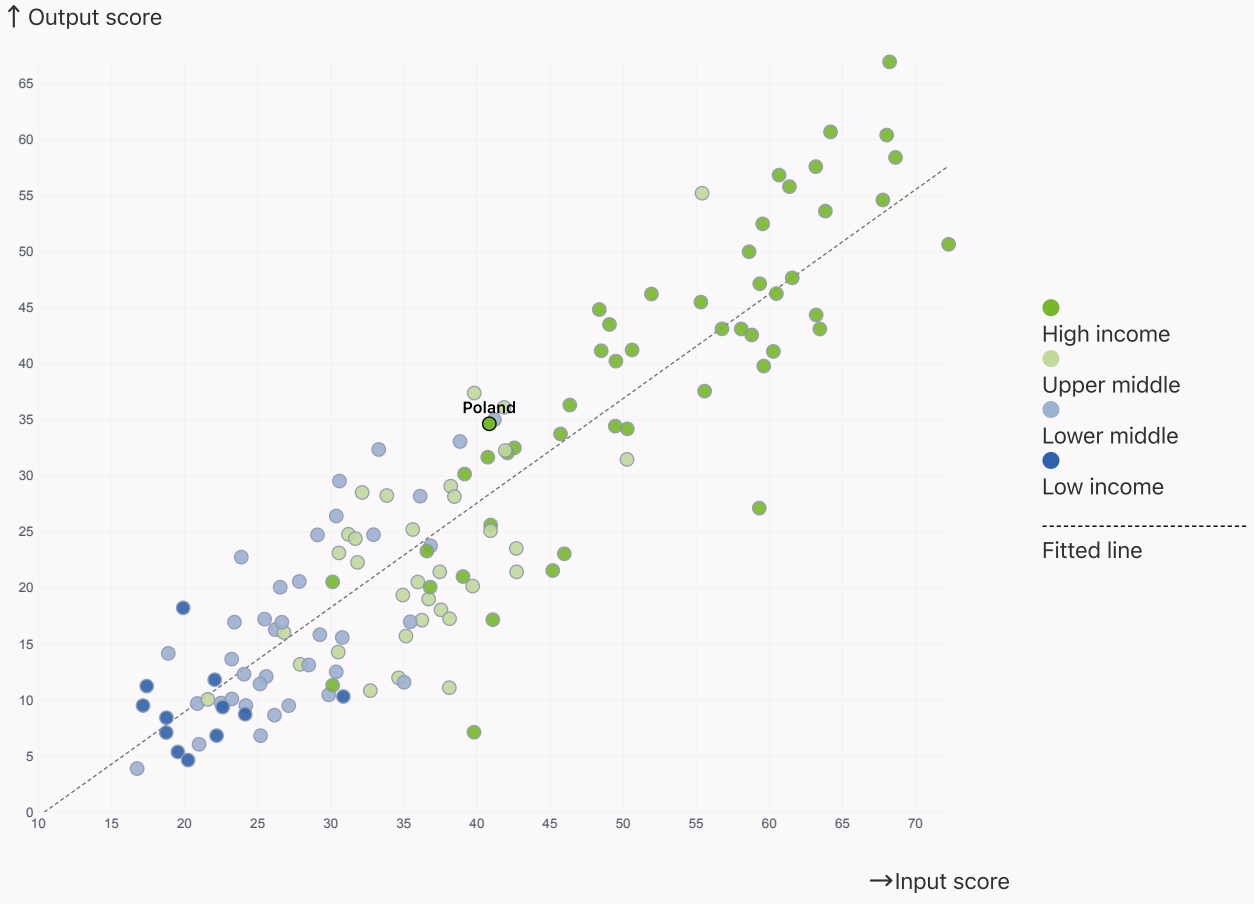
→ Effectively translating innovation investments into innovation outputs

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.

> Poland produces more innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs



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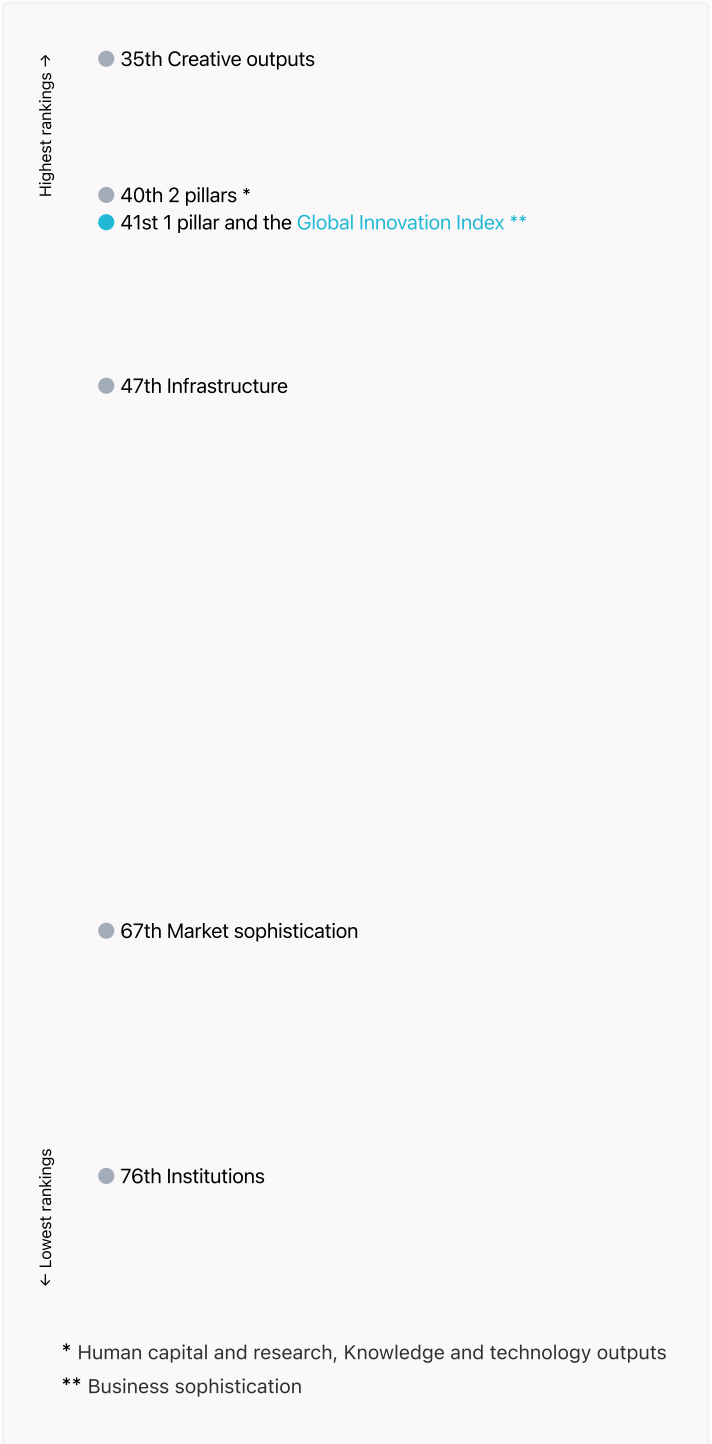
→ Overview of Poland's rankings in the seven areas of the GII in 2023

The chart shows the ranking for each of the seven areas that the GII comprises. The strongest areas for Poland are those that rank above the GII (shown in blue) and the weakest are those that rank below.



> Highest rankings

Poland ranks highest in Creative outputs (35th), Human capital and research, Knowledge and technology outputs (40th) and Business sophistication (41st).

> Lowest rankings

Poland ranks lowest in Institutions (76th), Market sophistication (67th) and Infrastructure (47th).

The full WIPO Intellectual Property Statistics profile for Poland can be found on this link.

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→ Benchmark of Poland against other country groupings for each of the seven areas of the GII Index

The charts shows the relative position of Poland (blue bar) against other country groupings (grey bars), for each of the seven areas of the GII Index.

> High-Income economies

Poland performs below the high-income group average in all the pillars.

> Europe

Poland performs below the regional average in all the pillars.

Knowledge and technology outputs

- Top 10 | Score: 58.96
- Europe | Score: 38.80
- High income | Score: 38.62
- Poland | Score: 31.60

Creative outputs

- Top 10 | 56.09
- High income | 40.27
- Europe | 39.87
- Poland | 37.62

Business sophistication

- Top 10 | 64.39
- High income | 46.38
- Europe | 44.61
- Poland | 36.69

Market sophistication

- Top 10 | 61.93
- High income | 46.42
- Europe | 43.65
- Poland | 34.49

Human capital and research

- Top 10 | 60.28
- High income | 46.30
- Europe | 44.05
- Poland | 37.66

Infrastructure

- Top 10 | 62.83
- High income | 55.85
- Europe | 54.69
- Poland | 48.45

Institutions

- Top 10 | 79.85
- High income | 68.16
- Europe | 61.69
- Poland | 47.13

Global Innovation Index 2023

→ Innovation strengths and weaknesses in Poland

The table below gives an overview of the indicator strengths and weaknesses of Poland in the GII 2023.

> Poland's main innovation strengths are **PISA scales in reading, maths and science** (rank 9), **Labor productivity growth, %** (rank 11) and **Creative goods exports, % total trade** (rank 13).

Strengths

Rank	Code	Indicator name
9	2.1.4	PISA scales in reading, maths and science
11	6.2.1	Labor productivity growth, %
13	7.2.4	Creative goods exports, % total trade
16	7.1.1	Intangible asset intensity, top 15, %
19	7.1.4	Industrial designs by origin/bn PPP$ GDP
21	4.3.3	Domestic market scale, bn PPP$
22	4.3.2	Domestic industry diversification
26	6.1.5	Citable documents H-index
26	5.1.5	Females employed w/advanced degrees, %
26	6.1.1	Patents by origin/bn PPP$ GDP
27	7.3.2	Country-code TLDs/th pop. 15-69

Weaknesses

Rank	Code	Indicator name
121	1.3.1	Policies for doing business
97	5.2.1	University-industry R&D collaboration
77	4.2.3	VC recipients, deals/bn PPP$ GDP
75	5.1.2	Firms offering formal training, %
74	4.2.4	VC received, value, % GDP
69	4.2.2	Venture capital (VC) investors, deals/bn PPP$ GDP
68	1.3.2	Entrepreneurship policies and culture
48	4.1.3	Loans from microfinance institutions, % GDP
48	6.2.2	Unicorn valuation, % GDP
40	2.3.3	Global corporate R&D investors, top 3, mn US$

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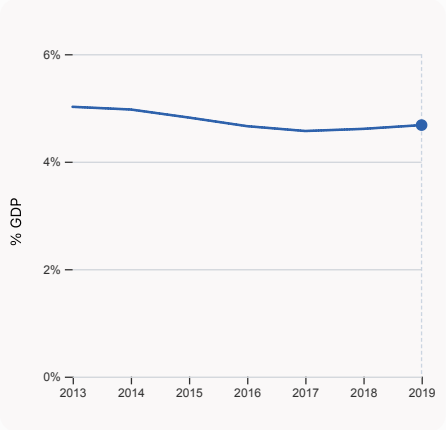
→ Poland's innovation system

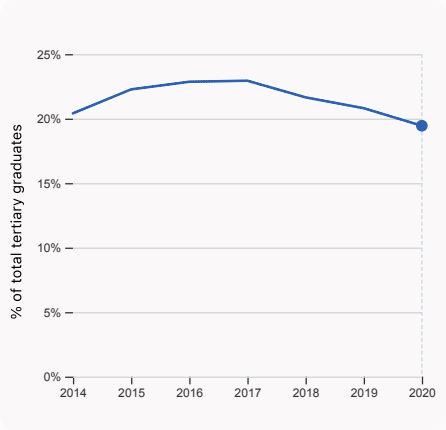
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Poland



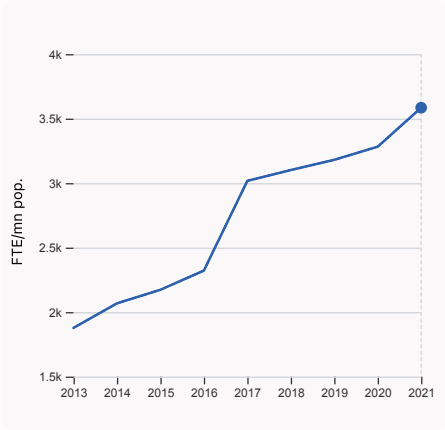
2.1.1 Expenditure on education, % GDP

was equal to 4.68% GDP in 2019, up by 0.07 percentage points from the year prior – and equivalent to an indicator rank of 47.



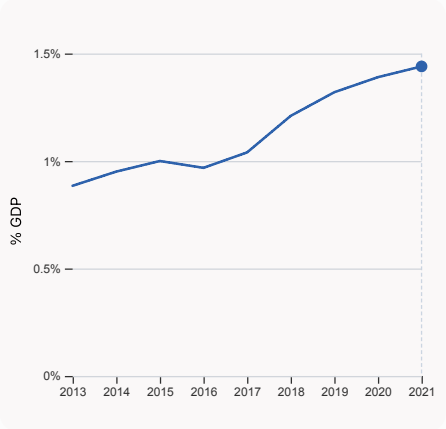
2.2.2 Graduates in science and engineering, %

was equal to 19.45% of total tertiary graduates in 2020, down by 1.36 percentage points from the year prior – and equivalent to an indicator rank of 78.



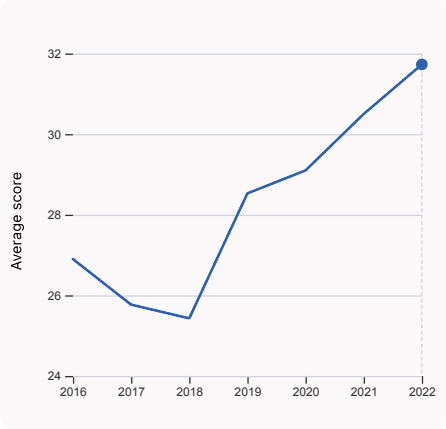
2.3.1 Researchers, FTE/mn pop.

was equal to 3,584.83 FTE/mn pop. in 2021, up by 9.21% from the year prior – and equivalent to an indicator rank of 29.



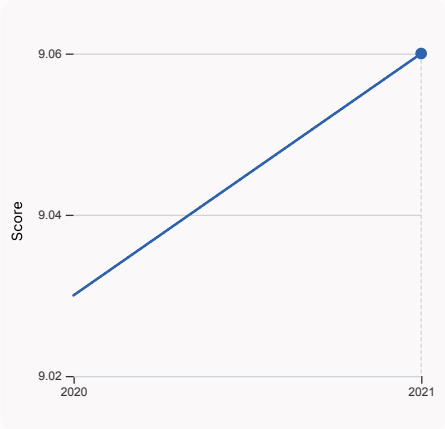
2.3.2 Gross expenditure on R&D, % GDP

was equal to 1.44% GDP in 2021, up by 0.05 percentage points from the year prior – and equivalent to an indicator rank of 29.



2.3.4 QS university ranking, top 3

was equal to an average score of 31.73 for the top 3 universities in 2022, up by 4.033% from the year prior – and equivalent to an indicator rank of 40.



3.1.1 ICT access

was equal to a score of 9.06 in 2021, up by 0.33% from the year prior – and equivalent to an indicator rank of 47.

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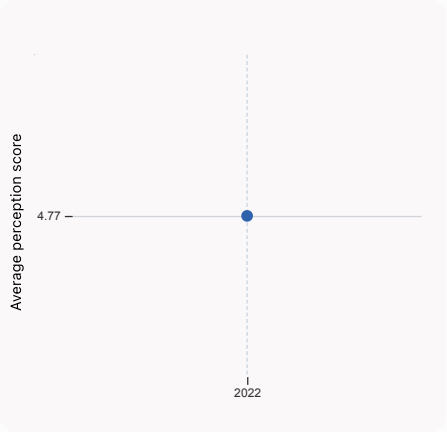
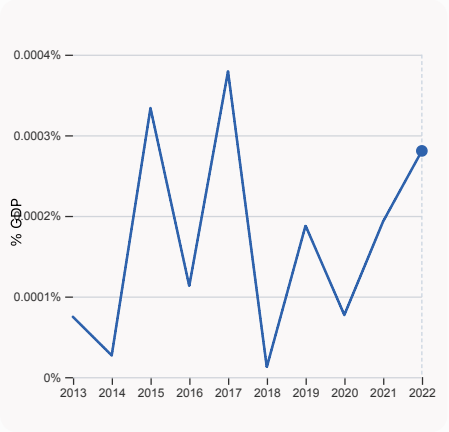


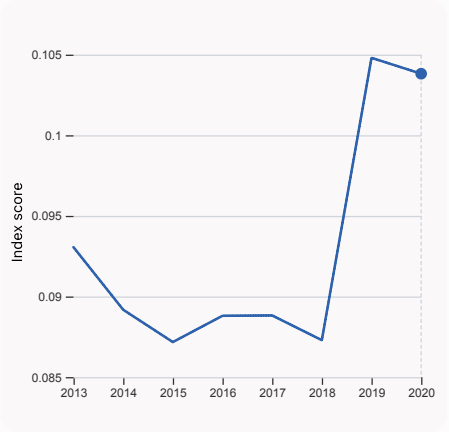
4.1.1 Finance for startups and scaleups

was equal to an average perception score of 4.77 in 2022, equivalent to an indicator rank of 40.



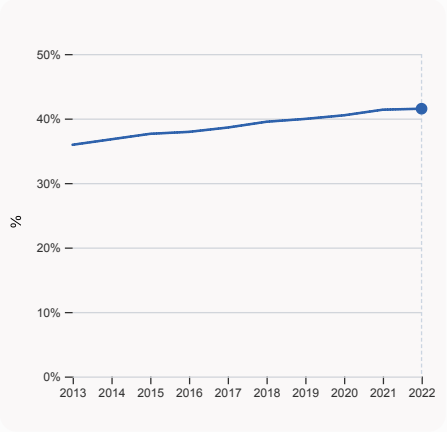
4.2.4 VC received, value, % GDP

was equal to 0.00028% GDP in 2022, up by 0.000088 percentage points from the year prior – and equivalent to an indicator rank of 74.



4.3.2 Domestic industry diversification

was equal to an index score of 0.104 in 2020, down by 0.94% from the year prior – and equivalent to an indicator rank of 22.



5.1.1 Knowledge-intensive employment, %

was equal to 41.52% in 2022, up by 0.15 percentage points from the year prior – and equivalent to an indicator rank of 28.

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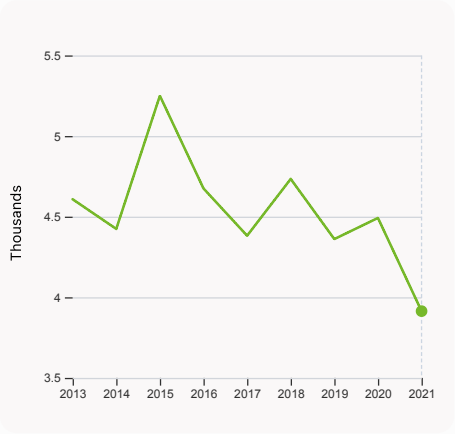
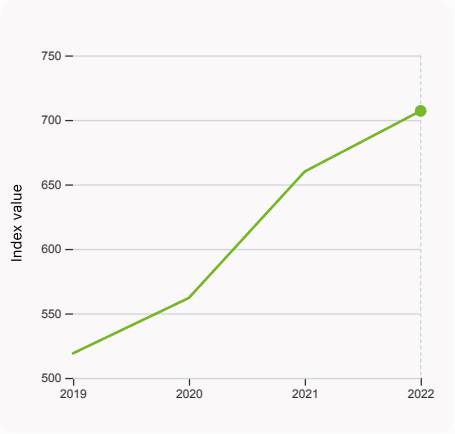
> Innovation outputs in Poland



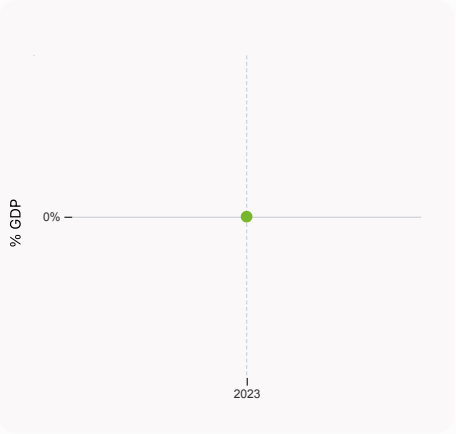
6.1.1 Patents by origin

was equal to 3.91 Thousands in 2021, down by 12.87% from the year prior – and equivalent to an indicator rank of 26.



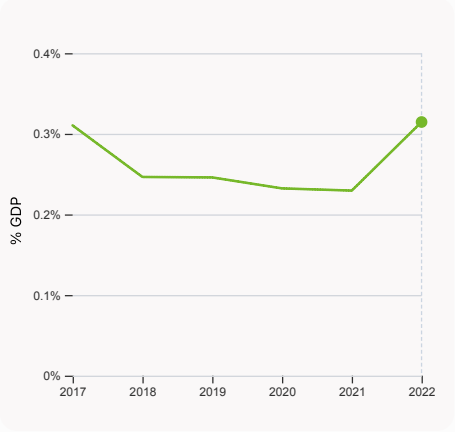
6.1.5 Citable documents H-index

was equal to an index value of 707 in 2022, up by 7.12% from the year prior – and equivalent to an indicator rank of 26.



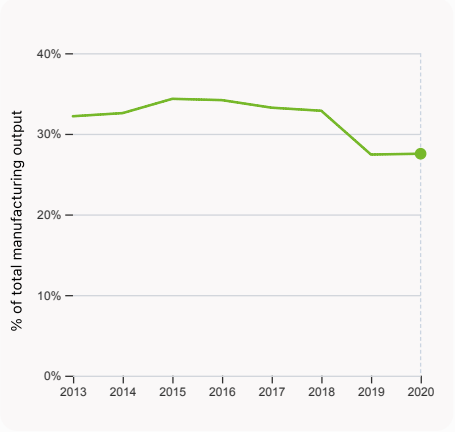
6.2.2 Unicorn valuation, % GDP

was equal to 0 % GDP in 2023 – and equivalent to an indicator rank of 48.



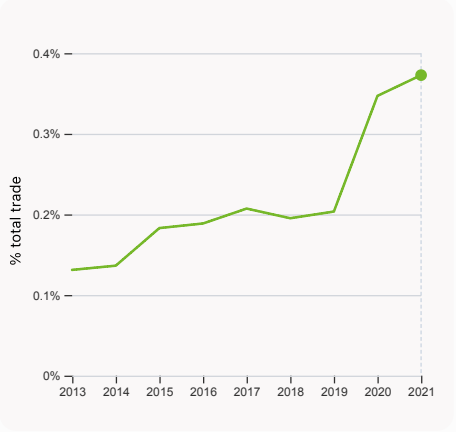
6.2.3 Software spending, % GDP

was equal to 0.315% GDP in 2022, up by 0.085 percentage points from the year prior – and equivalent to an indicator rank of 40.



6.2.4 High-tech manufacturing, %

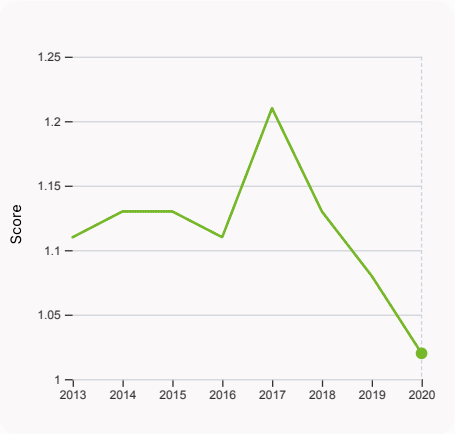
was equal to 27.53% of total manufacturing output in 2020, up by 0.1 percentage points from the year prior – and equivalent to an indicator rank of 46.



6.3.1 Intellectual property receipts, % total trade

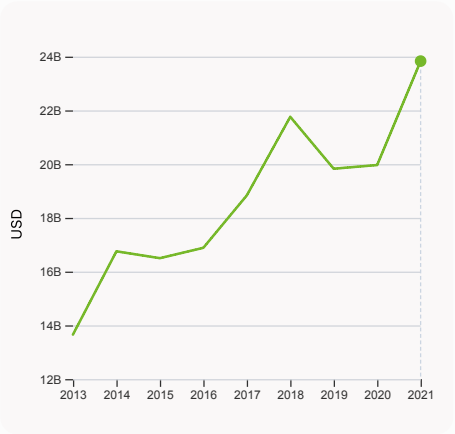
was equal to 0.373% total trade in 2021, up by 0.026 percentage points from the year prior – and equivalent to an indicator rank of 35.

Global Innovation Index 2023



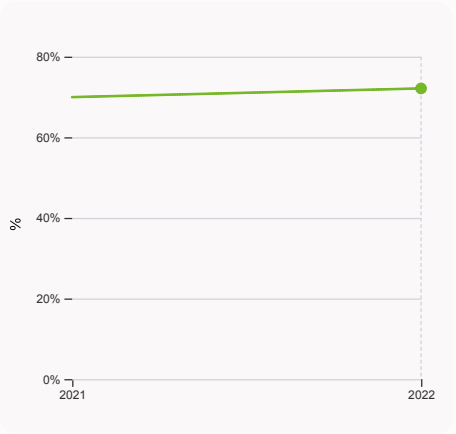
6.3.2 Production and export complexity

was equal to a score of 1.02 in 2020, down by 5.56% from the year prior – and equivalent to an indicator rank of 26.



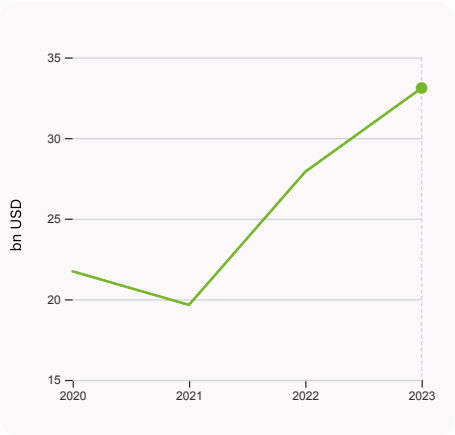
6.3.3 High-tech exports

was equal to 23,834,306,175 USD in 2021, up by 19.37% from the year prior – and equivalent to an indicator rank of 32.



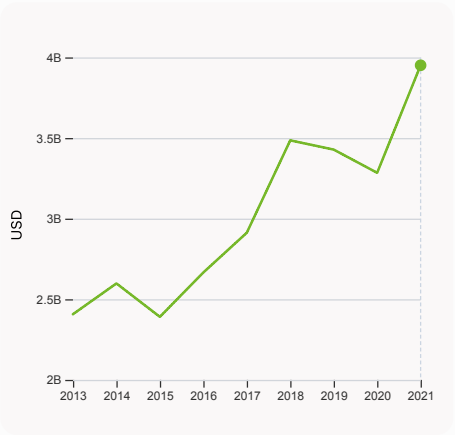
7.1.1 Intangible asset intensity, top 15, %

was equal to 72.12% in 2022, up by 2.16 percentage points from the year prior – and equivalent to an indicator rank of 16.



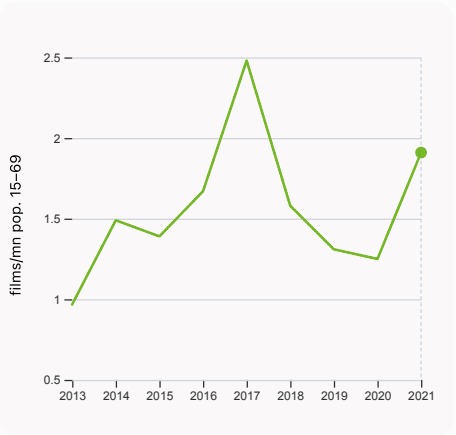
7.1.3 Global brand value, top 5,000

was equal to 33.1 bn USD in 2023, up by 18.61% from the year prior – and equivalent to an indicator rank of 36.



7.2.1 Cultural and creative services exports

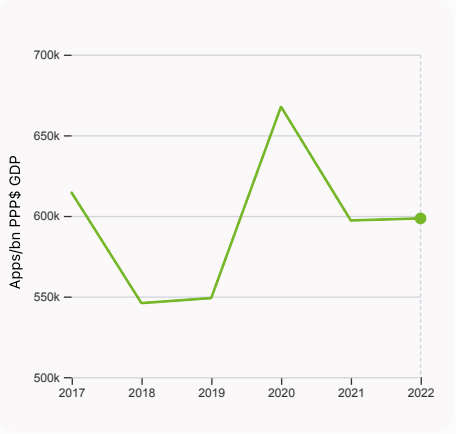
was equal to 3,951,205,000 USD in 2021, up by 20.3% from the year prior – and equivalent to an indicator rank of 29.



7.2.2 National feature films/mn pop. 15-69

was equal to 1.91 films/mn pop. 15–69 in 2021, up by 52.8% from the year prior – and equivalent to an indicator rank of 48.

Global Innovation Index 2023



7.3.4 Mobile app creation/bn PPP$ GDP

was equal to 598,426.75 Apps/bn PPP$ GDP in 2022, up by 0.21% from the year prior – and equivalent to an indicator rank of 38.

Global Innovation Index 2023

→ Poland's innovation top performers

> 2.3.4 QS university ranking of Poland’s top universities

Rank	University	Score
284	UNIVERSITY OF WARSAW	36.10
293	JAGIELLONIAN UNIVERSITY	35.60
521-530	WARSAW UNIVERSITY OF TECHNOLOGY	23.50

Source: QS Quacquarelli Symonds Ltd (https://www.topuniversities.com/university-rankings/world-university-rankings/2023).
Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100]. Ranks can represent a single value "x", a tie "x=" or a range "x-y".

> 7.1.1 Top 15 intangible-asset intensive companies in Poland

Rank	Firm	Intensity, %
1	DINO POLSKA SA	84.66
2	CYFROWY POLSAT SA	60.87
3	LPP SA	66.72

Source: Brand Finance (https://brandirectory.com/reports/gift-2022).
Note: Brand Finance only provides within economy ranks.

> 7.1.3 Top 5,000 companies in Poland with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	PKN ORLEN	Oil & Gas	3,897.2
2	BIEDRONKA	Retail	3,566.5
3	PKO BANK POLSKI	Banking	2,333.9

Source: Brand Finance (https://brandirectory.com).
Note: Rank corresponds to within economy ranks.

Global Innovation Index 2023

Poland

GII 2023 rank
41

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
36	50	High	EUR	39.9	1,599.0	42,465.9

	Score / Value	Rank	
Institutions	**47.1**	**76**	◇
1.1 Institutional environment	**53.0**	**50**	◇
1.1.1 Operational stability for businesses*	61.1	43	
1.1.2 Government effectiveness*	44.8	52	◇
1.2 Regulatory environment	**68.5**	**47**	
1.2.1 Regulatory quality*	63.9	37	
1.2.2 Rule of law*	52.7	45	◇
1.2.3 Cost of redundancy dismissal	18.8	80	
1.3 Business environment	**19.9**	**119**	◇
1.3.1 Policies for doing business†	18.9	121	○ ◇
1.3.2 Entrepreneurship policies and culture†	21.0	68	○ ◇
Human capital and research	**37.7**	**40**	
2.1 Education	**60.2**	**36**	
2.1.1 Expenditure on education, % GDP	4.7	47	
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.2	46	
2.1.3 School life expectancy, years	16.1	36	
2.1.4 PISA scales in reading, maths and science	512.8	9	●
2.1.5 Pupil-teacher ratio, secondary	10.4	34	
2.2 Tertiary education	**29.1**	**70**	◇
2.2.1 Tertiary enrolment, % gross	70.5	36	
2.2.2 Graduates in science and engineering, %	19.4	78	
2.2.3 Tertiary inbound mobility, %	4.5	53	
2.3 Research and development (R&D)	**23.7**	**40**	
2.3.1 Researchers, FTE/mn pop.	3,584.8	29	
2.3.2 Gross expenditure on R&D, % GDP	1.4	29	
2.3.3 Global corporate R&D investors, top 3, mn US$	0.0	40	○ ◇
2.3.4 QS university ranking, top 3*	32.2	40	
Infrastructure	**48.5**	**47**	◇
3.1 Information and communication technologies (ICTs)	**76.9**	**45**	
3.1.1 ICT access*	86.0	47	
3.1.2 ICT use*	80.4	57	◇
3.1.3 Government's online service*	77.1	43	
3.1.4 E-participation*	64.0	51	
3.2 General infrastructure	**36.3**	**39**	
3.2.1 Electricity output, GWh/mn pop.	4,681.6	49	
3.2.2 Logistics performance*	68.2	25	
3.2.3 Gross capital formation, % GDP	22.2	80	
3.3 Ecological sustainability	**32.2**	**45**	
3.3.1 GDP/unit of energy use	11.7	51	
3.3.2 Environmental performance*	53.7	39	
3.3.3 ISO 14001 environment/bn PPP$ GDP	2.0	47	
Market sophistication	**34.5**	**67**	
4.1 Credit	**24.7**	**79**	◇
4.1.1 Finance for startups and scaleups†	54.3	40	
4.1.2 Domestic credit to private sector, % GDP	49.8	74	
4.1.3 Loans from microfinance institutions, % GDP	0.2	48	○
4.2 Investment	**5.0**	**76**	◇
4.2.1 Market capitalization, % GDP	27.4	49	
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.0	69	○
4.2.3 VC recipients, deals/bn PPP$ GDP	0.0	77	○
4.2.4 VC received, value, % GDP	0.0	74	○ ◇
4.3 Trade, diversification, and market scale	**73.8**	**17**	
4.3.1 Applied tariff rate, weighted avg., %	1.5	20	
4.3.2 Domestic industry diversification	96.7	22	●
4.3.3 Domestic market scale, bn PPP$	1,599.0	21	●

	Score / Value	Rank	
Business sophistication	**36.7**	**41**	
5.1 Knowledge workers	**47.6**	**35**	
5.1.1 Knowledge-intensive employment, %	41.5	28	
5.1.2 Firms offering formal training, %	21.7	75	○ ◇
5.1.3 GERD performed by business, % GDP	0.9	26	
5.1.4 GERD financed by business, %	50.6	26	
5.1.5 Females employed w/advanced degrees, %	22.6	26	●
5.2 Innovation linkages	**18.8**	**84**	◇
5.2.1 University-industry R&D collaboration†	29.3	97	○ ◇
5.2.2 State of cluster development†	37.9	78	◇
5.2.3 GERD financed by abroad, % GDP	0.1	37	
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	78	
5.2.5 Patent families/bn PPP$ GDP	0.3	40	
5.3 Knowledge absorption	**43.6**	**34**	
5.3.1 Intellectual property payments, % total trade	1.1	32	
5.3.2 High-tech imports, % total trade	9.4	45	
5.3.3 ICT services imports, % total trade	1.7	47	
5.3.4 FDI net inflows, % GDP	3.9	33	
5.3.5 Research talent, % in businesses	53.1	21	
Knowledge and technology outputs	**31.6**	**40**	
6.1 Knowledge creation	**25.3**	**39**	
6.1.1 Patents by origin/bn PPP$ GDP	2.7	26	●
6.1.2 PCT patents by origin/bn PPP$ GDP	0.2	39	
6.1.3 Utility models by origin/bn PPP$ GDP	0.5	33	
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a	
6.1.5 Citable documents H-index	37.0	26	●
6.2 Knowledge impact	**34.5**	**43**	
6.2.1 Labor productivity growth, %	3.3	11	●
6.2.2 Unicorn valuation, % GDP	0.0	48	○ ◇
6.2.3 Software spending, % GDP	0.3	40	
6.2.4 High-tech manufacturing, %	27.5	46	
6.3 Knowledge diffusion	**35.0**	**40**	
6.3.1 Intellectual property receipts, % total trade	0.3	35	
6.3.2 Production and export complexity	73.8	26	
6.3.3 High-tech exports, % total trade	6.0	32	
6.3.4 ICT services exports, % total trade	2.9	44	
6.3.5 ISO 9001 quality/bn PPP$ GDP	7.4	35	
Creative outputs	**37.6**	**35**	
7.1 Intangible assets	**45.8**	**35**	
7.1.1 Intangible asset intensity, top 15, %	72.1	16	●
7.1.2 Trademarks by origin/bn PPP$ GDP	36.5	63	
7.1.3 Global brand value, top 5,000	4.4	36	
7.1.4 Industrial designs by origin/bn PPP$ GDP	5.7	19	●
7.2 Creative goods and services	**24.1**	**44**	
7.2.1 Cultural and creative services exports, % total trade	1.0	29	
7.2.2 National feature films/mn pop. 15-69	1.9	48	◇
7.2.3 Entertainment and media market/th pop. 15-69	11.7	31	◇
7.2.4 Creative goods exports, % total trade	4.5	13	●
7.3 Online creativity	**34.8**	**34**	
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	7.9	47	
7.3.2 Country-code TLDs/th pop. 15-69	25.6	27	●
7.3.3 GitHub commits/mn pop. 15-69	32.3	33	
7.3.4 Mobile app creation/bn PPP$ GDP	73.2	38	

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question, ◔ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/gii-ranking. Square brackets [ ] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

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→ Data availability

The following tables list indicators that are either missing or outdated for Poland.

> Poland has missing data for zero indicators and outdated data for one indicator.

> Outdated data for Poland

Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics

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→ About the Global Innovation Index

- The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.
- 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.

Source: Global Innovation Index Database, WIPO, 2023.

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.