

Global Innovation Index 2023

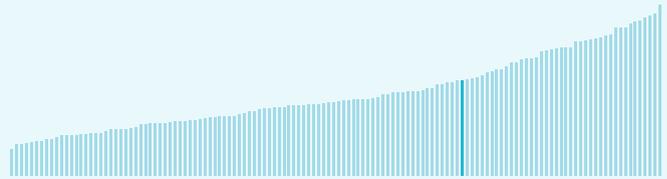


The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**

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

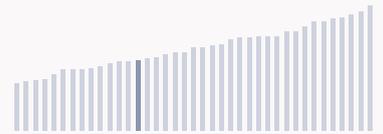
> Poland ranks **41st** among the 132 economies featured in the GII 2023.



> 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.

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→ Expected vs. observed innovation performance

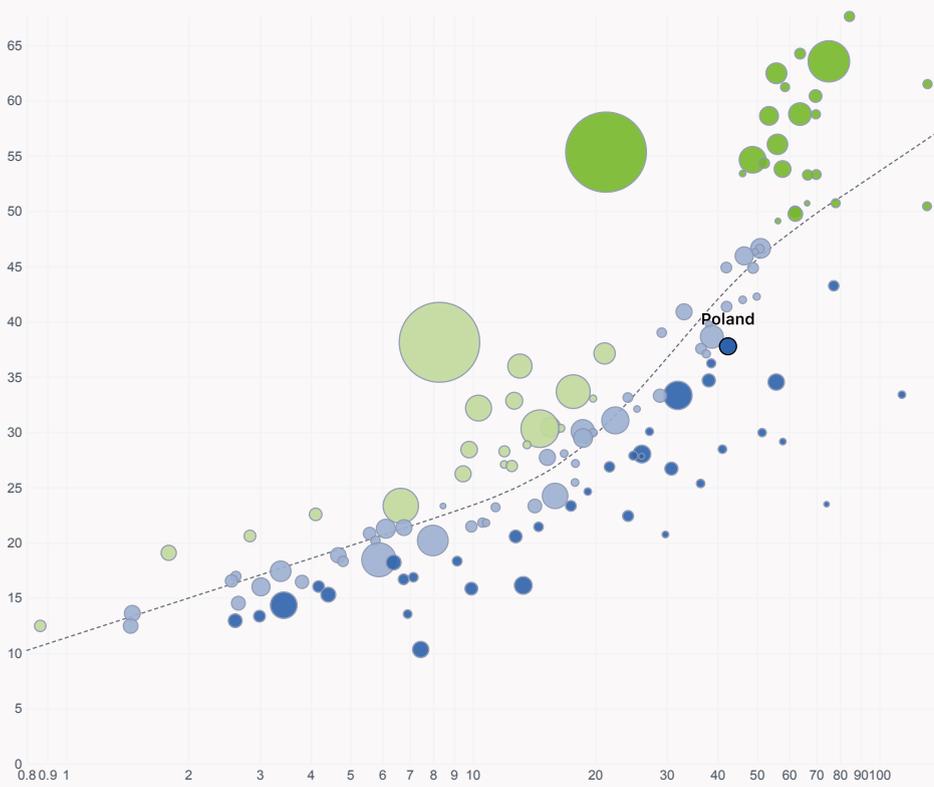
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected 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

↑ **GII Score**



- Innovation leader
- Performing above expectations for level of development
- Performing at expectations for level of development
- Performing below expectations for level of development

Size legend (Population)



→ GDP per capita, PPP logarithmic scale (thousands of \$)

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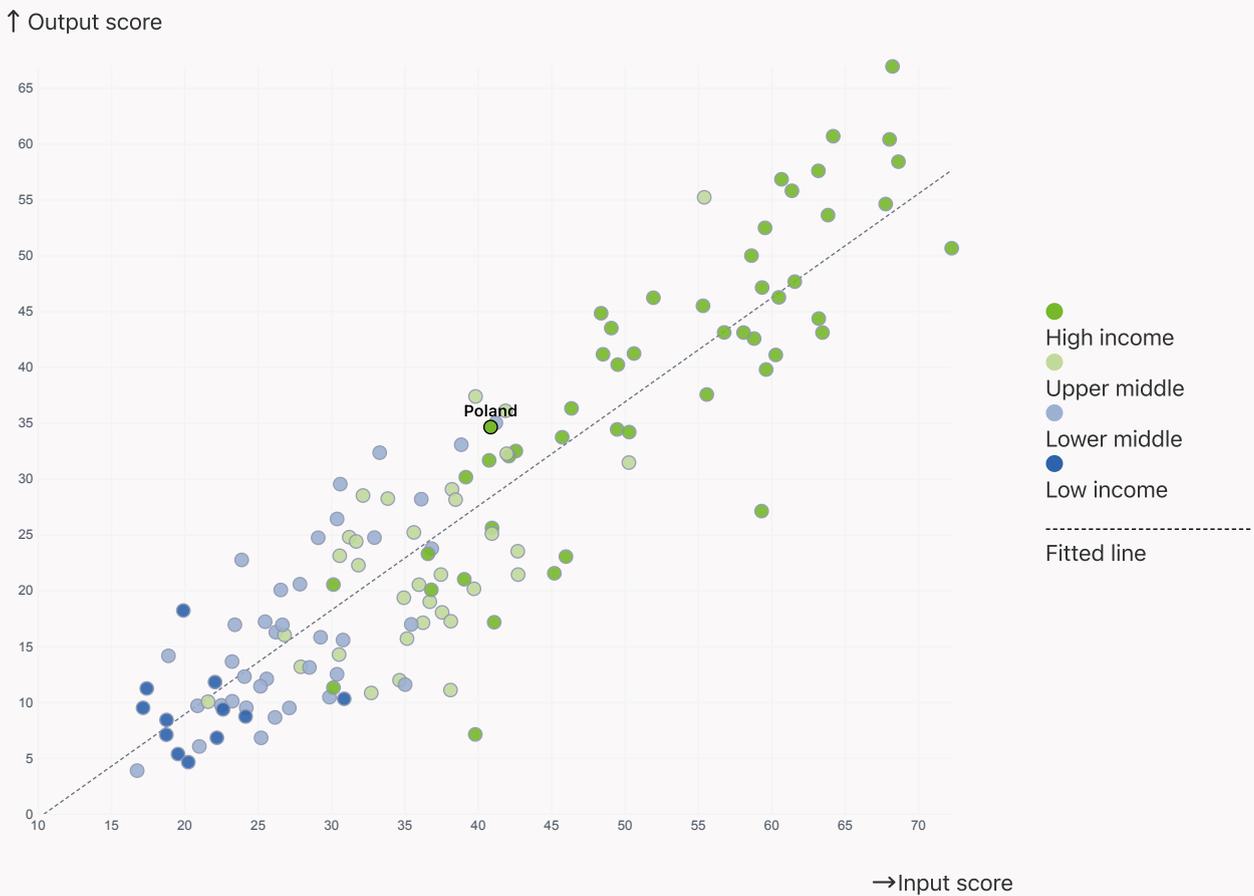
→ Effectively translating innovation investments into innovation outputs

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

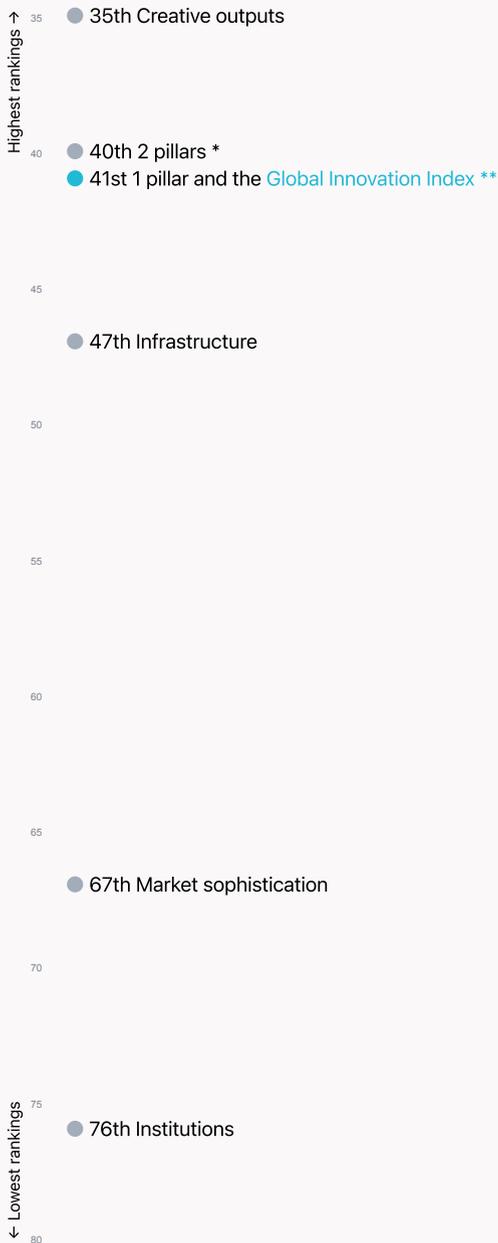


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→ Overview of Poland's rankings in the seven areas of the GII in 2023

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.



* Human capital and research, Knowledge and technology outputs
** Business sophistication

> 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 show 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



→ Innovation strengths and weaknesses in Poland

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



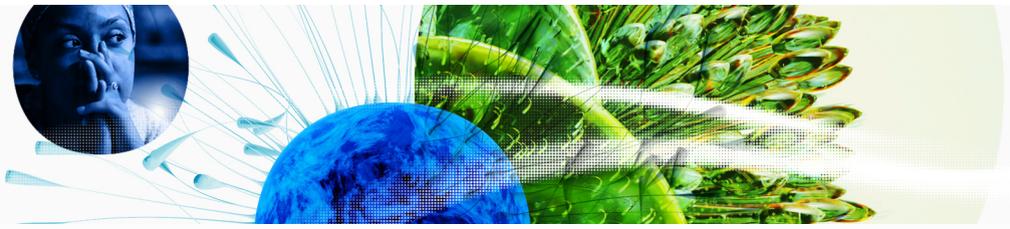
> Poland's main innovation strengths are **PISA scales in reading, maths and science (rank 9)**, **Labor productivity growth, % (rank 11)** and **Creative goods exports, % total trade (rank 13)**.

Strengths

Weaknesses

Rank	Code	Indicator name	Rank	Code	Indicator name
9	2.1.4	PISA scales in reading, maths and science	121	1.3.1	Policies for doing business
11	6.2.1	Labor productivity growth, %	97	5.2.1	University-industry R&D collaboration
13	7.2.4	Creative goods exports, % total trade	77	4.2.3	VC recipients, deals/bn PPP\$ GDP
16	7.1.1	Intangible asset intensity, top 15, %	75	5.1.2	Firms offering formal training, %
19	7.1.4	Industrial designs by origin/bn PPP\$ GDP	74	4.2.4	VC received, value, % GDP
21	4.3.3	Domestic market scale, bn PPP\$	69	4.2.2	Venture capital (VC) investors, deals/bn PPP\$ GDP
22	4.3.2	Domestic industry diversification	68	1.3.2	Entrepreneurship policies and culture
26	6.1.5	Citable documents H-index	48	4.1.3	Loans from microfinance institutions, % GDP
26	5.1.5	Females employed w/advanced degrees, %	48	6.2.2	Unicorn valuation, % GDP
26	6.1.1	Patents by origin/bn PPP\$ GDP	40	2.3.3	Global corporate R&D investors, top 3, mn US\$
27	7.3.2	Country-code TLDs/th pop. 15-69			

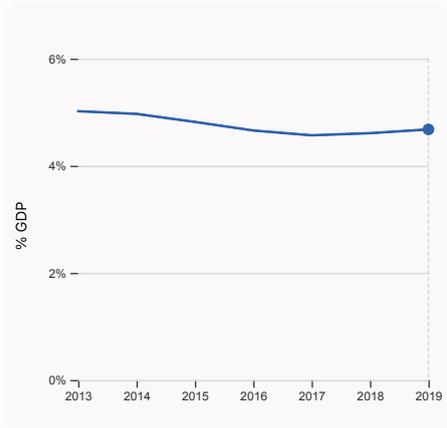
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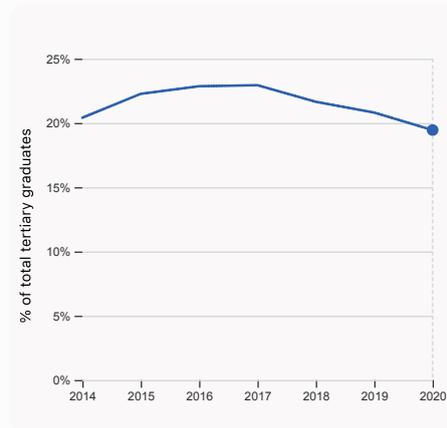
→ Poland's innovation system

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

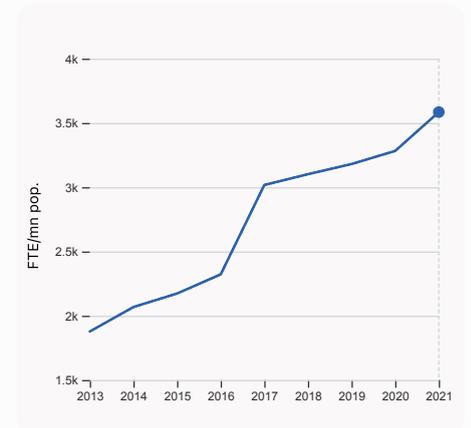
> Innovation inputs in Poland



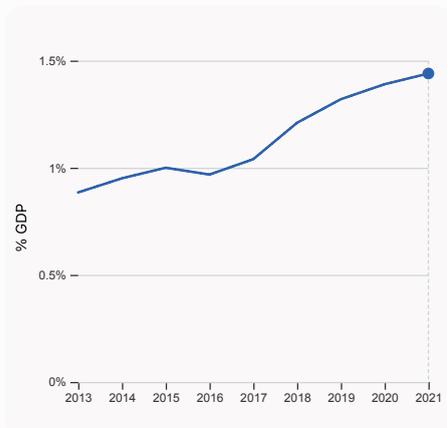
2.1.1 Expenditure on education, % GDP was equal to 4.68% GDP in 2019, up by 0.07 percentage points from the year prior – and equivalent to an indicator rank of 47.



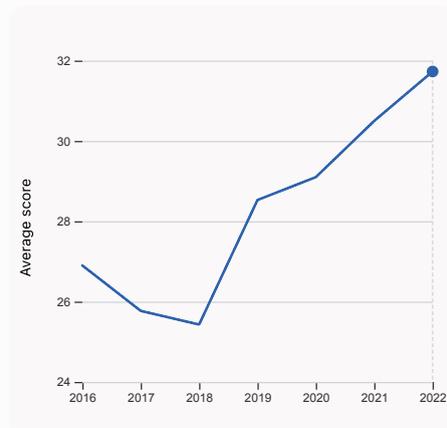
2.2.2 Graduates in science and engineering, % was equal to 19.45% of total tertiary graduates in 2020, down by 1.36 percentage points from the year prior – and equivalent to an indicator rank of 78.



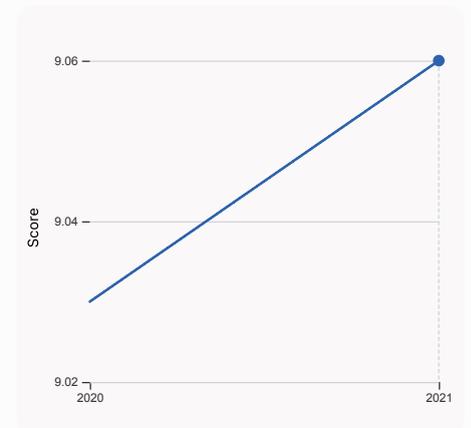
2.3.1 Researchers, FTE/mn pop. was equal to 3,584.83 FTE/mn pop. in 2021, up by 9.21% from the year prior – and equivalent to an indicator rank of 29.



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.

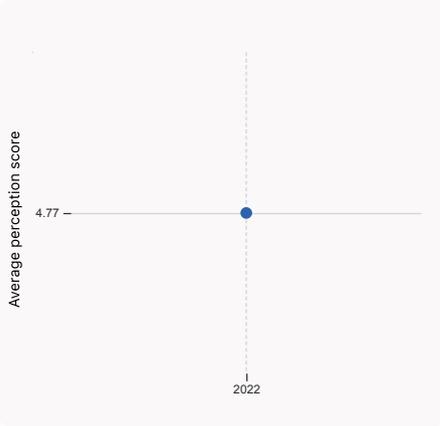


2.3.4 QS university ranking, top 3 was equal to an average score of 31.73 for the top 3 universities in 2022, up by 4.033% from the year prior – and equivalent to an indicator rank of 40.

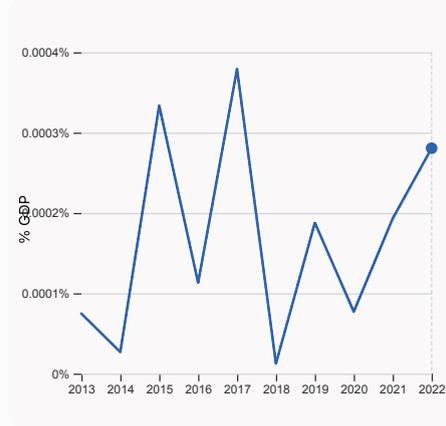


3.1.1 ICT access was equal to a score of 9.06 in 2021, up by 0.33% from the year prior – and equivalent to an indicator rank of 47.

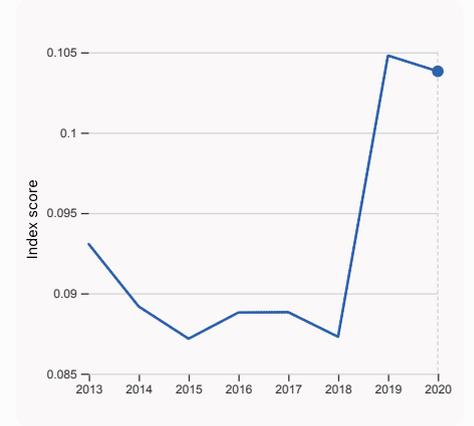
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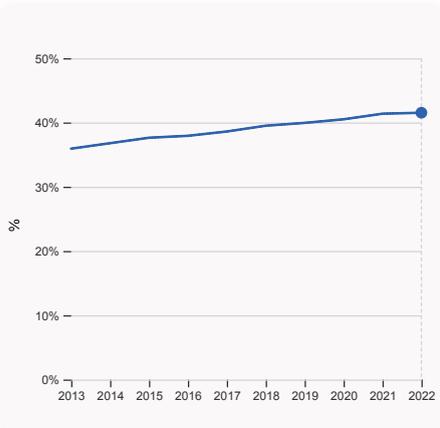
4.1.1 Finance for startups and scaleups was equal to an average perception score of 4.77 in 2022, equivalent to an indicator rank of 40.



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.

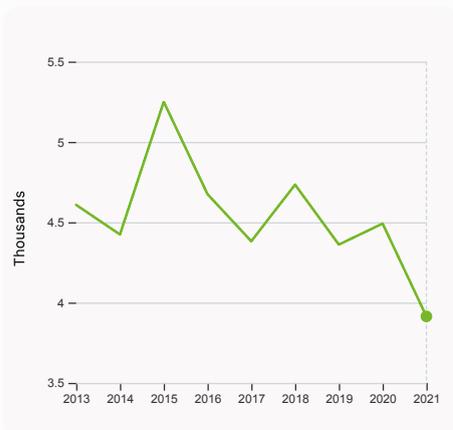


5.1.1 Knowledge-intensive employment, % was equal to 41.52% in 2022, up by 0.15 percentage points from the year prior – and equivalent to an indicator rank of 28.

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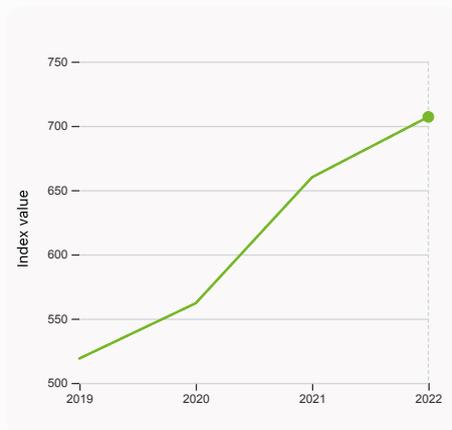


> Innovation outputs in Poland



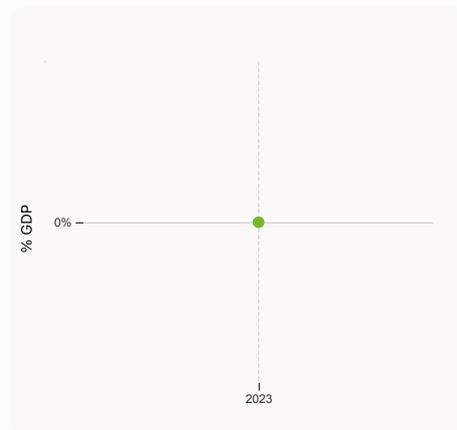
6.1.1 Patents by origin

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



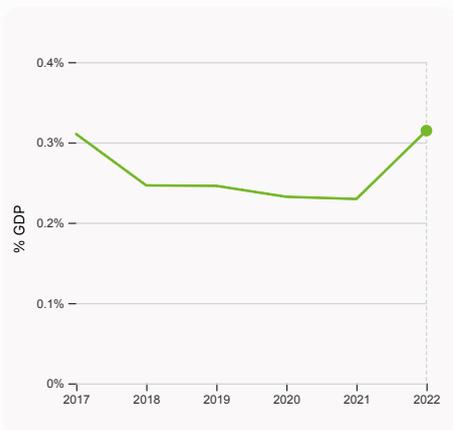
6.1.5 Citable documents H-index

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.



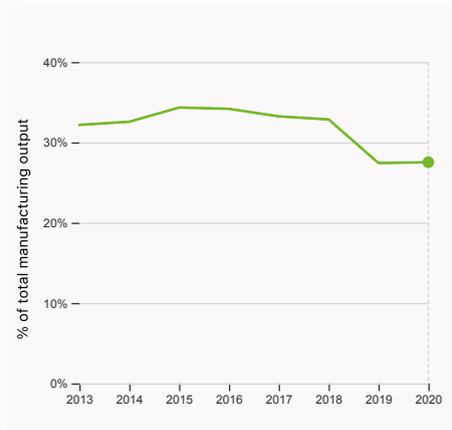
6.2.2 Unicorn valuation, % GDP

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



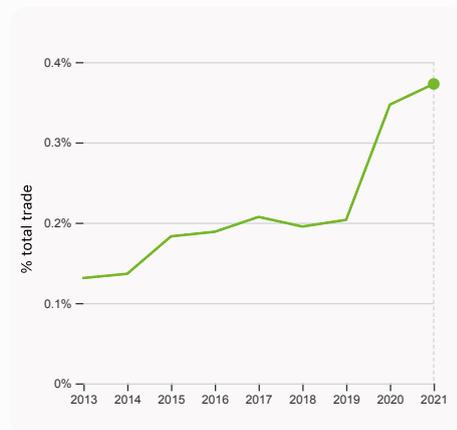
6.2.3 Software spending, % GDP

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, %

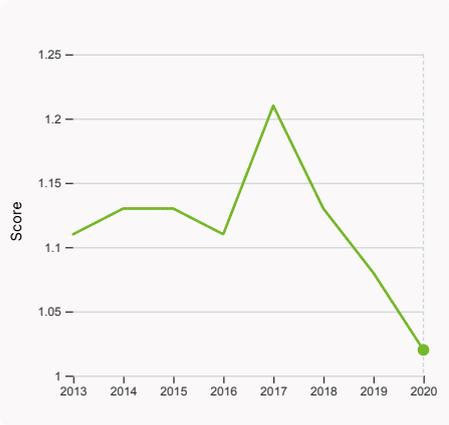
was equal to 27.53% of total manufacturing output in 2020, up by 0.1 percentage points from the year prior – and equivalent to an indicator rank of 46.



6.3.1 Intellectual property receipts, % total trade

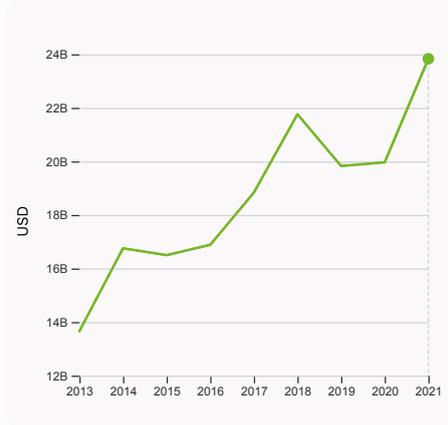
was equal to 0.373% total trade in 2021, up by 0.026 percentage points from the year prior – and equivalent to an indicator rank of 35.

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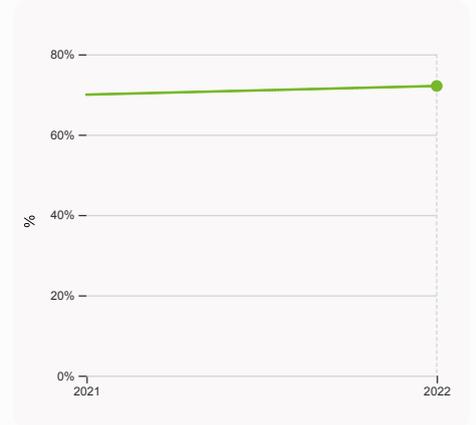
6.3.2 Production and export complexity

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.



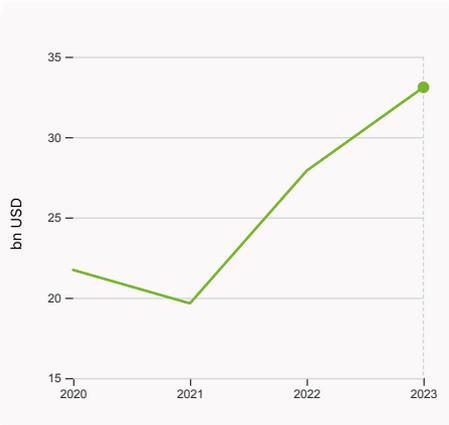
6.3.3 High-tech exports

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.



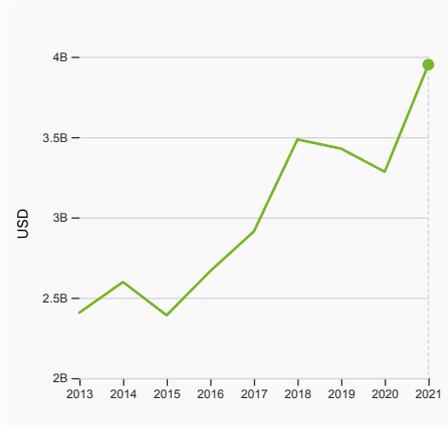
7.1.1 Intangible asset intensity, top 15, %

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.



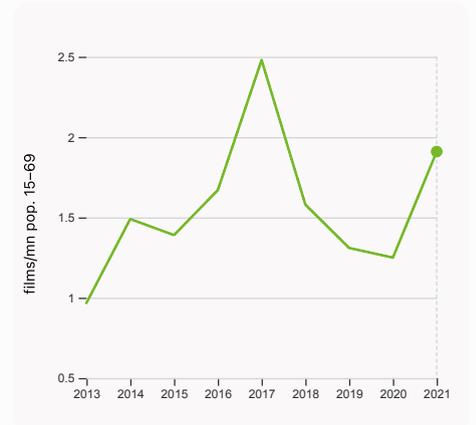
7.1.3 Global brand value, top 5,000

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

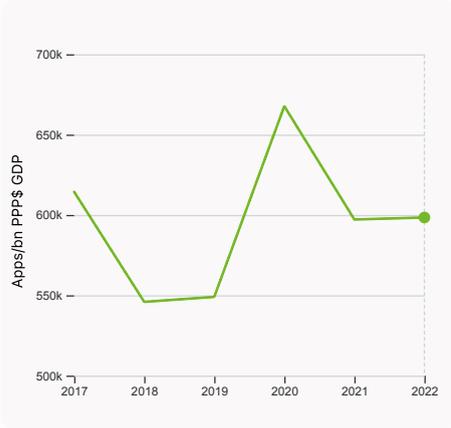
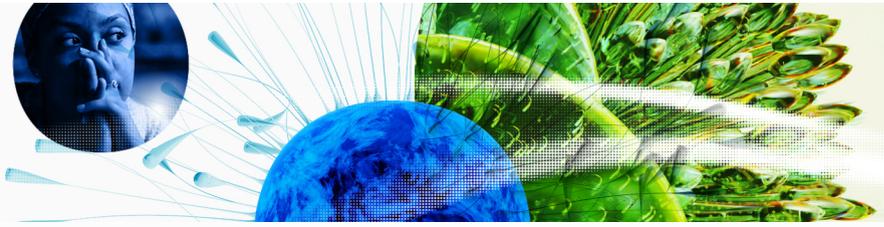
was equal to 3,951,205,000 USD in 2021, up by 20.3% from the year prior – and equivalent to an indicator rank of 29.



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.

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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.



→ 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.

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GII 2023 rank

41

Poland

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				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	●◆
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.



→ 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

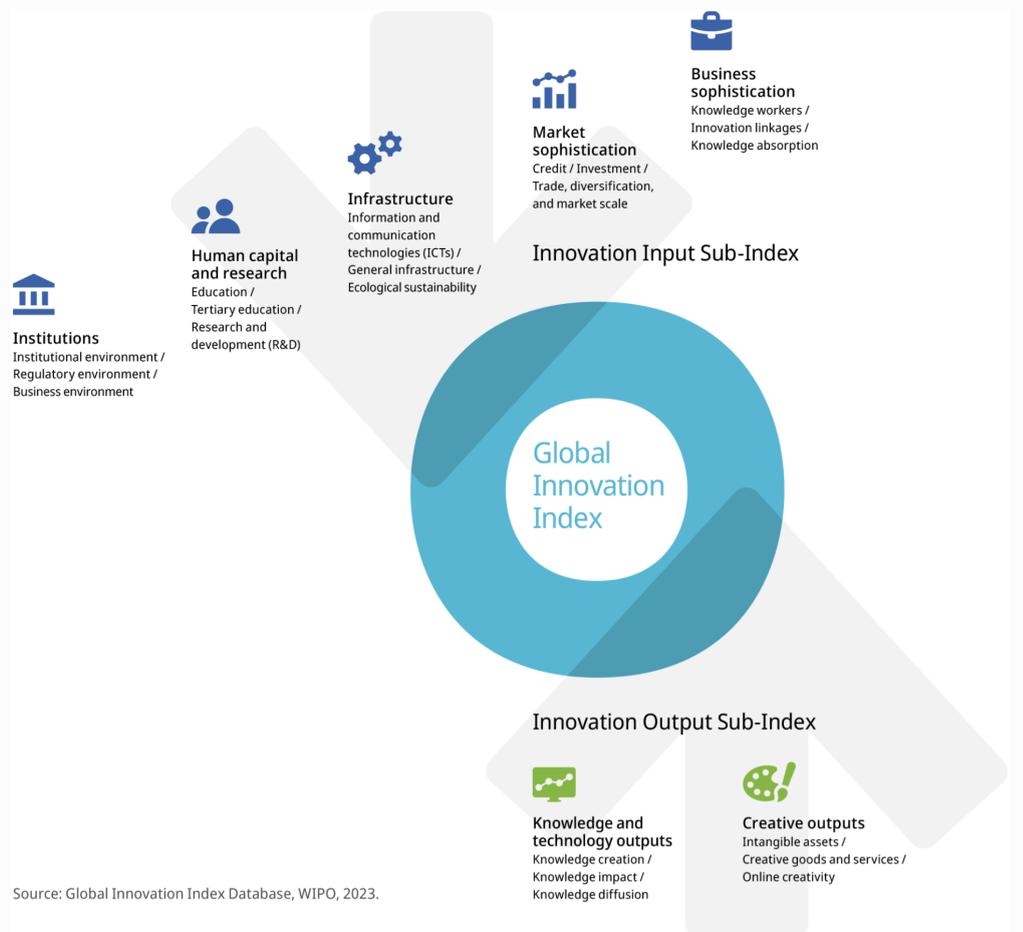
Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics

Global Innovation Index 2023



→ 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.



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.