

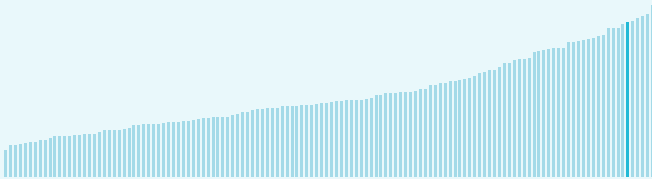
Global Innovation Index 2023



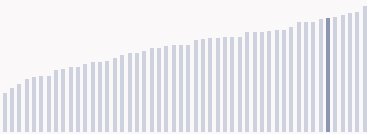
The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities**. Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation**.

Finland ranking in the Global Innovation Index 2023

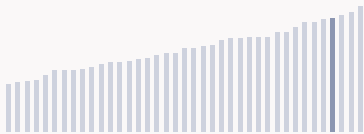
> Finland ranks **6th** among the 132 economies featured in the GII 2023.



> Finland ranks **6th** among the 50 high-income group economies.



> Finland ranks **4th** among the 39 economies in Europe.



> Finland GII Ranking (2020-2023)

The table shows the rankings of Finland 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 Finland in the GII 2023 is between ranks 4 and 6.

	GII Position	Innovation Inputs	Innovation Outputs
2020	7th	8th	8th
2021	7th	6th	9th
2022	9th	6th	9th
2023	6th	5th	9th

Finland performs worse in innovation outputs than innovation inputs in 2023.

This year Finland ranks 5th in innovation inputs. This position is higher than last year.

Finland ranks 9th in innovation outputs. This position is the same as last year.

Global Innovation Index 2023



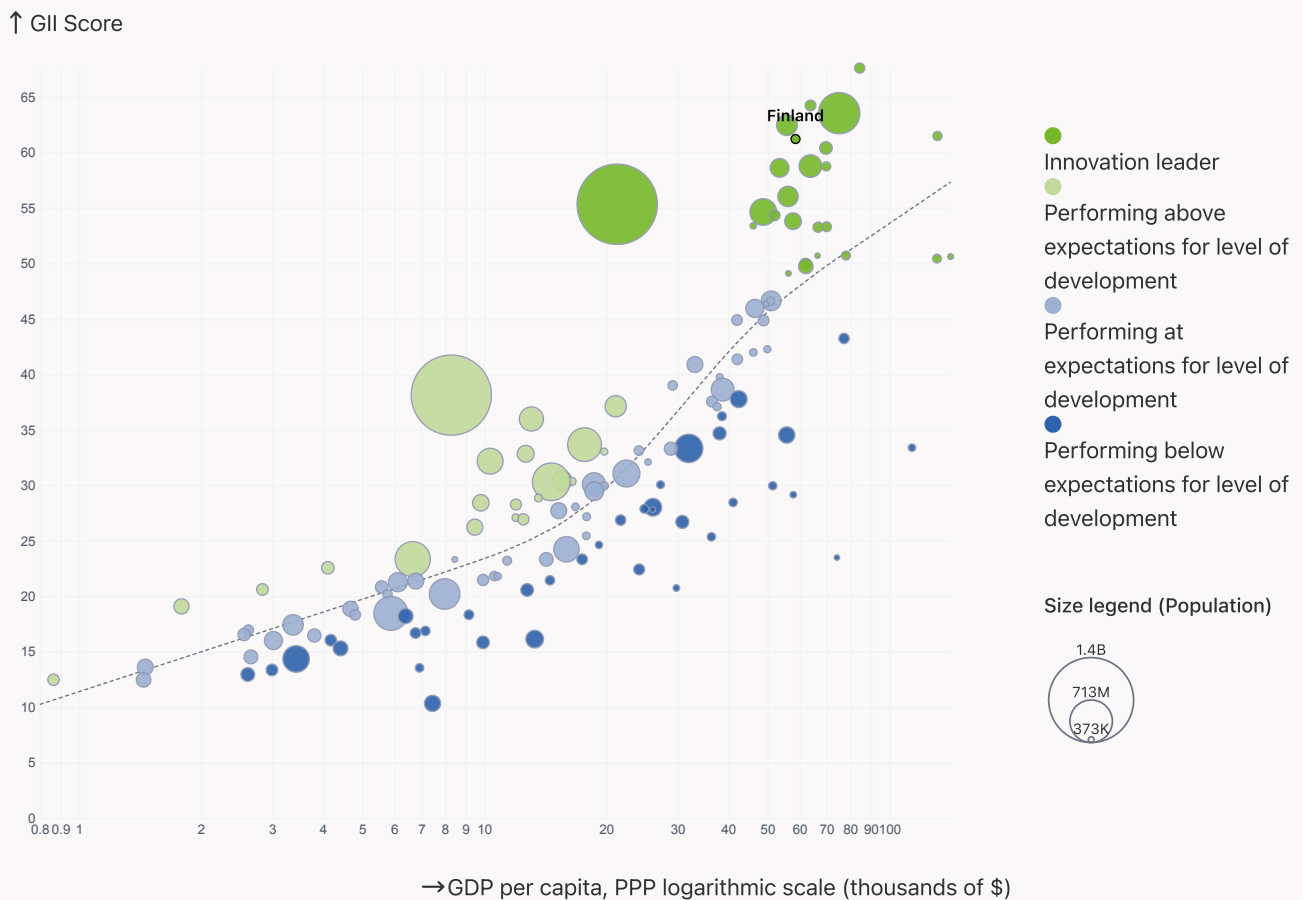
→ Expected vs. observed innovation performance

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.



> Finland is an innovation leader, ranking in the top 25 of the GII.

> Innovation overperformers relative to their economic development



Global Innovation Index 2023



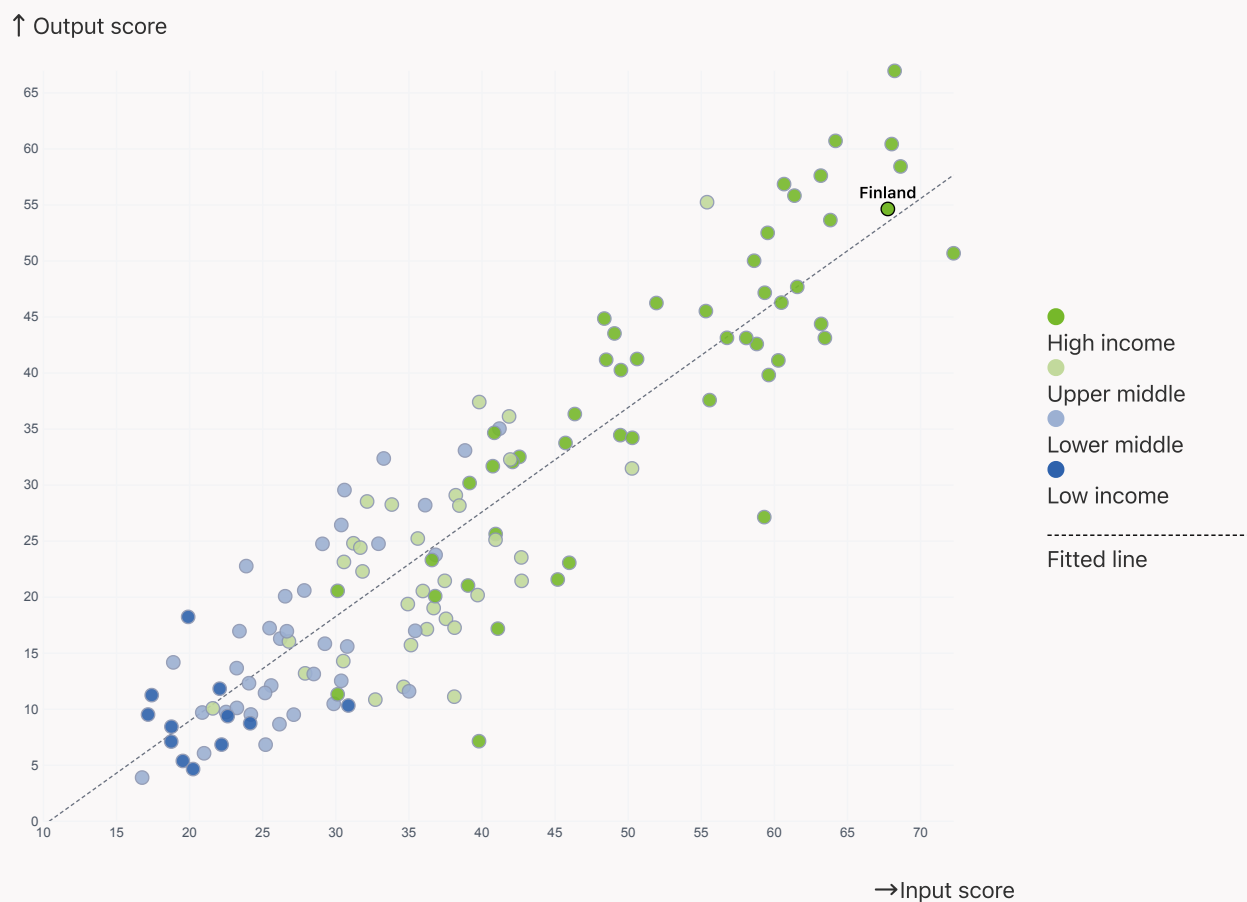
→ Effectively translating innovation investments into innovation outputs

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.



> Finland produces less innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs



Global Innovation Index 2023



→ Overview of Finland'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 Finland are those that rank above the GII (shown in blue) and the weakest are those that rank below.

Highest rankings →

- 1st Infrastructure
- 3rd Institutions
- 4th 2 pillars *
- 5th Human capital and research
- 6th Global Innovation Index

← Lowest rankings

- 12th Market sophistication
- 16th Creative outputs

* Business sophistication, Knowledge and technology outputs

> Highest rankings



Finland ranks highest in Infrastructure (1st), Institutions (3rd), Business sophistication, Knowledge and technology outputs (4th) and Human capital and research (5th).

> Lowest rankings



Finland ranks lowest in Creative outputs (16th), Market sophistication (12th) and Human capital and research (5th).



The full WIPO Intellectual Property Statistics profile for Finland can be found on [this link](#).

Global Innovation Index 2023



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

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

> High-Income economies

Finland performs above the high-income group average in all the pillars.



> Europe

Finland performs above the regional average in all the pillars.



Knowledge and technology outputs

Finland | Score: 61.65

Top 10 | Score: 58.96

Europe | Score: 38.80

High income | Score: 38.62

Creative outputs

Top 10 | 56.09

Finland | 47.52

High income | 40.27

Europe | 39.87

Business sophistication

Finland | 65.79

Top 10 | 64.39

High income | 46.38

Europe | 44.61

Market sophistication

Top 10 | 61.93

Finland | 58.66

High income | 46.42

Europe | 43.65

Human capital and research

Top 10 | 60.28

Finland | 59.96

High income | 46.30

Europe | 44.05

Infrastructure

Finland | 69.18

Top 10 | 62.83

High income | 55.85

Europe | 54.69

Institutions

Finland | 85.44

Top 10 | 79.85

High income | 68.16

Europe | 61.69

Global Innovation Index 2023



→ Innovation strengths and weaknesses in Finland

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



> Finland's main innovation strengths are **Finance for startups and scaleups** (rank 1), **ICT services exports, % total trade** (rank 1) and **Patent families/bn PPP\$ GDP** (rank 1).

Strengths

Weaknesses

Rank	Code	Indicator name	Rank	Code	Indicator name
1	4.1.1	Finance for startups and scaleups	108	6.2.1	Labor productivity growth, %
1	6.3.4	ICT services exports, % total trade	89	3.3.1	GDP/unit of energy use
1	5.2.5	Patent families/bn PPP\$ GDP	78	5.3.2	High-tech imports, % total trade
1	6.1.2	PCT patents by origin/bn PPP\$ GDP	66	3.2.3	Gross capital formation, % GDP
1	1.2.2	Rule of law	60	7.1.2	Trademarks by origin/bn PPP\$ GDP
2	3.1.3	Government's online service	59	7.2.4	Creative goods exports, % total trade
2	3.2.2	Logistics performance	58	2.1.5	Pupil-teacher ratio, secondary
3	3.3.2	Environmental performance	57	4.3.3	Domestic market scale, bn PPP\$
3	1.2.1	Regulatory quality	54	7.2.1	Cultural and creative services exports, % total trade
3	2.3.1	Researchers, FTE/mn pop.	20	4.3.1	Applied tariff rate, weighted avg., %
4	1.1.2	Government effectiveness			
4	5.3.3	ICT services imports, % total trade			

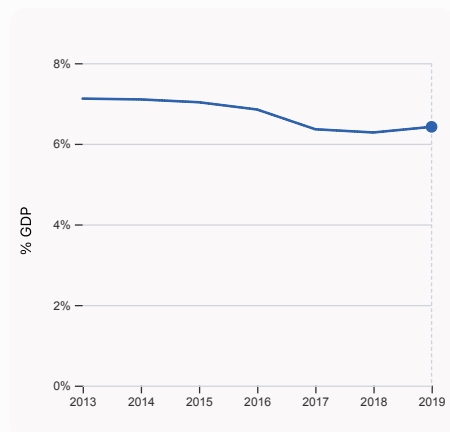
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→ Finland's innovation system

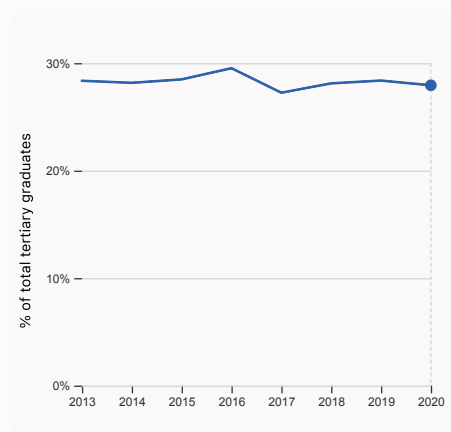
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Finland



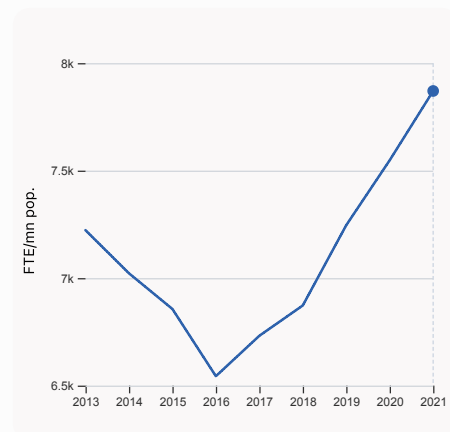
2.1.1 Expenditure on education, % GDP

was equal to 6.42% GDP in 2019, up by 0.14 percentage points from the year prior – and equivalent to an indicator rank of 14.



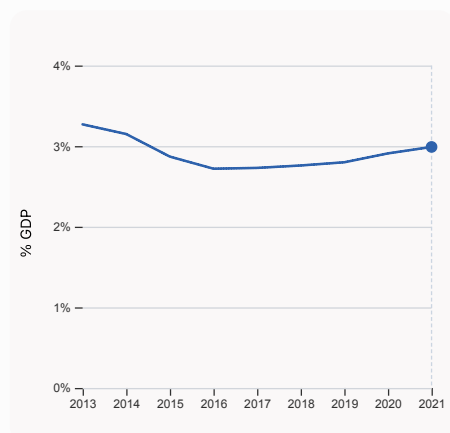
2.2.2 Graduates in science and engineering, %

was equal to 27.94% of total tertiary graduates in 2020, down by 0.44 percentage points from the year prior – and equivalent to an indicator rank of 28.



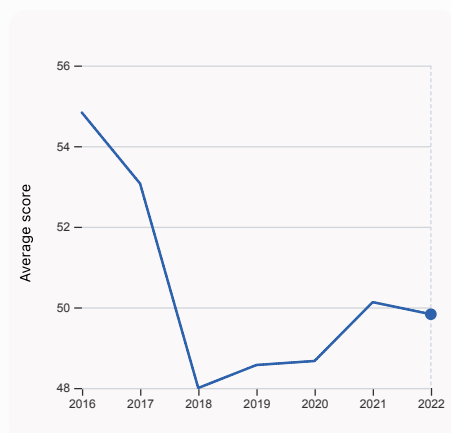
2.3.1 Researchers, FTE/mn pop.

was equal to 7,870.55 FTE/mn pop. in 2021, up by 4.27% from the year prior – and equivalent to an indicator rank of 3.



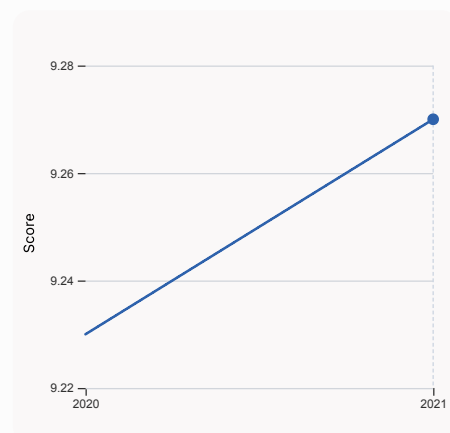
2.3.2 Gross expenditure on R&D, % GDP

was equal to 2.99% GDP in 2021, up by 0.08 percentage points from the year prior – and equivalent to an indicator rank of 10.



2.3.4 QS university ranking, top 3

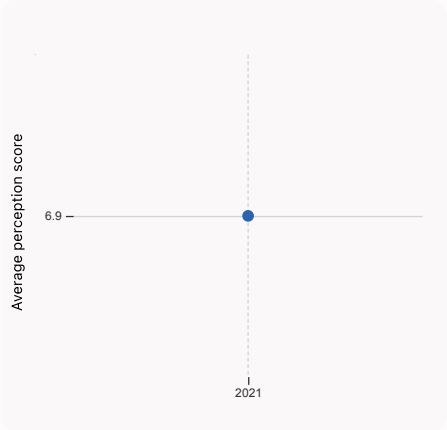
was equal to an average score of 49.83 for the top 3 universities in 2022, down by 0.6% from the year prior – and equivalent to an indicator rank of 18.



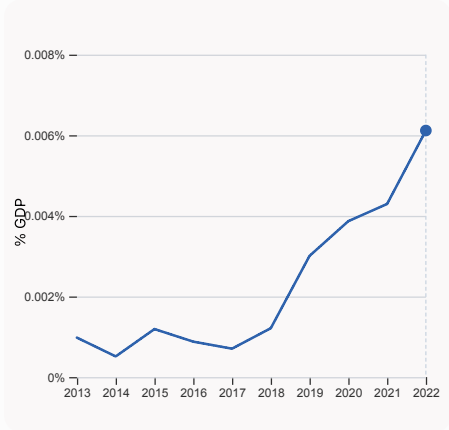
3.1.1 ICT access

was equal to a score of 9.27 in 2021, up by 0.43% from the year prior – and equivalent to an indicator rank of 28.

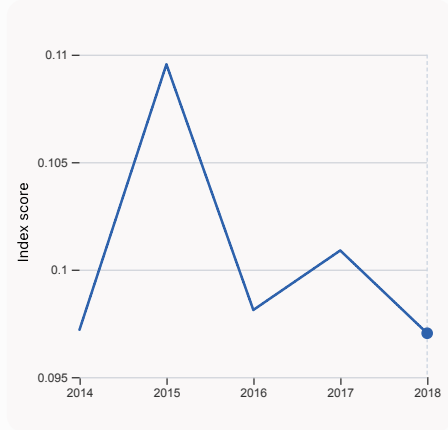
Global Innovation Index 2023



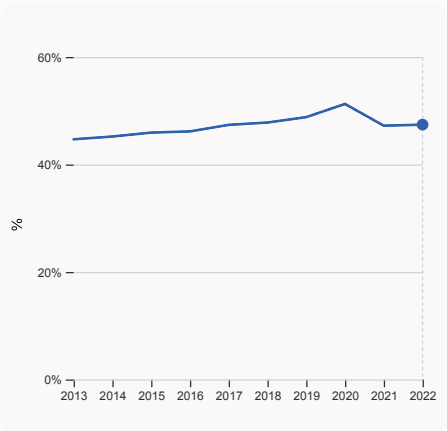
4.1.1 Finance for startups and scaleups
was equal to an average perception score of 6.9 in 2021, equivalent to an indicator rank of 1.



4.2.4 VC received, value, % GDP
was equal to 0.00612% GDP in 2022, up by 0.0018 percentage points from the year prior – and equivalent to an indicator rank of 15.



4.3.2 Domestic industry diversification
was equal to an index score of 0.097 in 2018, down by 3.82% from the year prior – and equivalent to an indicator rank of 13.

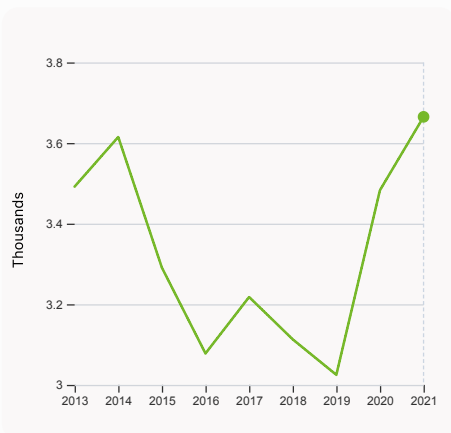


5.1.1 Knowledge-intensive employment, %
was equal to 47.42% in 2022, up by 0.2 percentage points from the year prior – and equivalent to an indicator rank of 15.

Global Innovation Index 2023

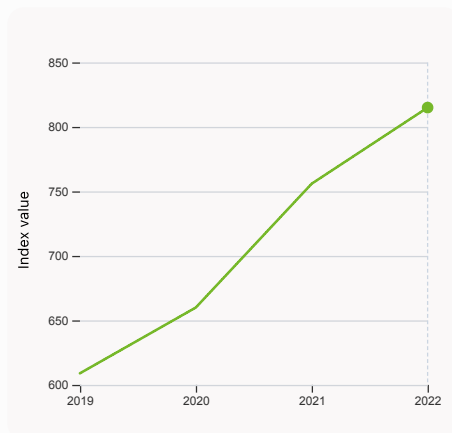


> Innovation outputs in Finland



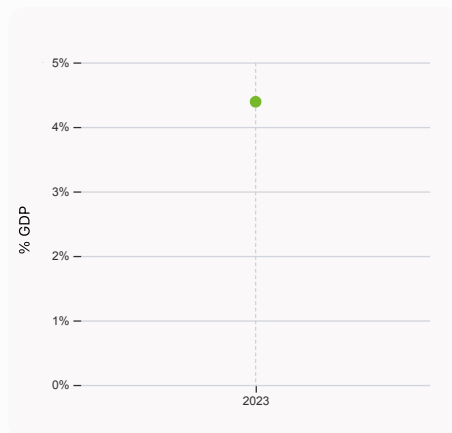
6.1.1 Patents by origin

was equal to 3.67 Thousands in 2021, up by 5.23% from the year prior – and equivalent to an indicator rank of 6.



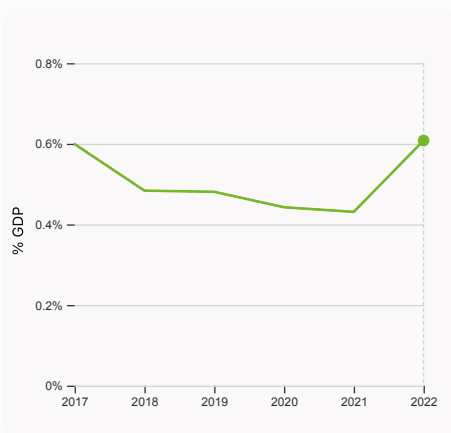
6.1.5 Citable documents H-index

was equal to an index value of 815 in 2022, up by 7.8% from the year prior – and equivalent to an indicator rank of 19.



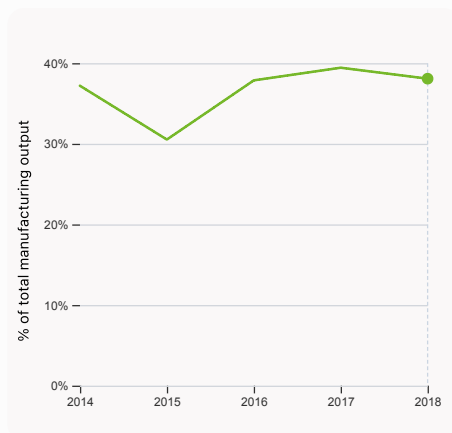
6.2.2 Unicorn valuation, % GDP

was equal to 4.39 % GDP in 2023 – and equivalent to an indicator rank of 10.



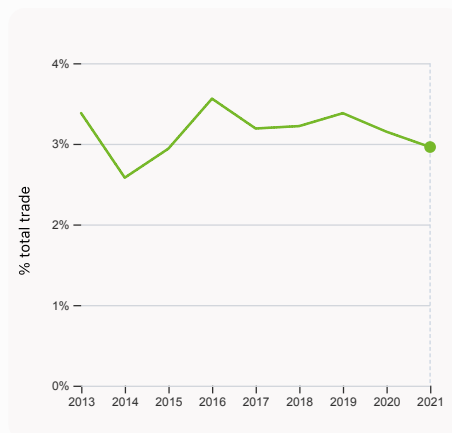
6.2.3 Software spending, % GDP

was equal to 0.608% GDP in 2022, up by 0.18 percentage points from the year prior – and equivalent to an indicator rank of 14.



6.2.4 High-tech manufacturing, %

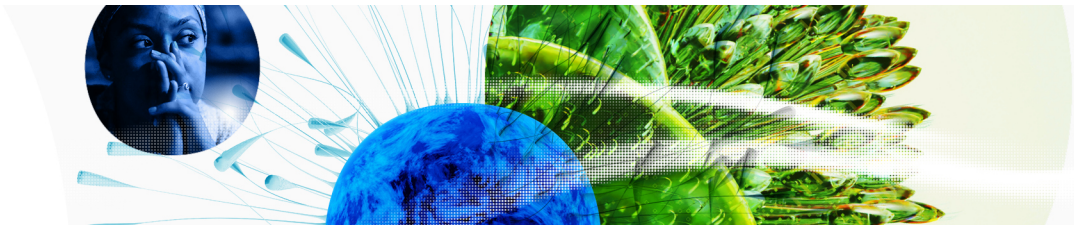
was equal to 38.08% of total manufacturing output in 2018, down by 1.36 percentage points from the year prior – and equivalent to an indicator rank of 28.



6.3.1 Intellectual property receipts, % total trade

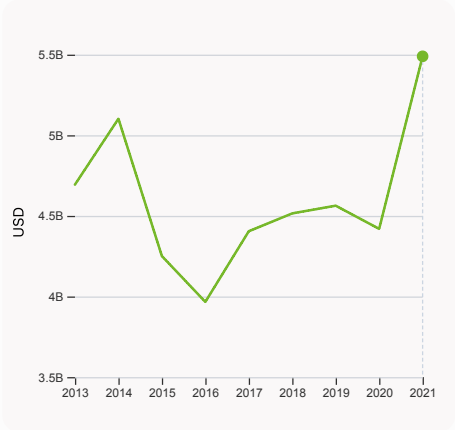
was equal to 2.96% total trade in 2021, down by 0.19 percentage points from the year prior – and equivalent to an indicator rank of 8.

Global Innovation Index 2023



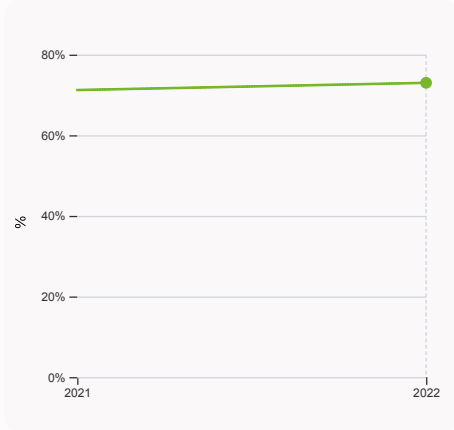
6.3.2 Production and export complexity

was equal to a score of 1.4 in 2020, down by 3.45% from the year prior – and equivalent to an indicator rank of 14.



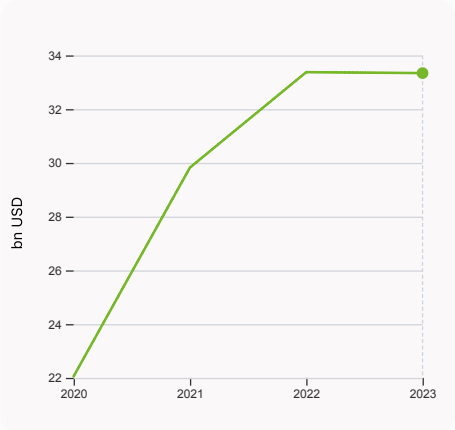
6.3.3 High-tech exports

was equal to 5,489,674,614 USD in 2021, up by 24.21% from the year prior – and equivalent to an indicator rank of 39.



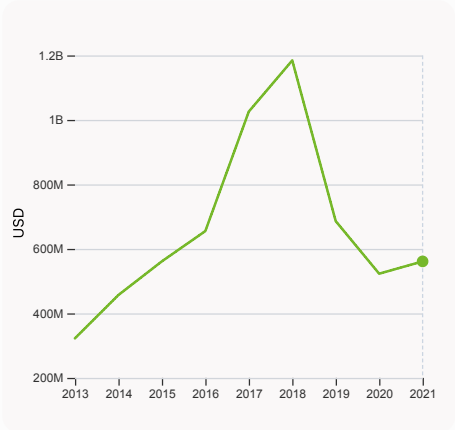
7.1.1 Intangible asset intensity, top 15, %

was equal to 73.01% in 2022, up by 1.79 percentage points from the year prior – and equivalent to an indicator rank of 14.



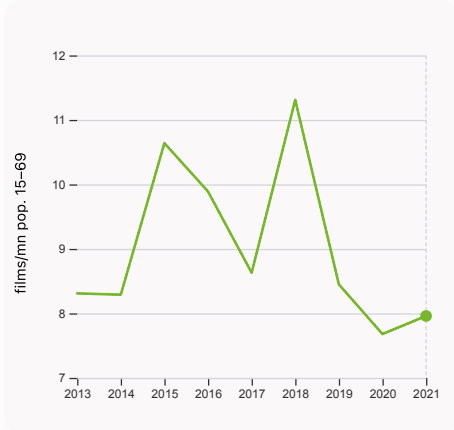
7.1.3 Global brand value, top 5,000

was equal to 33.342 bn USD in 2023, down by 0.11% from the year prior – and equivalent to an indicator rank of 13.



7.2.1 Cultural and creative services exports

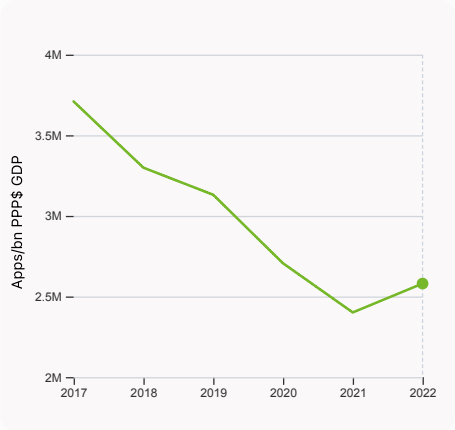
was equal to 561,243,000 USD in 2021, up by 7.29% from the year prior – and equivalent to an indicator rank of 54.



7.2.2 National feature films/mn pop. 15-69

was equal to 7.96 films/mn pop. 15-69 in 2021, up by 3.65% from the year prior – and equivalent to an indicator rank of 9.

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7.3.4 Mobile app creation/bn PPP\$ GDP

was equal to 2,580,254.76 Apps/bn PPP\$ GDP in 2022, up by 7.46% from the year prior – and equivalent to an indicator rank of 9.

Global Innovation Index 2023



→ Finland's innovation top performers

> 2.3.3 Global corporate R&D investors from Finland

Rank	Firm	Industry	R&D	R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
44	NOKIA	Technology Hardware & Equipment	4,141	8	19
724	WARTSILA	Industrial Engineering	226	10	5
841	KONE	Industrial Engineering	189	5	2
1184	TIETOEVRY	Software & Computer Services	127	-6	4

Source: European Commission's Joint Research Centre (<https://iri.jrc.ec.europa.eu/scoreboard/2022-eu-industrial-rd-investment-scoreboard>).

Note: European Commission's Joint Research Centre ranks the top 2,500 firms by R&D investment annually.

> 2.3.4 QS university ranking of Finland's top universities

Rank	University	Score
106	UNIVERSITY OF HELSINKI	57.80
116	AALTO UNIVERSITY	55.90
291	UNIVERSITY OF TURKU	35.80

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".

> 6.2.2 Top Unicorn Companies in Finland

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	RELEX	Supply chain, logistics, & delivery	Helsinki	6
2	AIVEN	Internet software & services	Helsinki	3
3	OURA	Health	Oulu	3

Source: CBInsights, Tracker – The Complete List of Unicorn Companies: <https://www.cbinsights.com/research-unicorn-companies>



> 7.1.1 Top 15 intangible-asset intensive companies in Finland

Rank	Firm	Intensity, %
1	NESTE OYJ	75.13
2	KONE OYJ	91.88
3	SAMPO OYJ	46.47

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 Finland with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	NOKIA	Electronics	7,825.6
2	NESTE	Oil & Gas	2,941.9
3	K GROUP	Retail	2,186.5

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

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GII 2023 rank

Finland

6

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
9	5	High	EUR	5.5	324.8	58,659.0
Score / Value Rank				Score / Value Rank		
Institutions				Business sophistication		
85.43				65.84		
1.1 Institutional environment				5.1 Knowledge workers		
84.08				66.611		
1.1.1 Operational stability for businesses*				5.1.1 Knowledge-intensive employment, %		
77.113				47.415		
1.1.2 Government effectiveness*				5.1.2 Firms offering formal training, %		
90.94				50.219		
1.2 Regulatory environment				5.1.3 GERD performed by business, % GDP		
95.72				2.111		
1.2.1 Regulatory quality*				5.1.4 GERD financed by business, %		
91.43				56.020		
1.2.2 Rule of law*				5.1.5 Females employed w/advanced degrees, %		
100.01				26.415		
1.2.3 Cost of redundancy dismissal				5.2 Innovation linkages		
10.131				74.25		
1.3 Business environment				5.2.1 University-industry R&D collaboration†		
76.613				81.514		
1.3.1 Policies for doing business†				5.2.2 State of cluster development†		
79.68				69.223		
1.3.2 Entrepreneurship policies and culture†				5.2.3 GERD financed by abroad, % GDP		
73.612				0.47		
Human capital and research				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP		
60.05				0.212		
2.1 Education				5.2.5 Patent families/bn PPP\$ GDP		
69.28				6.11		
2.1.1 Expenditure on education, % GDP				5.3 Knowledge absorption		
6.414				56.67		
2.1.2 Government funding/pupil, secondary, % GDP/cap				5.3.1 Intellectual property payments, % total trade		
24.224				1.036		
2.1.3 School life expectancy, years				5.3.2 High-tech imports, % total trade		
19.17				7.478		
2.1.4 PISA scales in reading, maths and science				5.3.3 ICT services imports, % total trade		
516.48				4.84		
2.1.5 Pupil-teacher ratio, secondary				5.3.4 FDI net inflows, % GDP		
12.658				4.328		
2.2 Tertiary education				5.3.5 Research talent, % in businesses		
46.019				62.010		
2.2.1 Tertiary enrolment, % gross				Knowledge and technology outputs		
95.07				61.64		
2.2.2 Graduates in science and engineering, %				6.1 Knowledge creation		
27.928				61.37		
2.2.3 Tertiary inbound mobility, %				6.1.1 Patents by origin/bn PPP\$ GDP		
8.032				12.36		
2.3 Research and development (R&D)				6.1.2 PCT patents by origin/bn PPP\$ GDP		
64.79				5.41		
2.3.1 Researchers, FTE/mn pop.				6.1.3 Utility models by origin/bn PPP\$ GDP		
7,870.63				0.824		
2.3.2 Gross expenditure on R&D, % GDP				6.1.4 Scientific and technical articles/bn PPP\$ GDP		
3.010				n/an/a		
2.3.3 Global corporate R&D investors, top 3, mn US\$				6.1.5 Citable documents H-index		
73.211				43.019		
2.3.4 QS university ranking, top 3*				6.2 Knowledge impact		
50.518				55.58		
Infrastructure				6.2.1 Labor productivity growth, %		
69.21				-0.5108		
3.1 Information and communication technologies (ICTs)				6.2.2 Unicorn valuation, % GDP		
94.74				4.410		
3.1.1 ICT access*				6.2.3 Software spending, % GDP		
89.128				0.614		
3.1.2 ICT use*				6.2.4 High-tech manufacturing, %		
96.17				38.128		
3.1.3 Government's online service*				6.3 Knowledge diffusion		
98.22				68.11		
3.1.4 E-participation*				6.3.1 Intellectual property receipts, % total trade		
95.36				3.28		
3.2 General infrastructure				6.3.2 Production and export complexity		
60.57				81.914		
3.2.1 Electricity output, GWh/mn pop.				6.3.3 High-tech exports, % total trade		
12,939.411				4.739		
3.2.2 Logistics performance*				6.3.4 ICT services exports, % total trade		
95.52				13.01		
3.2.3 Gross capital formation, % GDP				6.3.5 ISO 9001 quality/bn PPP\$ GDP		
24.166				9.829		
3.3 Ecological sustainability				Creative outputs		
52.418				47.516		
3.3.1 GDP/unit of energy use				7.1 Intangible assets		
7.789				50.126		
3.3.2 Environmental performance*				7.1.1 Intangible asset intensity, top 15, %		
97.63				73.014		
3.3.3 ISO 14001 environment/bn PPP\$ GDP				7.1.2 Trademarks by origin/bn PPP\$ GDP		
5.519				38.460		
Market sophistication				7.1.3 Global brand value, top 5,000		
58.712				11.813		
4.1 Credit				7.1.4 Industrial designs by origin/bn PPP\$ GDP		
68.76				3.629		
4.1.1 Finance for startups and scaleups†				7.2 Creative goods and services		
100.01				31.030		
4.1.2 Domestic credit to private sector, % GDP				7.2.1 Cultural and creative services exports, % total trade		
100.230				0.554		
4.1.3 Loans from microfinance institutions, % GDP				7.2.2 National feature films/mn pop. 15-69		
n/an/a				8.09		
4.2 Investment				7.2.3 Entertainment and media market/th pop. 15-69		
42.314				56.112		
4.2.1 Market capitalization, % GDP				7.2.4 Creative goods exports, % total trade		
n/an/a				0.659		
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP				7.3 Online creativity		
0.319				58.914		
4.2.3 VC recipients, deals/bn PPP\$ GDP				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69		
0.29				33.821		
4.2.4 VC received, value, % GDP				7.3.2 Country-code TLDs/th pop. 15-69		
0.015				42.418		
4.3 Trade, diversification, and market scale				7.3.3 GitHub commits/mn pop. 15-69		
65.029				78.27		
4.3.1 Applied tariff rate, weighted avg., %				7.3.4 Mobile app creation/bn PPP\$ GDP		
1.520				81.19		
4.3.2 Domestic industry diversification						
97.613						
4.3.3 Domestic market scale, bn PPP\$						
324.857						



→ Data availability

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



> Finland has missing data for two indicators and outdated data for five indicators.

> Missing data for Finland

Code	Indicator name	Economy Year	Model Year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2021	International Monetary Fund, Financial Access Survey (FAS)
4.2.1	Market capitalization, % GDP	n/a	2020	World Federation of Exchanges; World Bank

> Outdated data for Finland

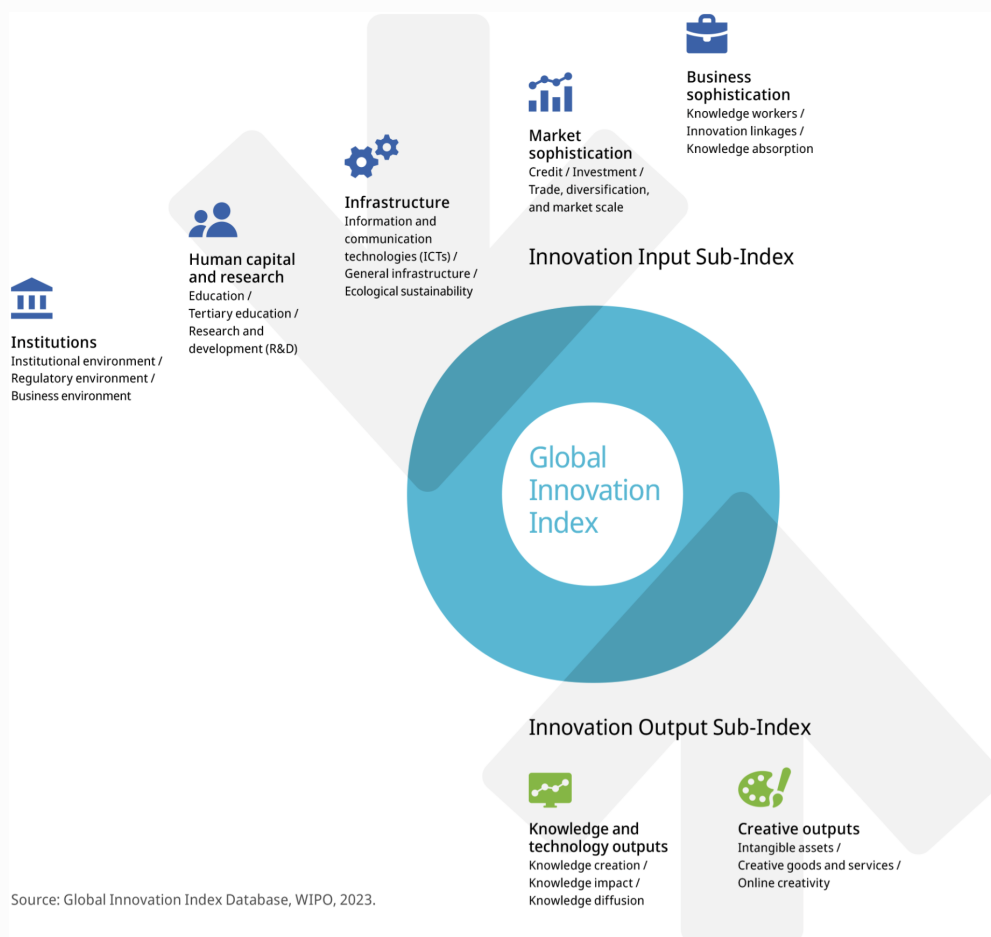
Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	2021	2022	Global Entrepreneurship Monitor
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics
4.1.1	Finance for startups and scaleups	2021	2022	Global Entrepreneurship Monitor
4.3.2	Domestic industry diversification	2018	2020	United Nations Industrial Development Organization
6.2.4	High-tech manufacturing, %	2018	2020	United Nations Industrial Development Organization

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.