

Global Innovation Index 2023

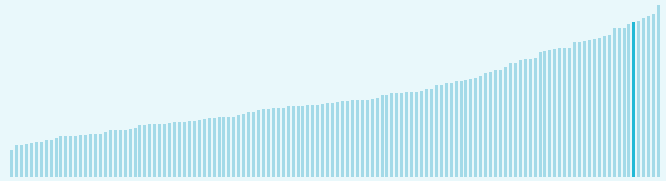


The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**

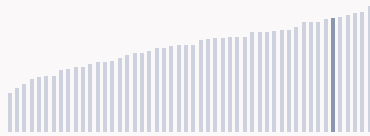
Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation.**

Finland ranking in the Global Innovation Index 2023

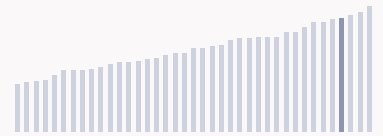
> Finland ranks **6th** among the 132 economies featured in the GII 2023.



> 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.

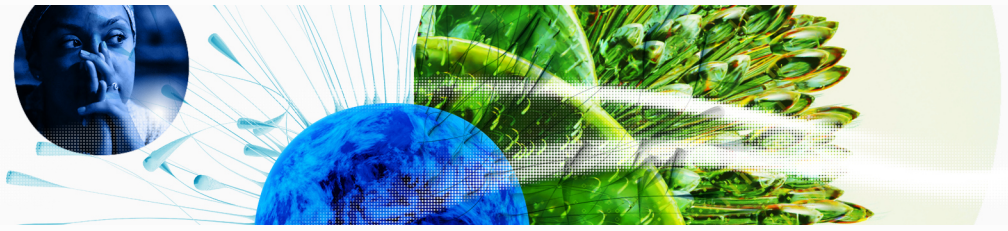
	GII Position	Innovation Inputs	Innovation Outputs
2020	7th	8th	8th
2021	7th	6th	9th
2022	9th	6th	9th
2023	6th	5th	9th

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.

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→ Expected vs. observed innovation performance

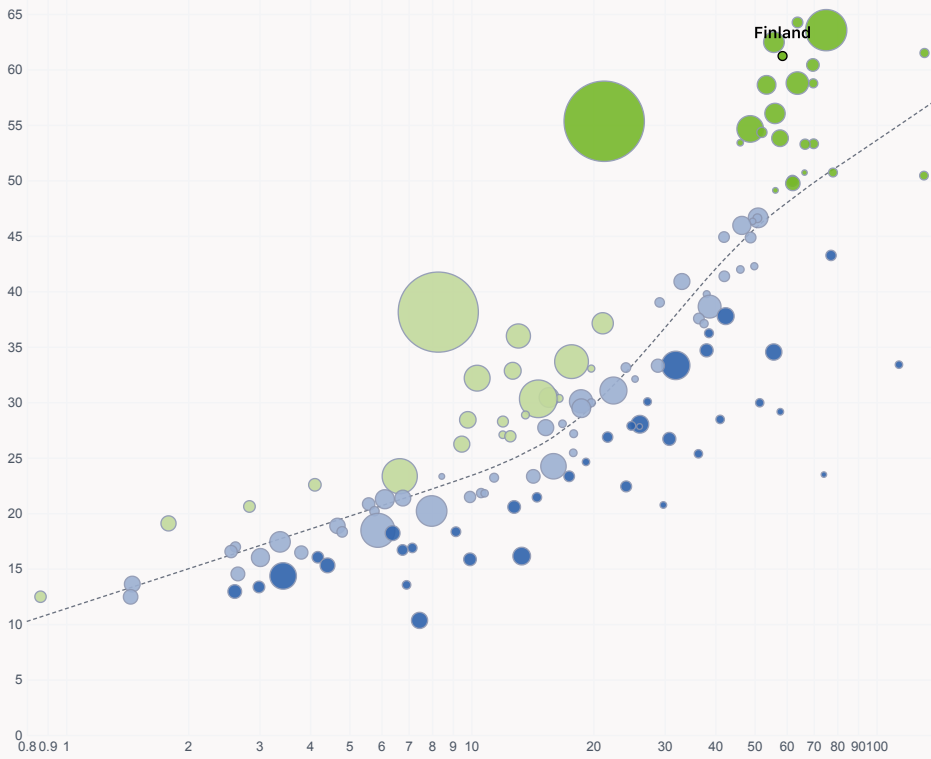
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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



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

> Innovation overperformers relative to their economic development

↑ GII Score



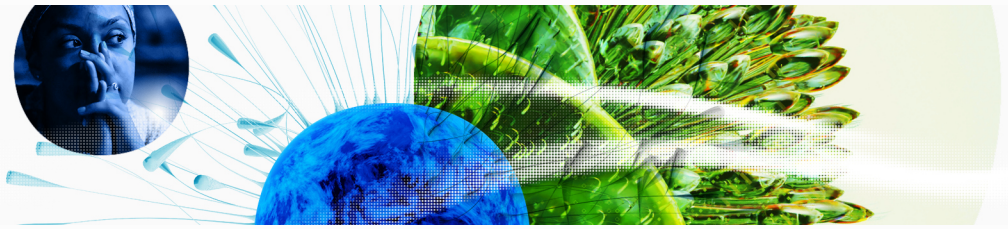
- Innovation leader
- Performing above expectations for level of development
- Performing at expectations for level of development
- Performing below expectations for level of development

Size legend (Population)



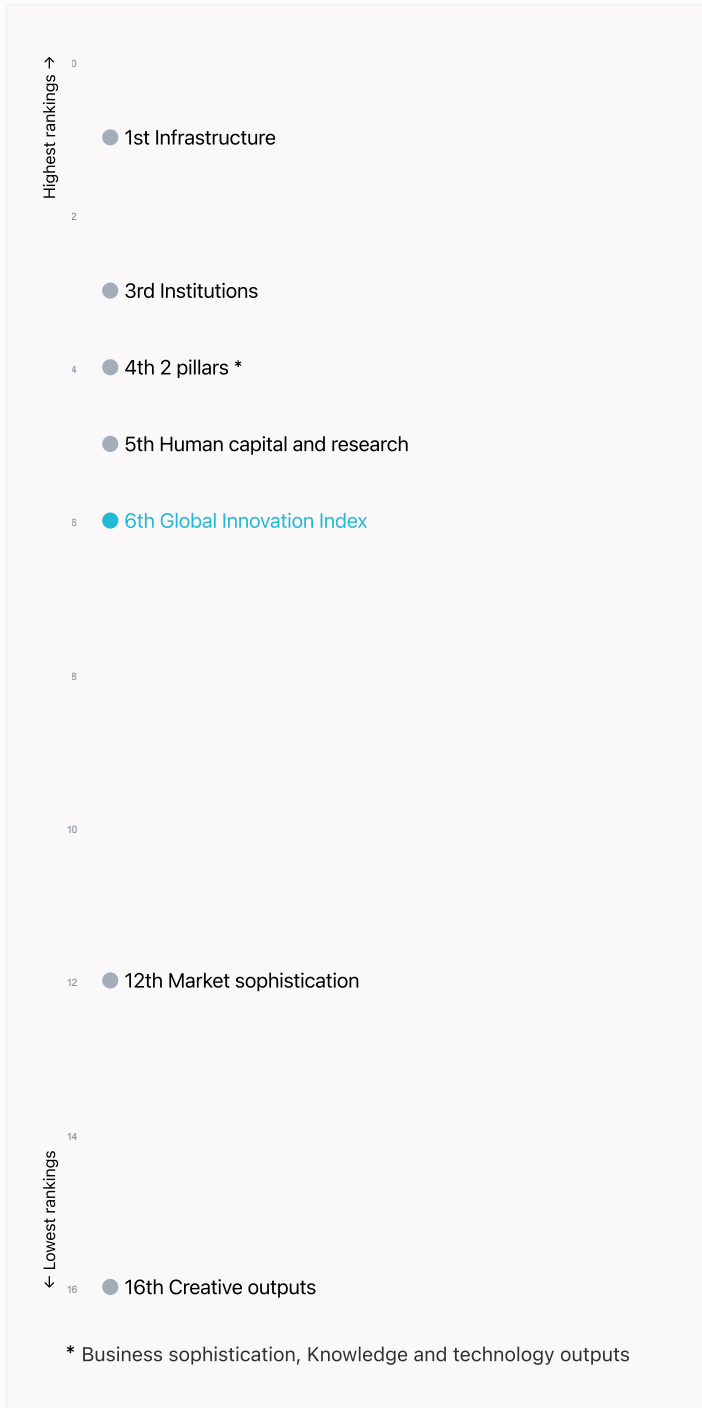
→ GDP per capita, PPP logarithmic scale (thousands of \$)

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→ 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



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

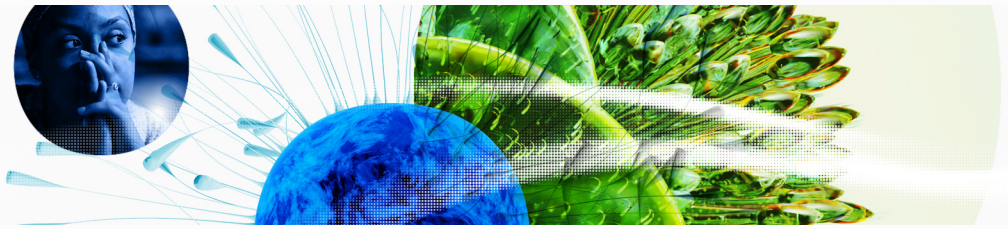
> Lowest rankings



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](#).

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→ 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.

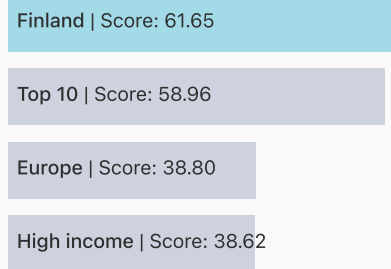


> Europe

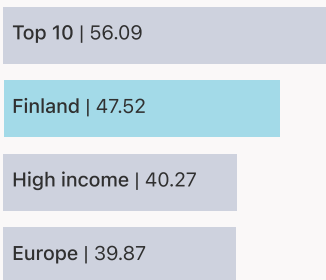
Finland performs above the regional average in all the pillars.



Knowledge and technology outputs



Creative outputs



Business sophistication



Market sophistication



Human capital and research

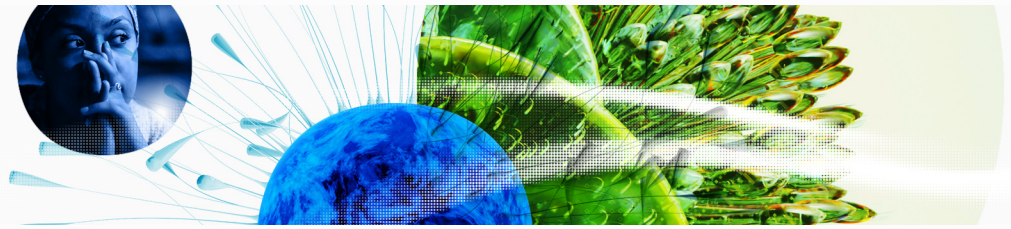


Infrastructure



Institutions





→ Innovation strengths and weaknesses in Finland

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



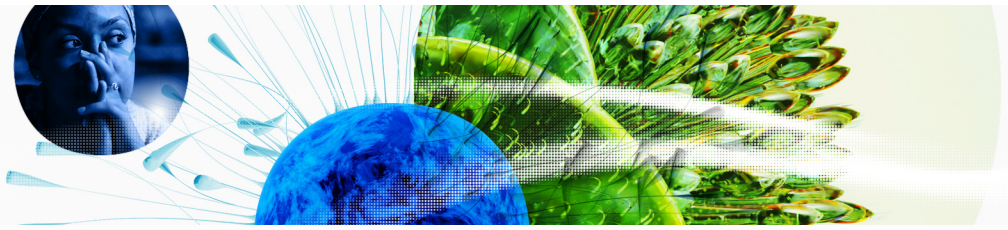
> Finland's main innovation strengths are **Finance for startups and scaleups (rank 1)**, **ICT services exports, % total trade (rank 1)** and **Patent families/bn PPP\$ GDP (rank 1)**.

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			

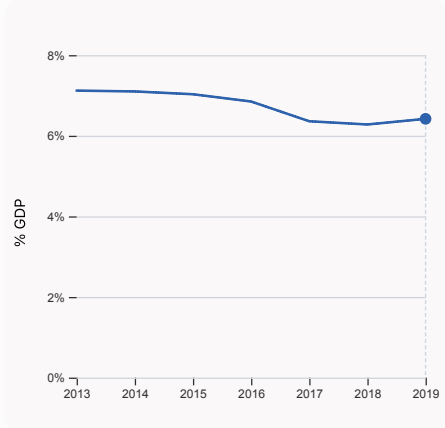
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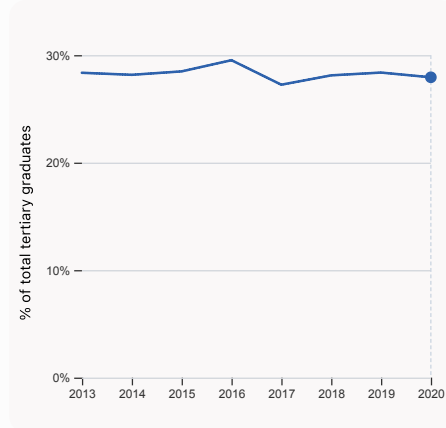
→ Finland's innovation system

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

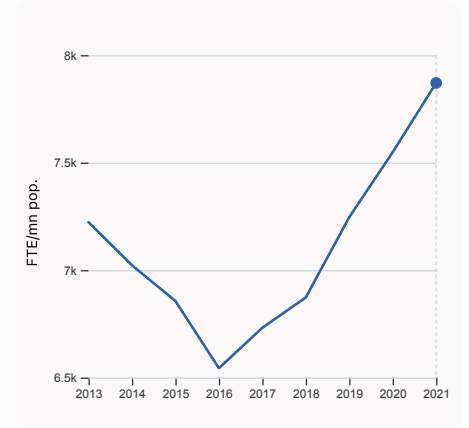
> Innovation inputs in Finland



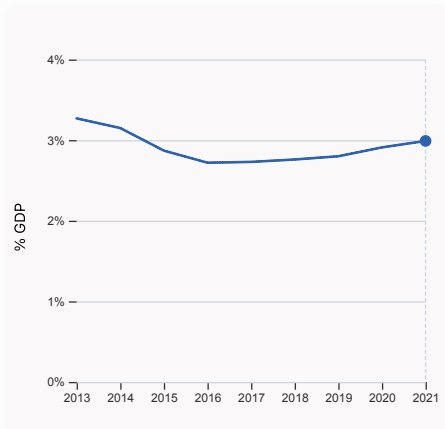
2.1.1 Expenditure on education, % GDP
was equal to 6.42% GDP in 2019, up by 0.14 percentage points from the year prior – and equivalent to an indicator rank of 14.



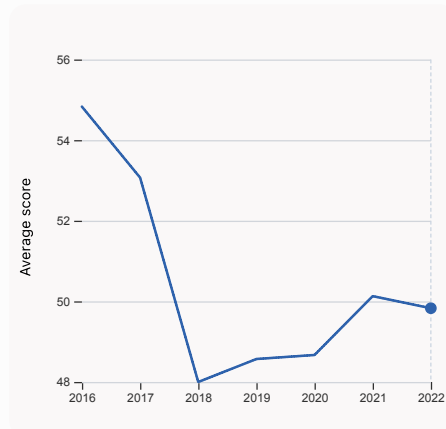
2.2.2 Graduates in science and engineering, %
was equal to 27.94% of total tertiary graduates in 2020, down by 0.44 percentage points from the year prior – and equivalent to an indicator rank of 28.



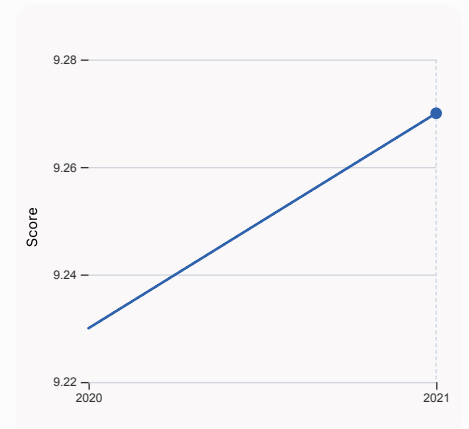
2.3.1 Researchers, FTE/mn pop.
was equal to 7,870.55 FTE/mn pop. in 2021, up by 4.27% from the year prior – and equivalent to an indicator rank of 3.



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.

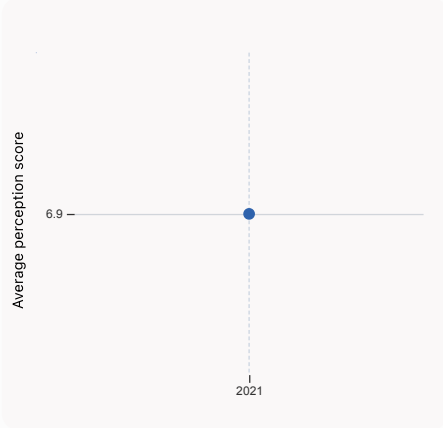
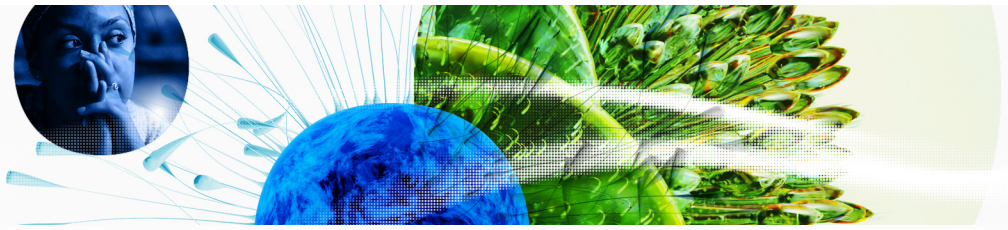


2.3.4 QS university ranking, top 3
was equal to an average score of 49.83 for the top 3 universities in 2022, down by 0.6% from the year prior – and equivalent to an indicator rank of 18.

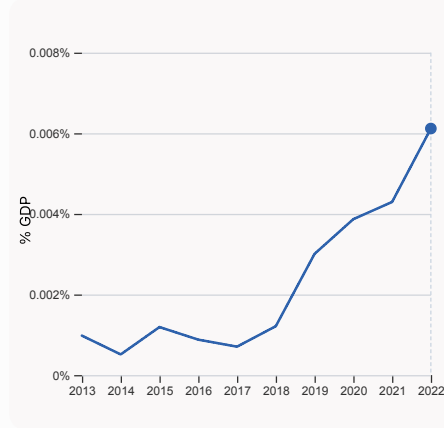


3.1.1 ICT access
was equal to a score of 9.27 in 2021, up by 0.43% from the year prior – and equivalent to an indicator rank of 28.

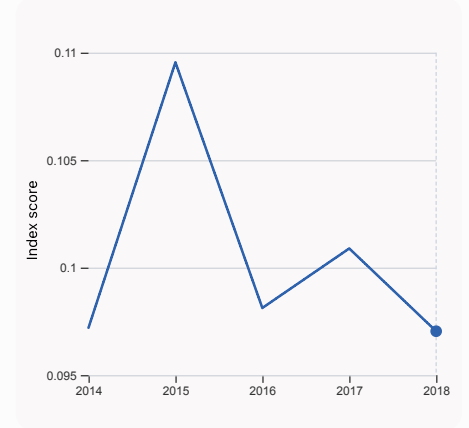
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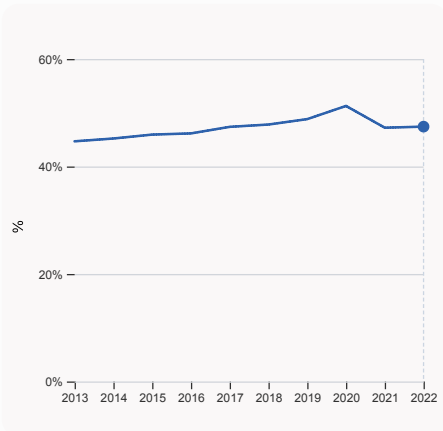
4.1.1 Finance for startups and scaleups was equal to an average perception score of 6.9 in 2021, equivalent to an indicator rank of 1.



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.

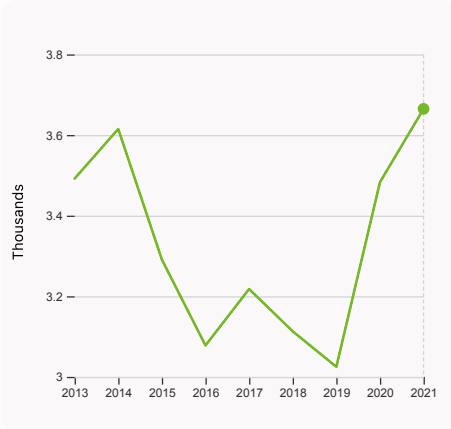


5.1.1 Knowledge-intensive employment, % was equal to 47.42% in 2022, up by 0.2 percentage points from the year prior – and equivalent to an indicator rank of 15.

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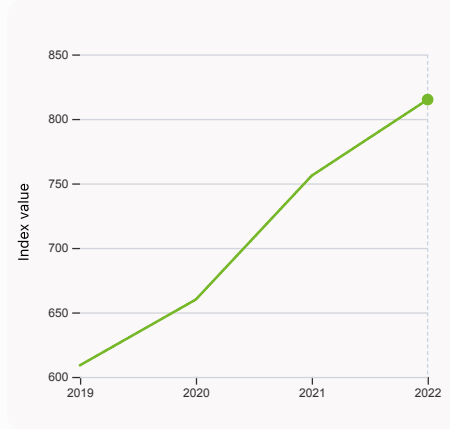


> Innovation outputs in Finland



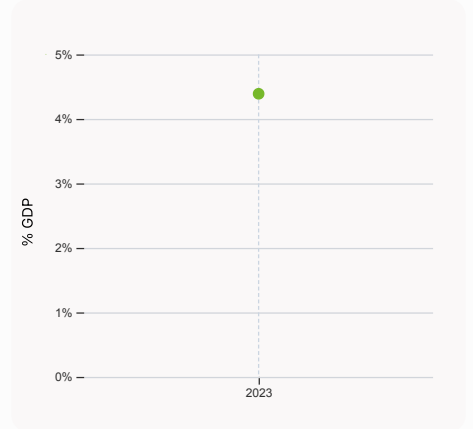
6.1.1 Patents by origin

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



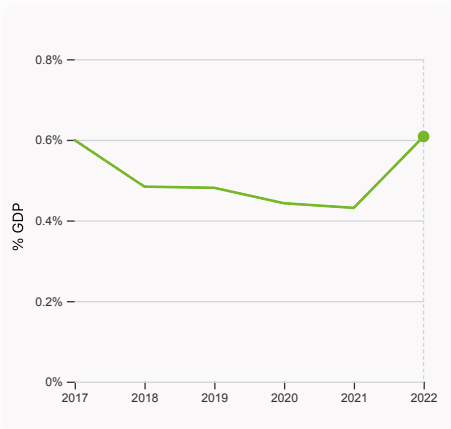
6.1.5 Citable documents H-index

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.



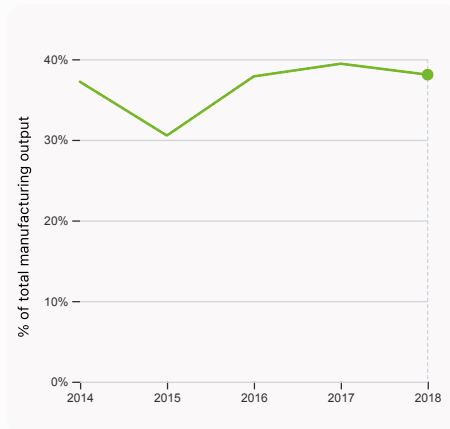
6.2.2 Unicorn valuation, % GDP

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



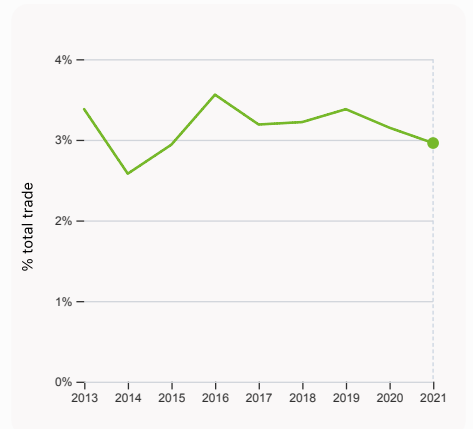
6.2.3 Software spending, % GDP

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

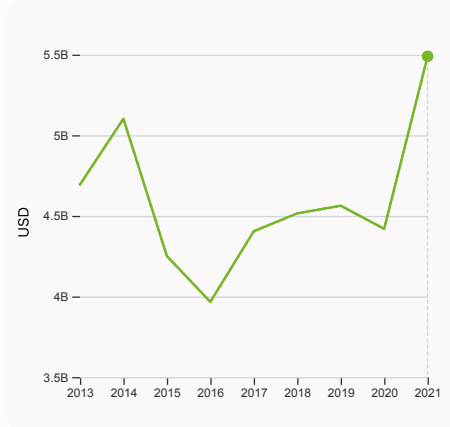
was equal to 2.96% total trade in 2021, down by 0.19 percentage points from the year prior – and equivalent to an indicator rank of 8.

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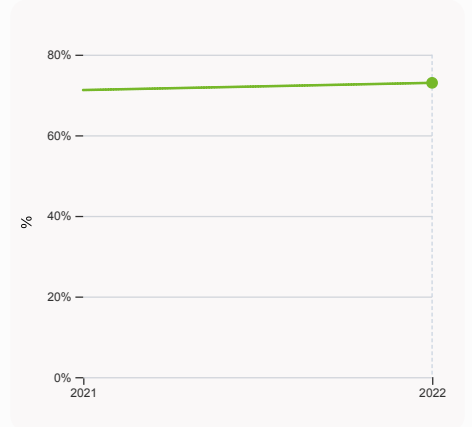
6.3.2 Production and export complexity

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.



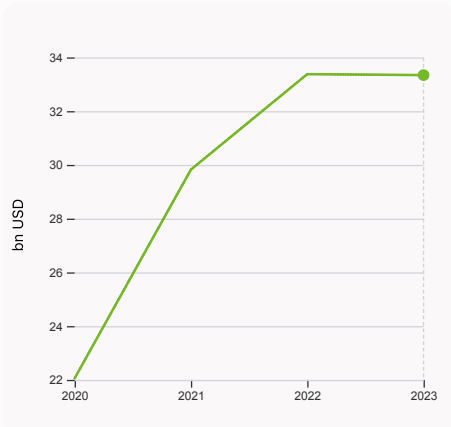
6.3.3 High-tech exports

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.



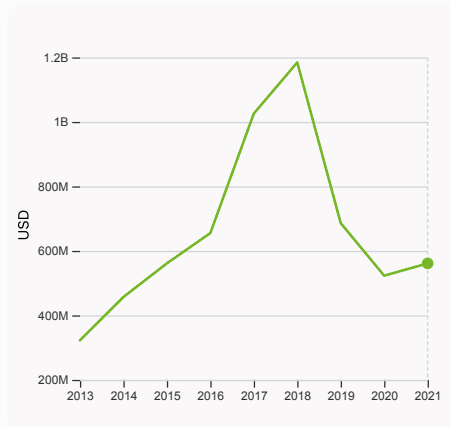
7.1.1 Intangible asset intensity, top 15, %

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.



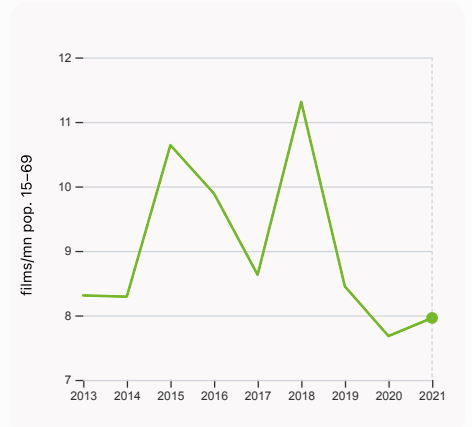
7.1.3 Global brand value, top 5,000

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

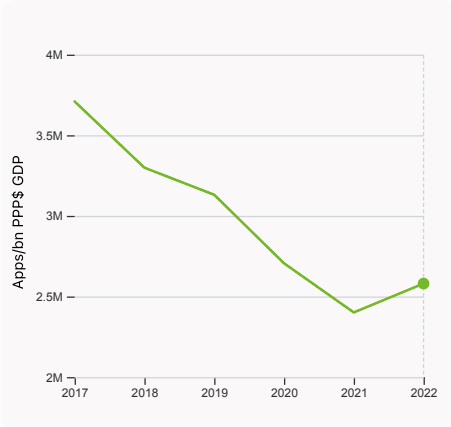
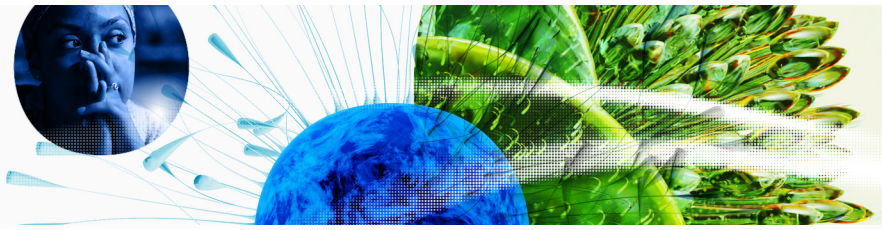
was equal to 561,243,000 USD in 2021, up by 7.29% from the year prior – and equivalent to an indicator rank of 54.



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.

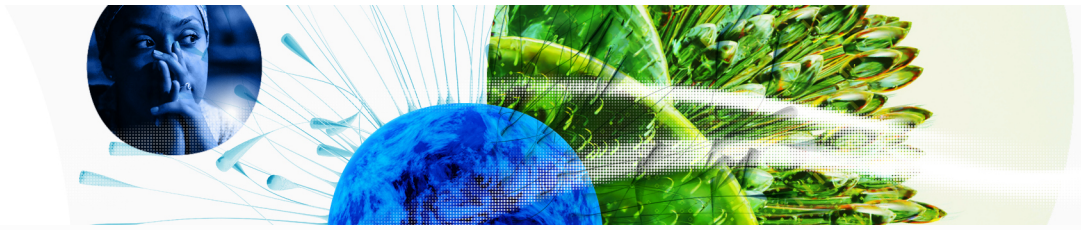
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7.3.4 Mobile app creation/bn PPP\$ GDP

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.

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→ 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	TIETOEVRVY	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

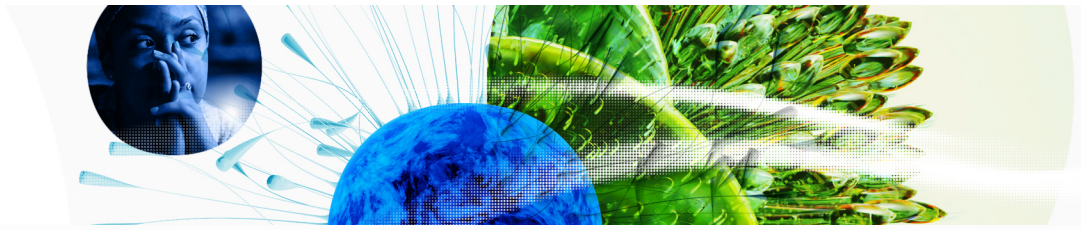
Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2023>).

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

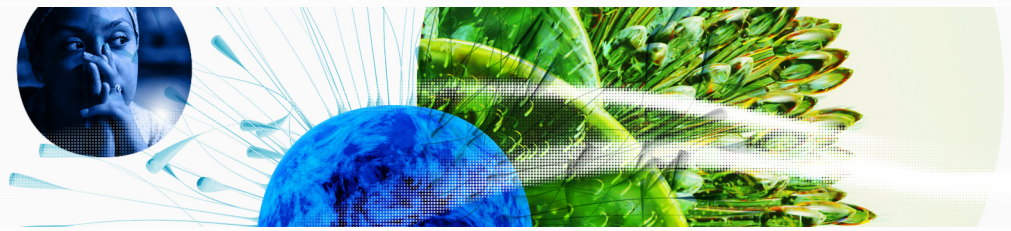
Source: Brand Finance (<https://brandirectory.com/reports/gift-2022>).
Note: Brand Finance only provides within economy ranks.

> 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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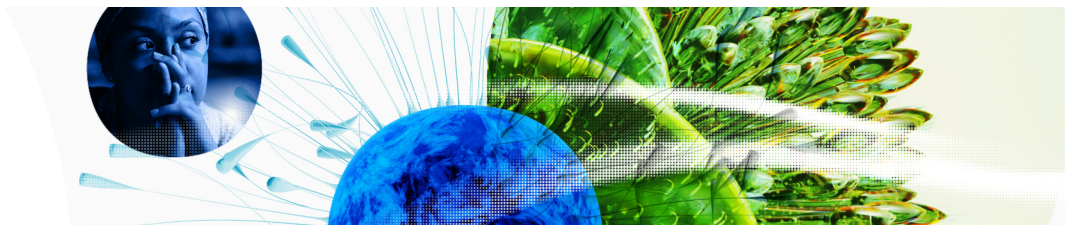
GII 2023 rank

6

Finland

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 85.4 3 ●◆				Business sophistication 65.8 4 ●◆		
1.1 Institutional environment 84.0 8				5.1 Knowledge workers 66.6 11		
1.1.1 Operational stability for businesses* 77.1 13				5.1.1 Knowledge-intensive employment, % 47.4 15		
1.1.2 Government effectiveness* 90.9 4 ●◆				5.1.2 Firms offering formal training, % 50.2 19		
1.2 Regulatory environment 95.7 2 ●◆				5.1.3 GERD performed by business, % GDP 2.1 11		
1.2.1 Regulatory quality* 91.4 3 ●◆				5.1.4 GERD financed by business, % 56.0 20		
1.2.2 Rule of law* 100.0 1 ●◆				5.1.5 Females employed w/advanced degrees, % 26.4 15		
1.2.3 Cost of redundancy dismissal 10.1 31				5.2 Innovation linkages 74.2 5 ◆		
1.3 Business environment 76.6 13				5.2.1 University-industry R&D collaboration+ 81.5 14		
1.3.1 Policies for doing business* 79.6 8				5.2.2 State of cluster development+ 69.2 23		
1.3.2 Entrepreneurship policies and culture* 73.6 12				5.2.3 GERD financed by abroad, % GDP 0.4 7 ◆		
Human capital and research 60.0 5				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP 0.2 12		
2.1 Education 69.2 8				5.2.5 Patent families/bn PPP\$ GDP 6.1 1 ●◆		
2.1.1 Expenditure on education, % GDP 6.4 14				5.3 Knowledge absorption 56.6 7		
2.1.2 Government funding/pupil, secondary, % GDP/cap 24.2 24				5.3.1 Intellectual property payments, % total trade 1.0 36		
2.1.3 School life expectancy, years 19.1 7 ◆				5.3.2 High-tech imports, % total trade 7.4 78 ○		
2.1.4 PISA scales in reading, maths and science 516.4 8				5.3.3 ICT services imports, % total trade 4.8 4 ●◆		
2.1.5 Pupil-teacher ratio, secondary 12.6 58 ○				5.3.4 FDI net inflows, % GDP 4.3 28		
2.2 Tertiary education 46.0 19				5.3.5 Research talent, % in businesses 62.0 10		
2.2.1 Tertiary enrolment, % gross 95.0 7				Knowledge and technology outputs 61.6 4 ●◆		
2.2.2 Graduates in science and engineering, % 27.9 28				6.1 Knowledge creation 61.3 7		
2.2.3 Tertiary inbound mobility, % 8.0 32				6.1.1 Patents by origin/bn PPP\$ GDP 12.3 6		
2.3 Research and development (R&D) 64.7 9				6.1.2 PCT patents by origin/bn PPP\$ GDP 5.4 1 ●◆		
2.3.1 Researchers, FTE/mn pop. 7,870.6 3 ●◆				6.1.3 Utility models by origin/bn PPP\$ GDP 0.8 24		
2.3.2 Gross expenditure on R&D, % GDP 3.0 10				6.1.4 Scientific and technical articles/bn PPP\$ GDP n/a n/a		
2.3.3 Global corporate R&D investors, top 3, mn US\$ 73.2 11				6.1.5 Citable documents H-index 43.0 19		
2.3.4 QS university ranking, top 3* 50.5 18				6.2 Knowledge impact 55.5 8		
Infrastructure 69.2 1 ●◆				6.2.1 Labor productivity growth, % -0.5 108 ○		
3.1 Information and communication technologies (ICTs) 94.7 4 ●◆				6.2.2 Unicorn valuation, % GDP 4.4 10		
3.1.1 ICT access* 89.1 28				6.2.3 Software spending, % GDP 0.6 14		
3.1.2 ICT use* 96.1 7				6.2.4 High-tech manufacturing, % 38.1 28		
3.1.3 Government's online service* 98.2 2 ●◆				6.3 Knowledge diffusion 68.1 1 ●◆		
3.1.4 E-participation* 95.3 6				6.3.1 Intellectual property receipts, % total trade 3.2 8		
3.2 General infrastructure 60.5 7 ◆				6.3.2 Production and export complexity 81.9 14		
3.2.1 Electricity output, GWh/mn pop. 12,939.4 11				6.3.3 High-tech exports, % total trade 4.7 39		
3.2.2 Logistics performance* 95.5 2 ●◆				6.3.4 ICT services exports, % total trade 13.0 1 ●◆		
3.2.3 Gross capital formation, % GDP 24.1 66 ○				6.3.5 ISO 9001 quality/bn PPP\$ GDP 9.8 29		
3.3 Ecological sustainability 52.4 18				Creative outputs 47.5 16		
3.3.1 GDP/unit of energy use 7.7 89 ○				7.1 Intangible assets 50.1 26		
3.3.2 Environmental performance* 97.6 3 ●◆				7.1.1 Intangible asset intensity, top 15, % 73.0 14		
3.3.3 ISO 14001 environment/bn PPP\$ GDP 5.5 19 ◆				7.1.2 Trademarks by origin/bn PPP\$ GDP 38.4 60 ○		
Market sophistication 58.7 12				7.1.3 Global brand value, top 5,000 11.8 13		
4.1 Credit 68.7 6				7.1.4 Industrial designs by origin/bn PPP\$ GDP 3.6 29		
4.1.1 Finance for startups and scaleups+ 100.0 1 ●◆				7.2 Creative goods and services 31.0 30		
4.1.2 Domestic credit to private sector, % GDP 100.2 30				7.2.1 Cultural and creative services exports, % total trade 0.5 54 ○		
4.1.3 Loans from microfinance institutions, % GDP n/a n/a				7.2.2 National feature films/mn pop. 15-69 8.0 9		
4.2 Investment 42.3 14				7.2.3 Entertainment and media market/th pop. 15-69 56.1 12		
4.2.1 Market capitalization, % GDP n/a n/a				7.2.4 Creative goods exports, % total trade 0.6 59 ○		
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP 0.3 19				7.3 Online creativity 58.9 14		
4.2.3 VC recipients, deals/bn PPP\$ GDP 0.2 9				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69 33.8 21		
4.2.4 VC received, value, % GDP 0.0 15				7.3.2 Country-code TLDs/th pop. 15-69 42.4 18		
4.3 Trade, diversification, and market scale 65.0 29				7.3.3 GitHub commits/mn pop. 15-69 78.2 7		
4.3.1 Applied tariff rate, weighted avg., % 1.5 20 ○				7.3.4 Mobile app creation/bn PPP\$ GDP 81.1 9		
4.3.2 Domestic industry diversification 97.6 13						
4.3.3 Domestic market scale, bn PPP\$ 324.8 57 ○						

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 Finland.



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

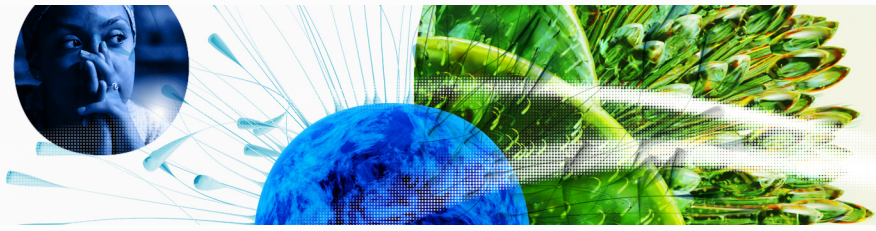
> Missing data for Finland

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

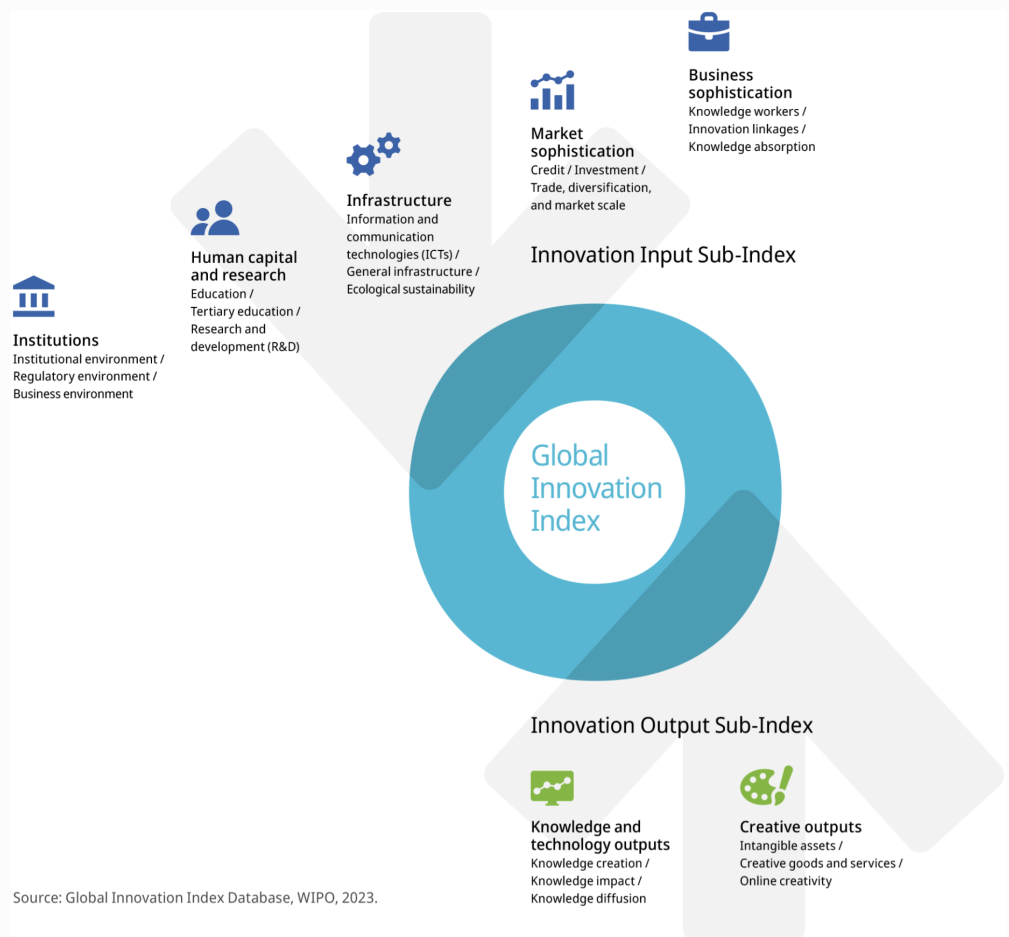
Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	2021	2022	Global Entrepreneurship Monitor
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics
4.1.1	Finance for startups and scaleups	2021	2022	Global Entrepreneurship Monitor
4.3.2	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.