

Global Innovation Index 2023

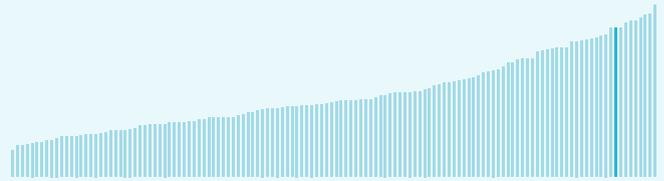


The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**

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

Denmark ranking in the Global Innovation Index 2023

> Denmark ranks **9th** among the 132 economies featured in the GII 2023.



> Denmark ranks **9th** among the 50 high-income group economies.



> Denmark ranks **7th** among the 39 economies in Europe.



> Denmark GII Ranking (2020-2023)

The table shows the rankings of Denmark 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 Denmark in the GII 2023 is between ranks 8 and 10.

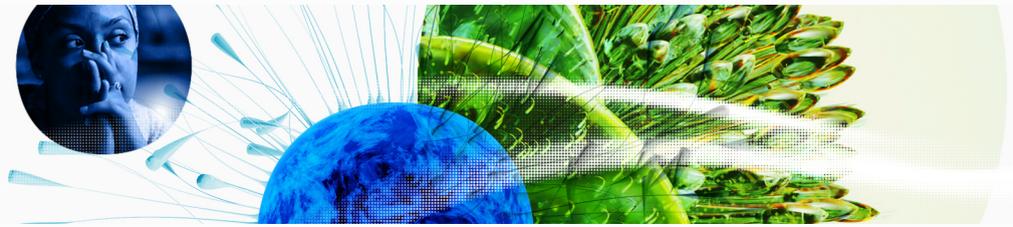
	GII Position	Innovation Inputs	Innovation Outputs
2020	6th	5th	9th
2021	9th	5th	11th
2022	10th	8th	10th
2023	9th	7th	10th

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

This year Denmark ranks 7th in innovation inputs. This position is higher than last year.

Denmark ranks 10th in innovation outputs. This position is the same as last year.

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→ Expected vs. observed innovation performance

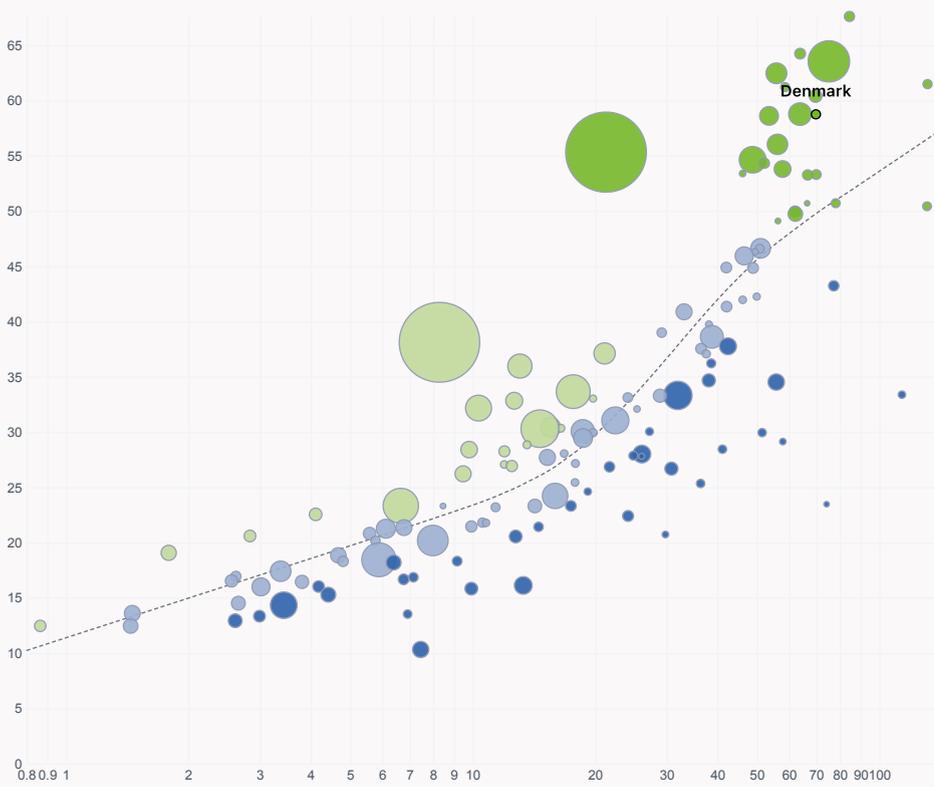
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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



> Denmark 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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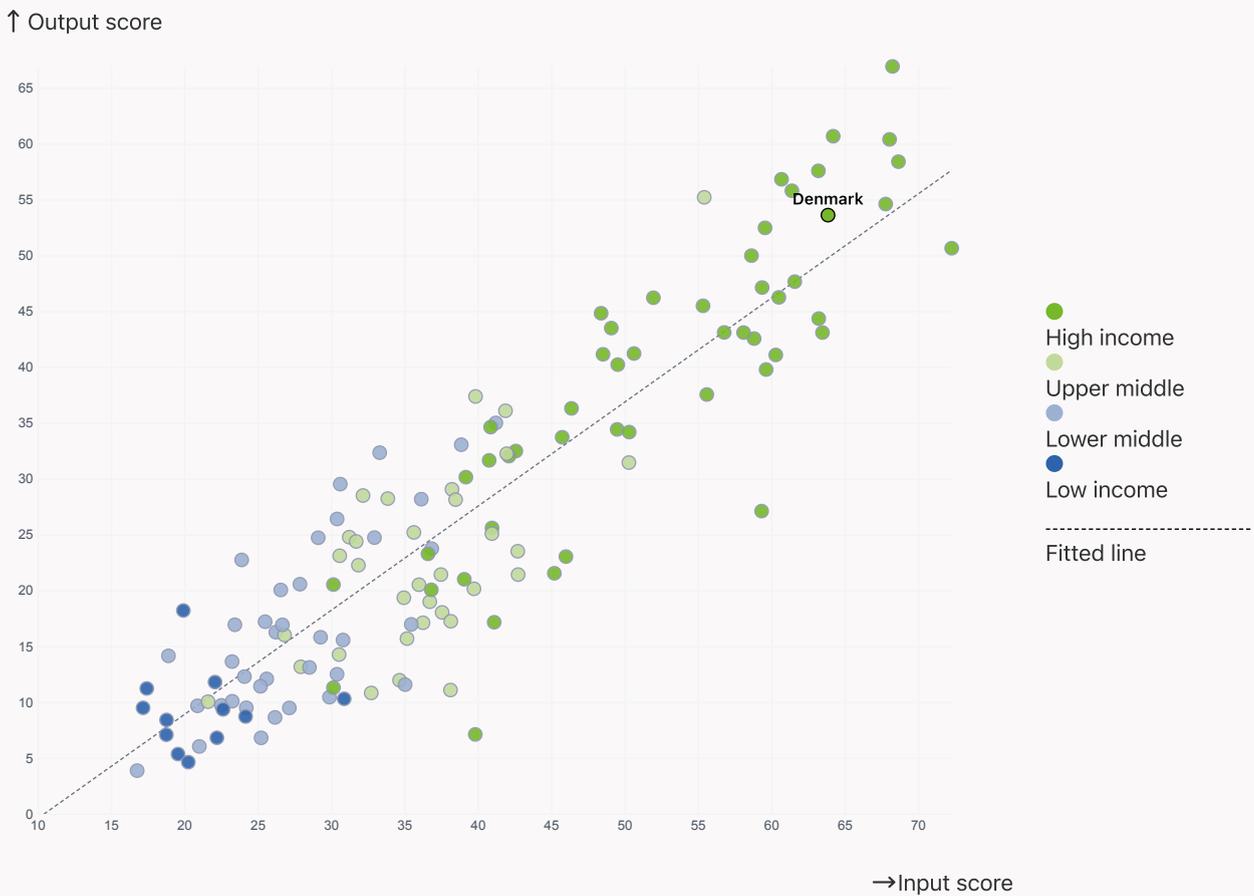
→ Effectively translating innovation investments into innovation outputs

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.

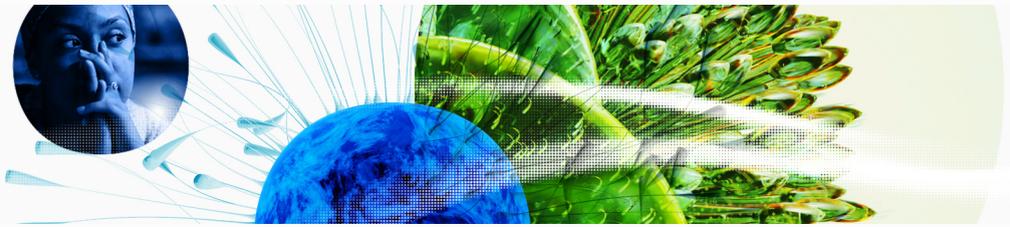


> Denmark produces more innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

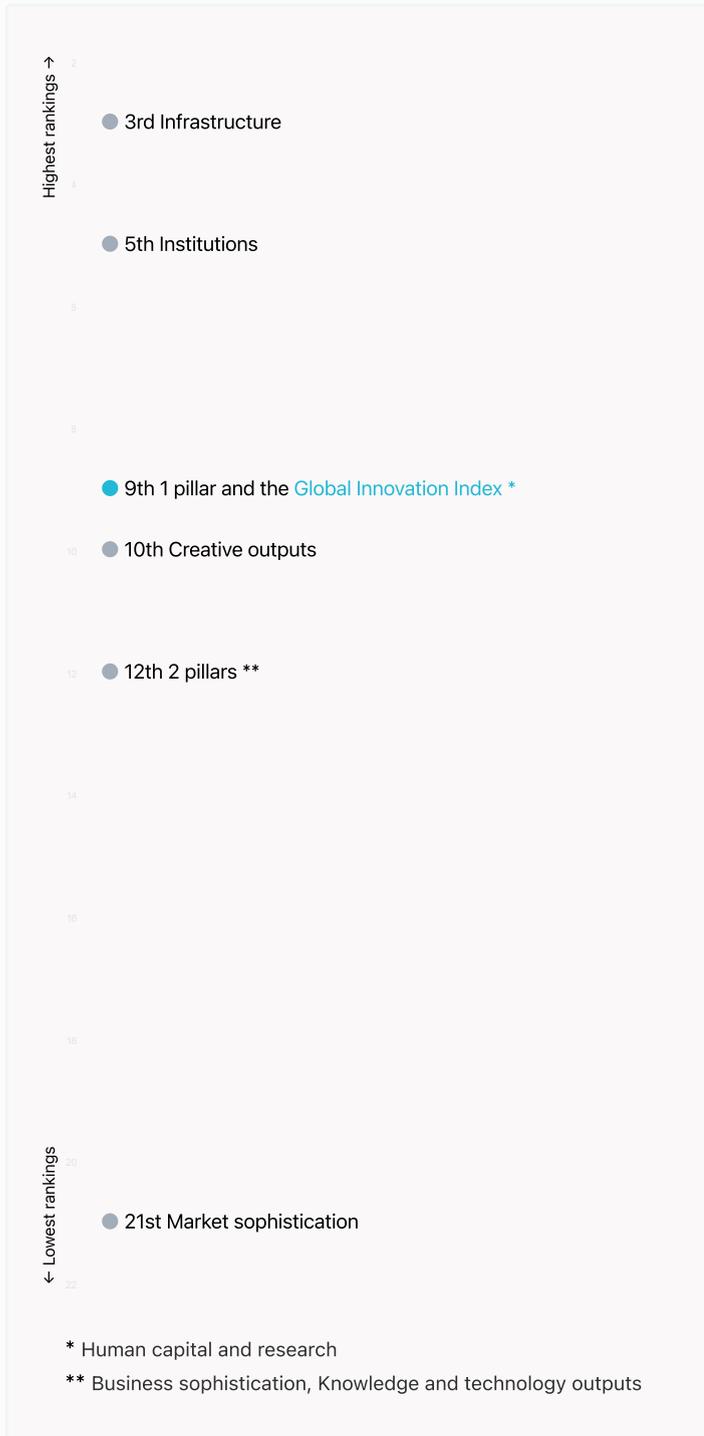


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→ Overview of Denmark's rankings in the seven areas of the GII in 2023

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



> Highest rankings



Denmark ranks highest in Infrastructure (3rd), Institutions (5th) and Human capital and research (9th).

> Lowest rankings



Denmark ranks lowest in Market sophistication (21st), Business sophistication, Knowledge and technology outputs (12th) and Creative outputs (10th).

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

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

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

> High-Income economies

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



> Europe

Denmark performs above the regional average in all the pillars.



Knowledge and technology outputs

Top 10 | Score: 58.96

Denmark | Score: 51.28

Europe | Score: 38.80

High income | Score: 38.62

Creative outputs

Top 10 | 56.09

Denmark | 55.91

High income | 40.27

Europe | 39.87

Business sophistication

Top 10 | 64.39

Denmark | 58.96

High income | 46.38

Europe | 44.61

Market sophistication

Top 10 | 61.93

Denmark | 52.81

High income | 46.42

Europe | 43.65

Human capital and research

Top 10 | 60.28

Denmark | 58.07

High income | 46.30

Europe | 44.05

Infrastructure

Denmark | 65.64

Top 10 | 62.83

High income | 55.85

Europe | 54.69

Institutions

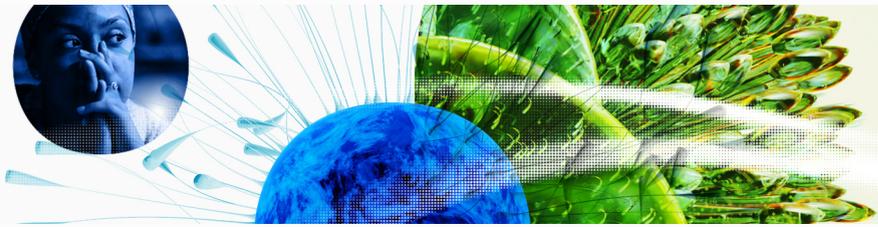
Denmark | 83.88

Top 10 | 79.85

High income | 68.16

Europe | 61.69

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→ Innovation strengths and weaknesses in Denmark

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



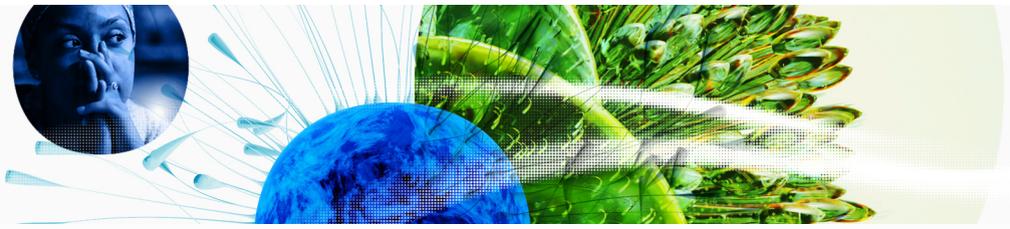
> Denmark's main innovation strengths are **Country-code TLDs/th pop. 15-69 (rank 1)**, **Environmental performance (rank 1)** and **ICT use (rank 2)**.

Strengths

Weaknesses

Rank	Code	Indicator name	Rank	Code	Indicator name
1	7.3.2	Country-code TLDs/th pop. 15-69	100	5.3.2	High-tech imports, % total trade
1	3.3.2	Environmental performance	97	5.3.4	FDI net inflows, % GDP
2	3.1.2	ICT use	83	6.2.1	Labor productivity growth, %
2	6.1.4	Scientific and technical articles/bn PPP\$ GDP	81	1.2.3	Cost of redundancy dismissal
3	7.1.1	Intangible asset intensity, top 15, %	75	7.1.2	Trademarks by origin/bn PPP\$ GDP
3	7.2.3	Entertainment and media market/th pop. 15-69	63	3.2.3	Gross capital formation, % GDP
3	1.1.2	Government effectiveness	55	2.2.2	Graduates in science and engineering, %
3	3.2.2	Logistics performance	50	4.3.2	Domestic industry diversification
3	1.2.2	Rule of law	49	5.3.1	Intellectual property payments, % total trade
4	3.1.3	Government's online service	42	6.1.3	Utility models by origin/bn PPP\$ GDP
4	2.3.1	Researchers, FTE/mn pop.			
5	1.2.1	Regulatory quality			

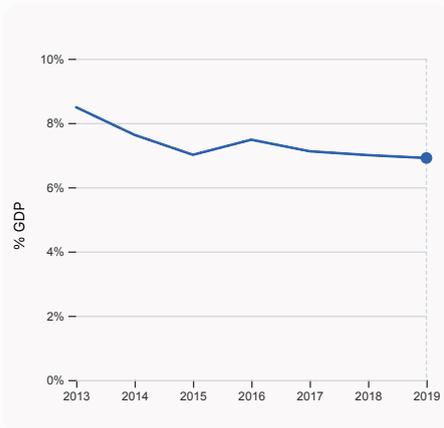
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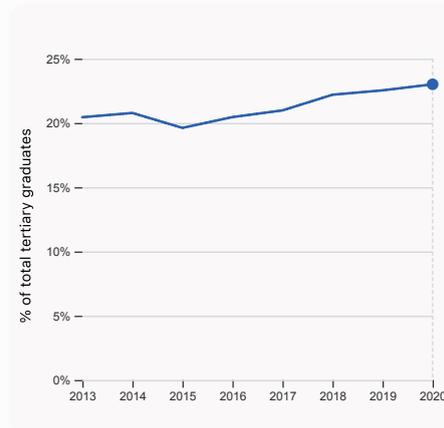
→ Denmark's innovation system

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

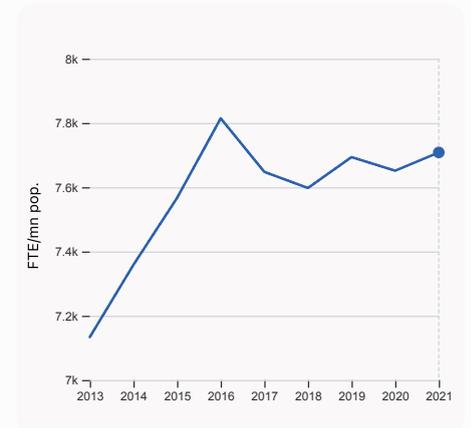
> Innovation inputs in Denmark



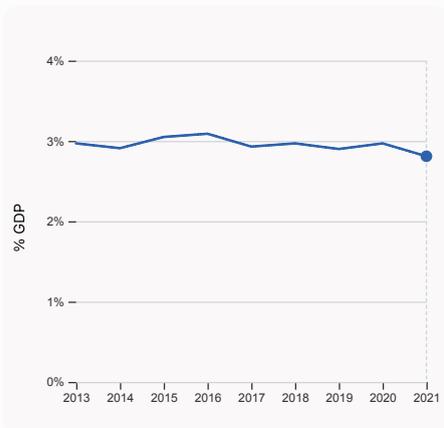
2.1.1 Expenditure on education, % GDP was equal to 6.91% GDP in 2019, down by 0.09 percentage points from the year prior – and equivalent to an indicator rank of 7.



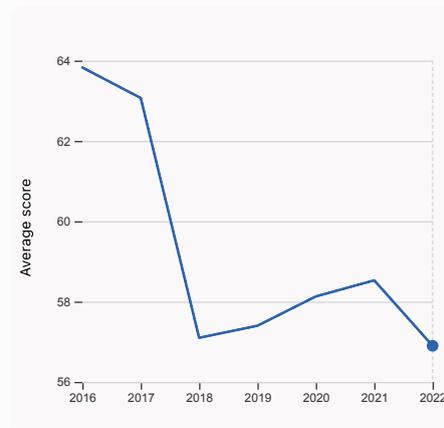
2.2.2 Graduates in science and engineering, % was equal to 23.01% of total tertiary graduates in 2020, up by 0.47 percentage points from the year prior – and equivalent to an indicator rank of 55.



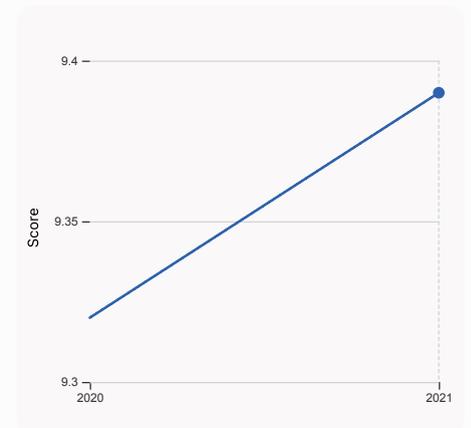
2.3.1 Researchers, FTE/mn pop. was equal to 7,708.33 FTE/mn pop. in 2021, up by 0.74% from the year prior – and equivalent to an indicator rank of 4.



2.3.2 Gross expenditure on R&D, % GDP was equal to 2.81% GDP in 2021, down by 0.16 percentage points from the year prior – and equivalent to an indicator rank of 12.

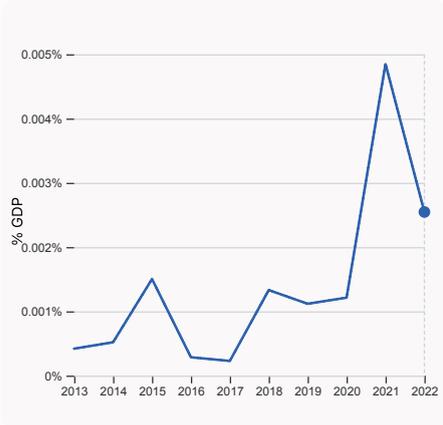


2.3.4 QS university ranking, top 3 was equal to an average score of 56.9 for the top 3 universities in 2022, down by 2.78% from the year prior – and equivalent to an indicator rank of 16.



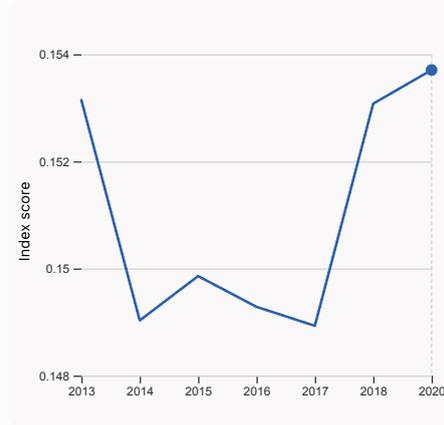
3.1.1 ICT access was equal to a score of 9.39 in 2021, up by 0.75% from the year prior – and equivalent to an indicator rank of 20.

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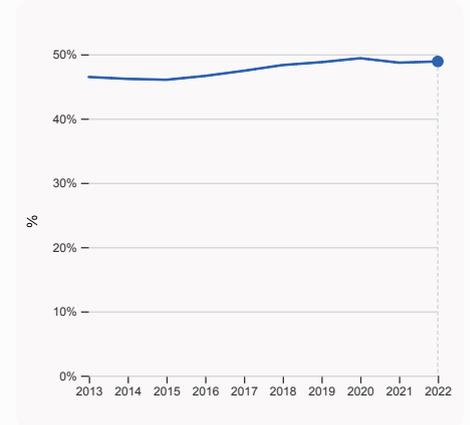
4.2.4 VC received, value, % GDP

was equal to 0.00255% GDP in 2022, down by 0.0023 percentage points from the year prior – and equivalent to an indicator rank of 26.



4.3.2 Domestic industry diversification

was equal to an index score of 0.154 in 2020, up by 0.41% from the year prior – and equivalent to an indicator rank of 50.



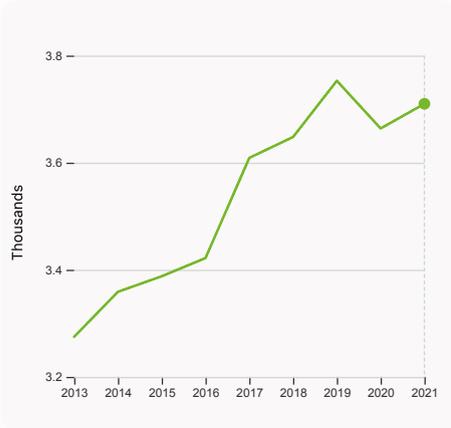
5.1.1 Knowledge-intensive employment, %

was equal to 48.89% in 2022, up by 0.19 percentage points from the year prior – and equivalent to an indicator rank of 13.

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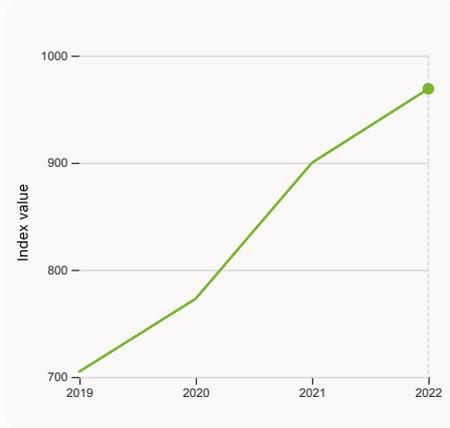


> Innovation outputs in Denmark



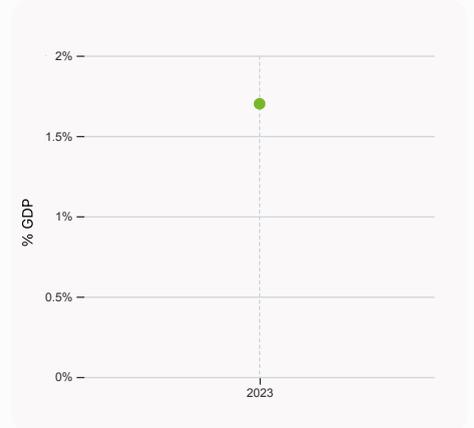
6.1.1 Patents by origin

was equal to 3.71 Thousands in 2021, up by 1.26% from the year prior – and equivalent to an indicator rank of 9.



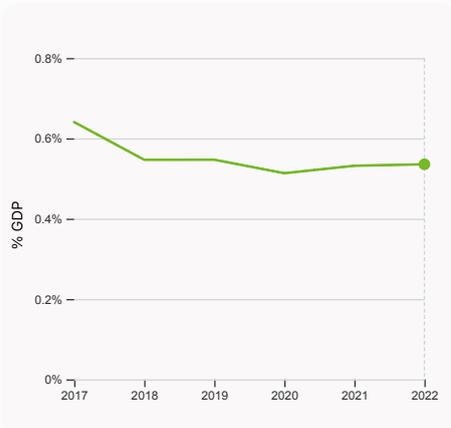
6.1.5 Citable documents H-index

was equal to an index value of 969 in 2022, up by 7.67% from the year prior – and equivalent to an indicator rank of 15.



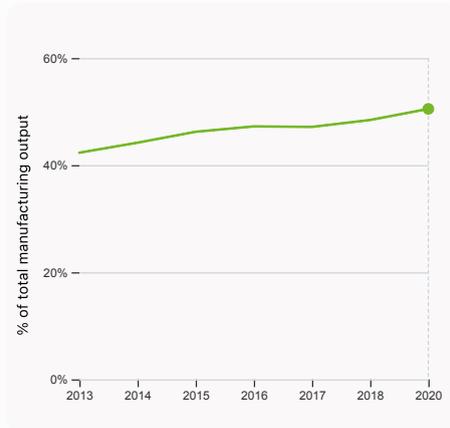
6.2.2 Unicorn valuation, % GDP

was equal to 1.7 % GDP in 2023 – and equivalent to an indicator rank of 25.



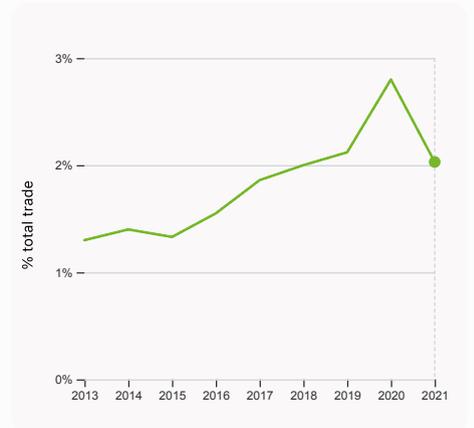
6.2.3 Software spending, % GDP

was equal to 0.536% GDP in 2022, up by 0.0037 percentage points from the year prior – and equivalent to an indicator rank of 22.



6.2.4 High-tech manufacturing, %

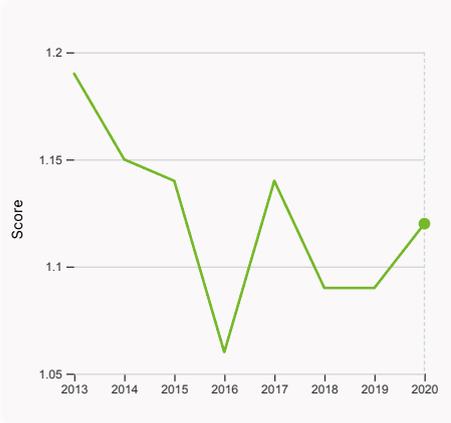
was equal to 50.51% of total manufacturing output in 2020, up by 2.07 percentage points from the year prior – and equivalent to an indicator rank of 10.



6.3.1 Intellectual property receipts, % total trade

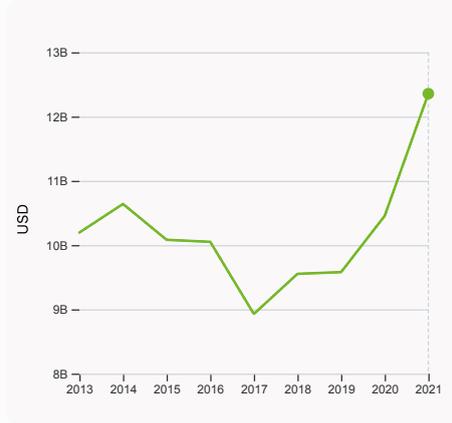
was equal to 2.03% total trade in 2021, down by 0.77 percentage points from the year prior – and equivalent to an indicator rank of 13.

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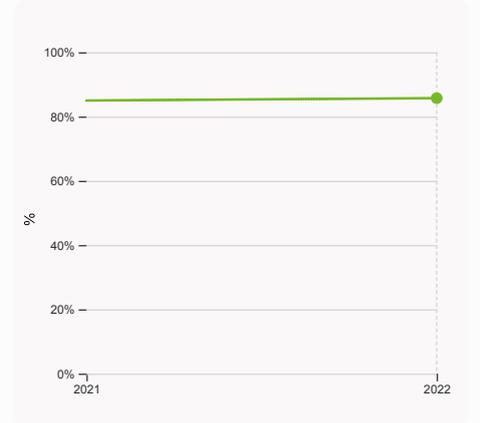
6.3.2 Production and export complexity

was equal to a score of 1.12 in 2020, up by 2.75% from the year prior – and equivalent to an indicator rank of 23.



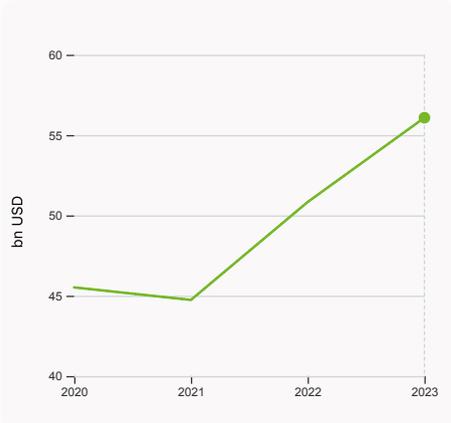
6.3.3 High-tech exports

was equal to 12,356,258,213 USD in 2021, up by 18.18% from the year prior – and equivalent to an indicator rank of 34.



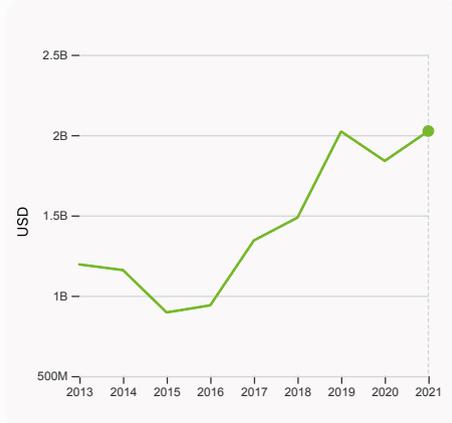
7.1.1 Intangible asset intensity, top 15, %

was equal to 85.73% in 2022, up by 0.73 percentage points from the year prior – and equivalent to an indicator rank of 3.



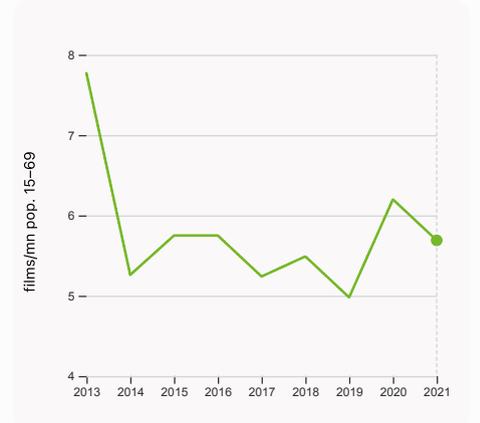
7.1.3 Global brand value, top 5,000

was equal to 56.083 bn USD in 2023, up by 10.32% from the year prior – and equivalent to an indicator rank of 9.



7.2.1 Cultural and creative services exports

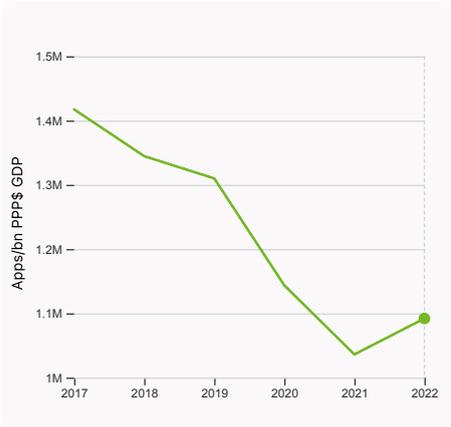
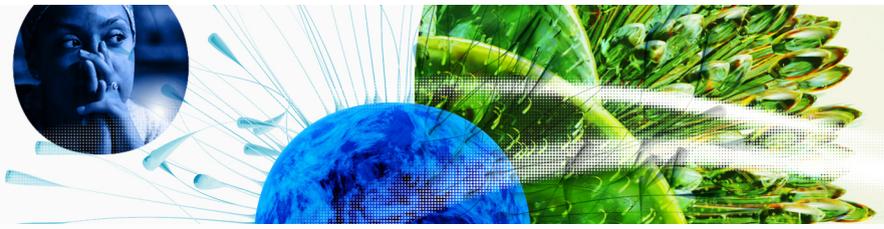
was equal to 2,025,262,000 USD in 2021, up by 10.11% from the year prior – and equivalent to an indicator rank of 34.



7.2.2 National feature films/mn pop. 15-69

was equal to 5.69 films/mn pop. 15-69 in 2021, down by 8.23% from the year prior – and equivalent to an indicator rank of 20.

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7.3.4 Mobile app creation/bn PPP\$ GDP

was equal to 1,091,989.15 Apps/bn PPP\$ GDP in 2022, up by 5.39% from the year prior – and equivalent to an indicator rank of 16.

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→ Denmark's innovation top performers

> 2.3.3 Global corporate R&D investors from Denmark

Rank	Firm	Industry	R&D	R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
90	NOVO NORDISK	Pharmaceuticals & Biotechnology	2,192	19	12
297	DANSKE BANK	Banks	628	21	10
361	H LUNDBECK	Pharmaceuticals & Biotechnology	502	-0	23
405	VESTAS WIND SYSTEMS	Alternative Energy	444	34	3

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 Denmark's top universities

Rank	University	Score
82	UNIVERSITY OF COPENHAGEN	64.10
104	TECHNICAL UNIVERSITY OF DENMARK	58.00
161	AARHUS UNIVERSITY	48.60

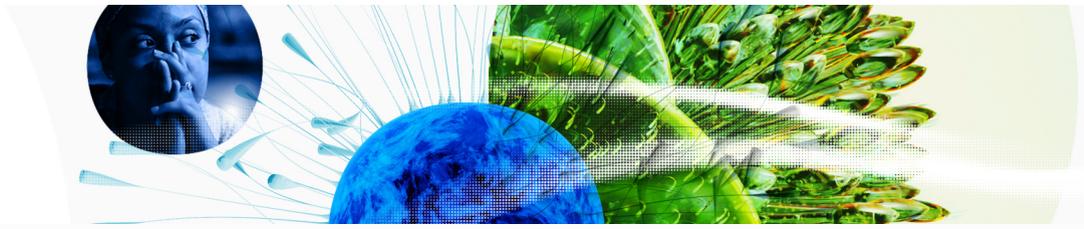
Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2023>).

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 Denmark

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	PLEO	Fintech	Copenhagen	5
2	LUNAR	Fintech	Aarhus	2

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 Denmark

Rank	Firm	Intensity, %
1	NOVO NORDISK A/S	97.95
2	DSV A/S	90.85
3	ORSTED AS	58.70

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 Denmark with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	LEGO	Toys	7,443.5
2	MAERSK	Logistics	7,416.8
3	DSV	Logistics	3,313.9

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

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GII 2023 rank

9

Denmark

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
10	7	High	EUR	5.9	411.0	69,845.1

Score / Value Rank

Score / Value Rank

Institutions	83.9	5	◆◆	Business sophistication	59.0	12
1.1 Institutional environment	88.7	2	◆◆	5.1 Knowledge workers	63.1	17
1.1.1 Operational stability for businesses*	85.4	6	◆	5.1.1 Knowledge-intensive employment, %	48.9	13
1.1.2 Government effectiveness*	92.1	3	◆◆	5.1.2 Firms offering formal training, %	40.6	32
1.2 Regulatory environment	85.7	17		5.1.3 GERD performed by business, % GDP	1.7	14
1.2.1 Regulatory quality*	89.0	5	◆◆	5.1.4 GERD financed by business, %	59.6	15
1.2.2 Rule of law*	96.4	3	◆◆	5.1.5 Females employed w/advanced degrees, %	25.3	18
1.2.3 Cost of redundancy dismissal	18.8	81	○	5.2 Innovation linkages	64.0	8
1.3 Business environment	77.2	[12]		5.2.1 University-industry R&D collaboration+	81.5	13
1.3.1 Policies for doing business*	77.2	14		5.2.2 State of cluster development*	69.0	25
1.3.2 Entrepreneurship policies and culture*	n/a	n/a		5.2.3 GERD financed by abroad, % GDP	0.2	27
Human capital and research	58.1	9		5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	15
2.1 Education	69.2	7		5.2.5 Patent families/bn PPP\$ GDP	4.9	8
2.1.1 Expenditure on education, % GDP	6.9	7	◆	5.3 Knowledge absorption	49.8	21
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.4	37		5.3.1 Intellectual property payments, % total trade	0.8	49
2.1.3 School life expectancy, years	18.7	10		5.3.2 High-tech imports, % total trade	6.5	100
2.1.4 PISA scales in reading, maths and science	501.1	17		5.3.3 ICT services imports, % total trade	4.1	7
2.1.5 Pupil-teacher ratio, secondary	10.1	32		5.3.4 FDI net inflows, % GDP	1.0	97
2.2 Tertiary education	40.4	34		5.3.5 Research talent, % in businesses	56.2	18
2.2.1 Tertiary enrolment, % gross	82.8	20		Knowledge and technology outputs	51.3	12
2.2.2 Graduates in science and engineering, %	23.0	55	○	6.1 Knowledge creation	59.6	11
2.2.3 Tertiary inbound mobility, %	10.2	26		6.1.1 Patents by origin/bn PPP\$ GDP	9.9	9
2.3 Research and development (R&D)	64.5	10		6.1.2 PCT patents by origin/bn PPP\$ GDP	3.6	7
2.3.1 Researchers, FTE/mn pop.	7,708.3	4	◆◆	6.1.3 Utility models by origin/bn PPP\$ GDP	0.2	42
2.3.2 Gross expenditure on R&D, % GDP	2.8	12		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\$	70.1	14		6.1.5 Citable documents H-index	51.5	15
2.3.4 QS university ranking, top 3*	57.6	16		6.2 Knowledge impact	48.1	20
Infrastructure	65.6	3	◆◆	6.2.1 Labor productivity growth, %	0.4	83
3.1 Information and communication technologies (ICTs)	94.2	7	◆	6.2.2 Unicorn valuation, % GDP	1.7	25
3.1.1 ICT access*	90.9	20		6.2.3 Software spending, % GDP	0.5	22
3.1.2 ICT use*	99.6	2	◆◆	6.2.4 High-tech manufacturing, %	50.5	10
3.1.3 Government's online service*	97.8	4	◆◆	6.3 Knowledge diffusion	46.2	22
3.1.4 E-participation*	88.4	12		6.3.1 Intellectual property receipts, % total trade	2.3	13
3.2 General infrastructure	46.6	25		6.3.2 Production and export complexity	76.0	23
3.2.1 Electricity output, GWh/mn pop.	5,644.0	36		6.3.3 High-tech exports, % total trade	5.5	34
3.2.2 Logistics performance*	90.9	3	◆◆	6.3.4 ICT services exports, % total trade	3.5	34
3.2.3 Gross capital formation, % GDP	24.2	63	○	6.3.5 ISO 9001 quality/bn PPP\$ GDP	6.0	48
3.3 Ecological sustainability	56.2	10	◆	Creative outputs	55.9	10
3.3.1 GDP/unit of energy use	18.6	10		7.1 Intangible assets	55.6	15
3.3.2 Environmental performance*	100.0	1	◆◆	7.1.1 Intangible asset intensity, top 15, %	85.7	3
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.6	35		7.1.2 Trademarks by origin/bn PPP\$ GDP	31.3	75
Market sophistication	52.8	21		7.1.3 Global brand value, top 5,000	14.2	9
4.1 Credit	62.5	[15]		7.1.4 Industrial designs by origin/bn PPP\$ GDP	5.8	18
4.1.1 Finance for startups and scaleups*	n/a	n/a		7.2 Creative goods and services	37.9	16
4.1.2 Domestic credit to private sector, % GDP	163.7	8		7.2.1 Cultural and creative services exports, % total trade	0.9	34
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a		7.2.2 National feature films/mn pop. 15-69	5.7	20
4.2 Investment	33.0	21		7.2.3 Entertainment and media market/th pop. 15-69	77.8	3
4.2.1 Market capitalization, % GDP	n/a	n/a		7.2.4 Creative goods exports, % total trade	1.6	32
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.4	14		7.3 Online creativity	74.5	4
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.2	14		7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	56.8	14
4.2.4 VC received, value, % GDP	0.0	26		7.3.2 Country-code TLDs/th pop. 15-69	100.0	1
4.3 Trade, diversification, and market scale	63.0	44		7.3.3 GitHub commits/mn pop. 15-69	64.7	9
4.3.1 Applied tariff rate, weighted avg., %	1.5	20		7.3.4 Mobile app creation/bn PPP\$ GDP	76.4	16
4.3.2 Domestic industry diversification	89.7	50	○			
4.3.3 Domestic market scale, bn PPP\$	411.0	51				

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 Denmark.



> Denmark has missing data for four indicators and outdated data for three indicators.

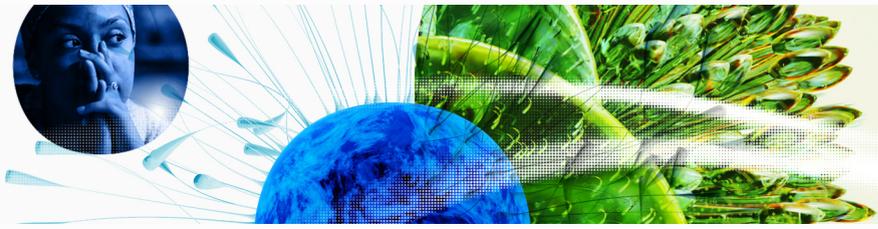
> Missing data for Denmark

Code	Indicator name	Economy Year	Model Year	Source
1.3.2	Entrepreneurship policies and culture	n/a	2022	Global Entrepreneurship Monitor
4.1.1	Finance for startups and scaleups	n/a	2022	Global Entrepreneurship Monitor
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 Denmark

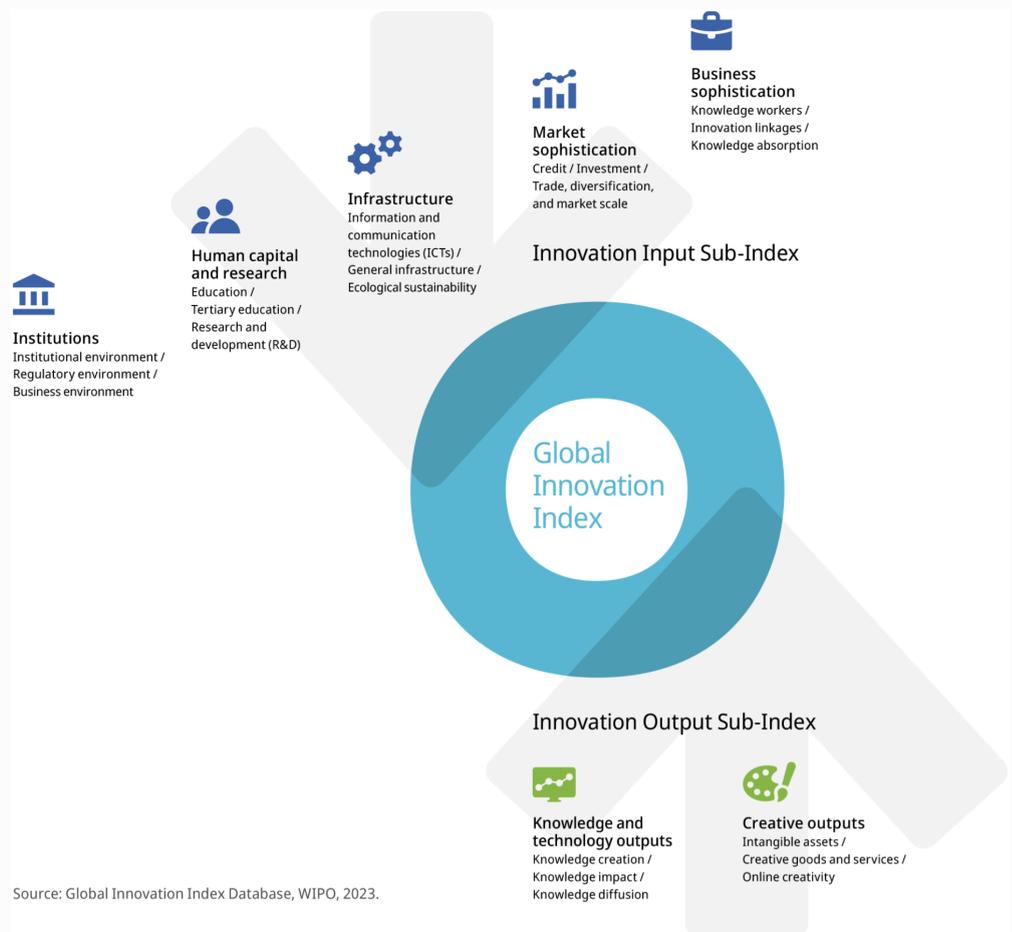
Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics
5.1.4	GERD financed by business, %	2019	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.2.3	GERD financed by abroad, % GDP	2019	2020	UNESCO Institute for Statistics; Eurostat; OECD; RICYT

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.