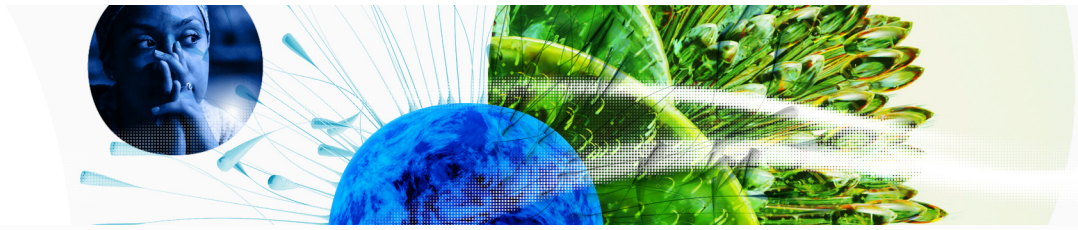
Global Innovation Index 2023



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.

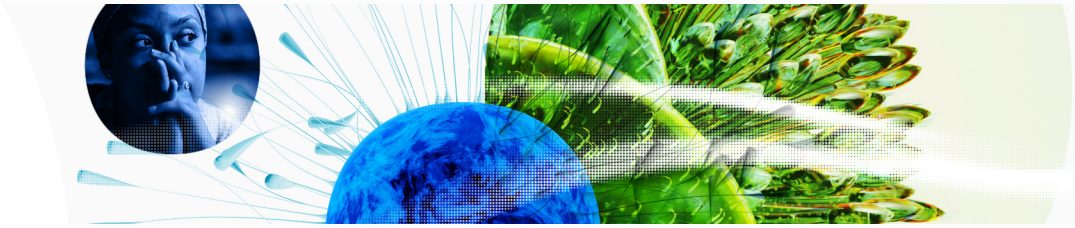
	GII Position	Innovation Inputs	Innovation Outputs
2020	6th	5th	9th
2021	9th	5th	11th
2022	10th	8th	10th
2023	9th	7th	10th

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.

Global Innovation Index 2023

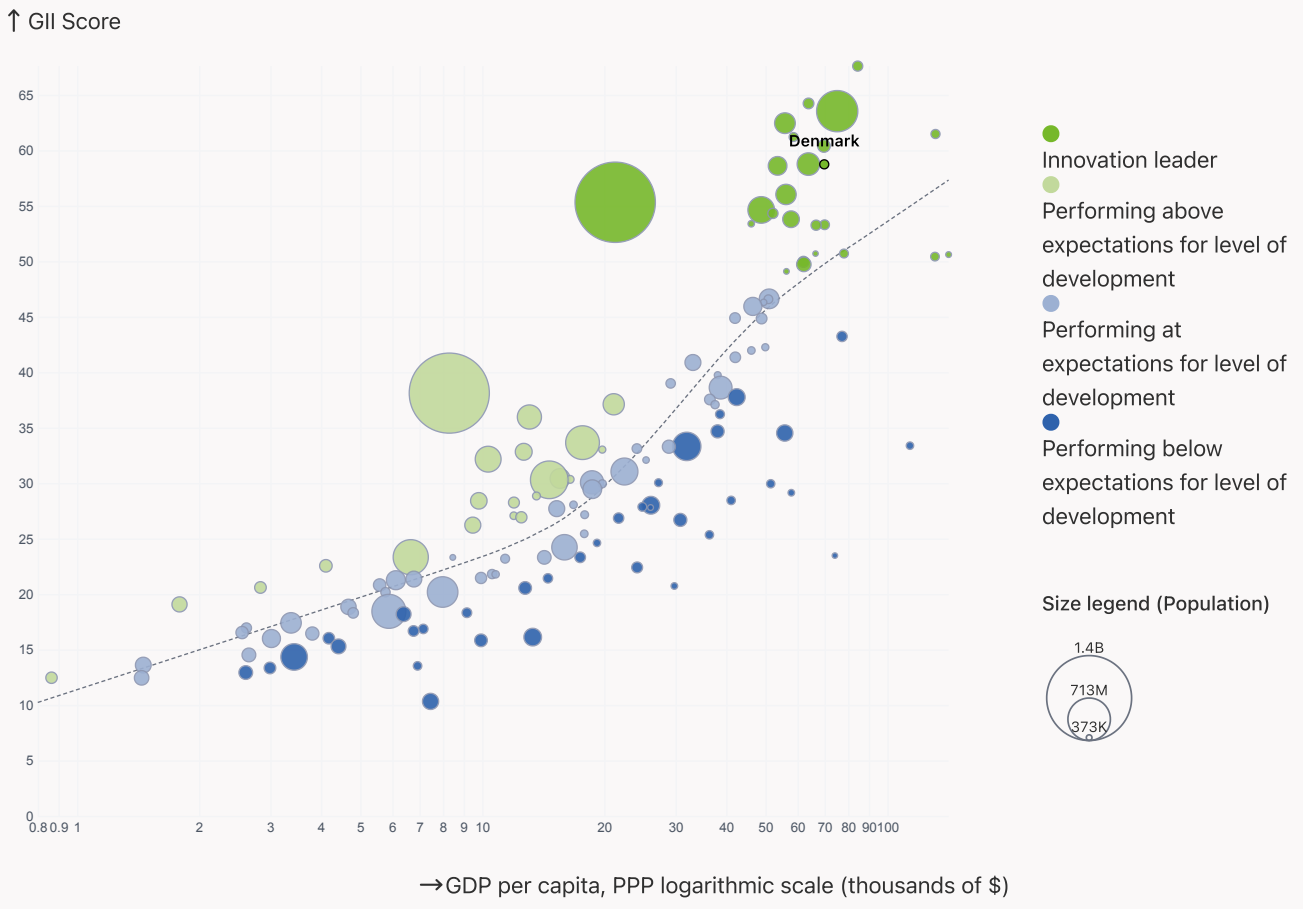


→ Expected vs. observed innovation performance

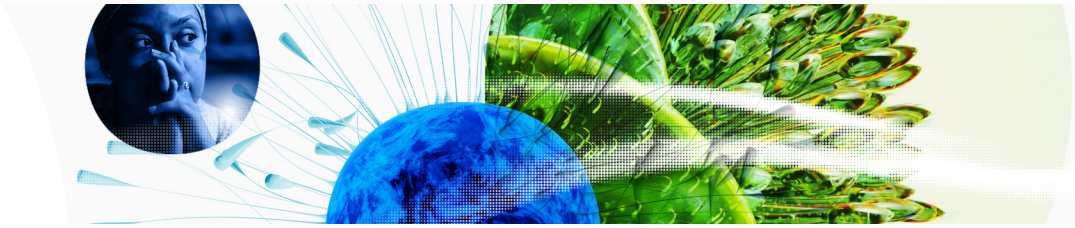
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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

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

> Innovation overperformers relative to their economic development



Global Innovation Index 2023

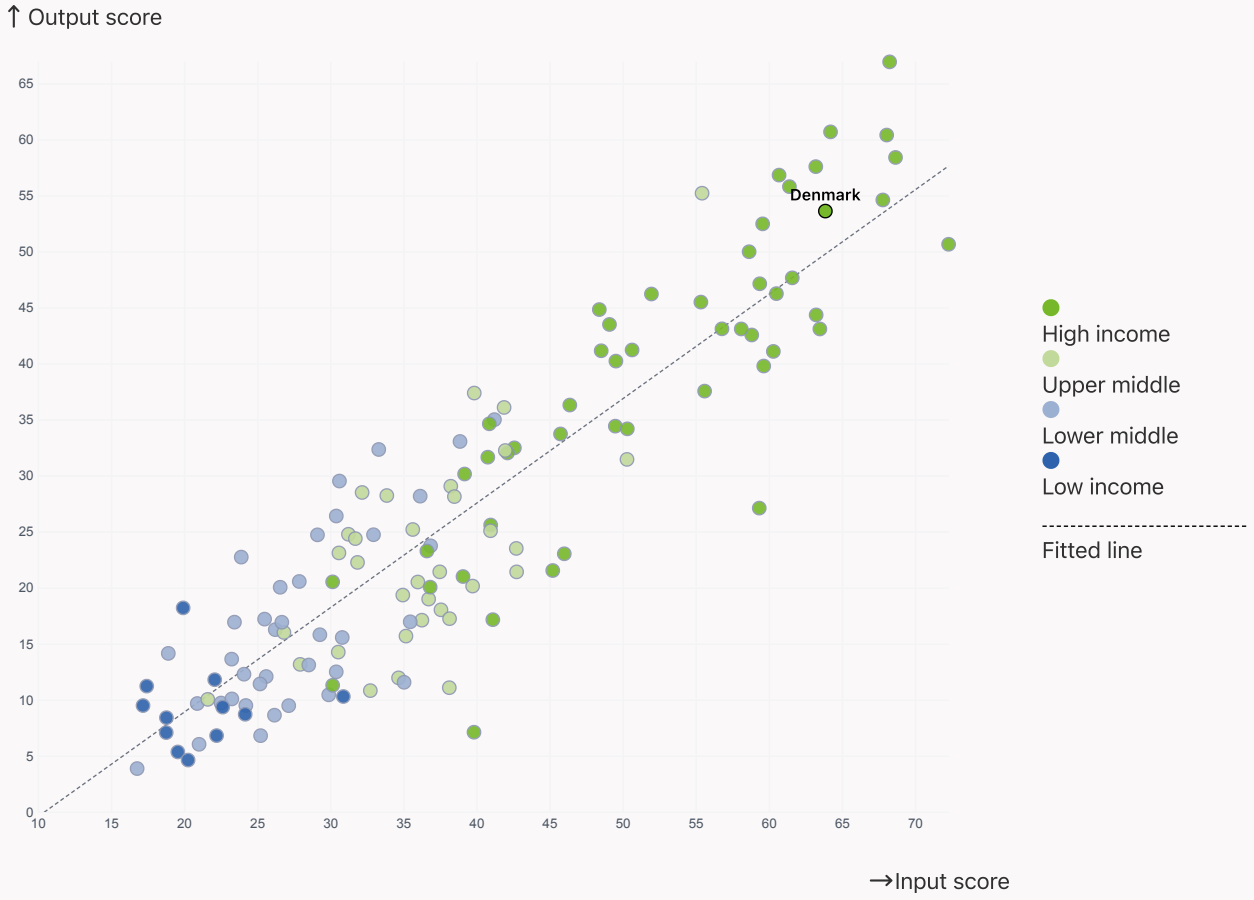


→ Effectively translating innovation investments into innovation outputs

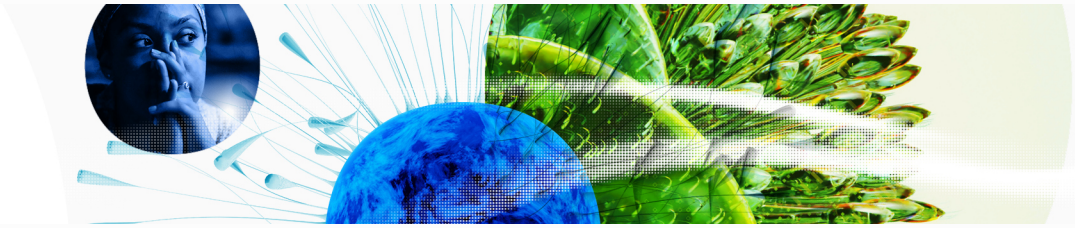
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

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

> Relationship between innovation inputs and outputs

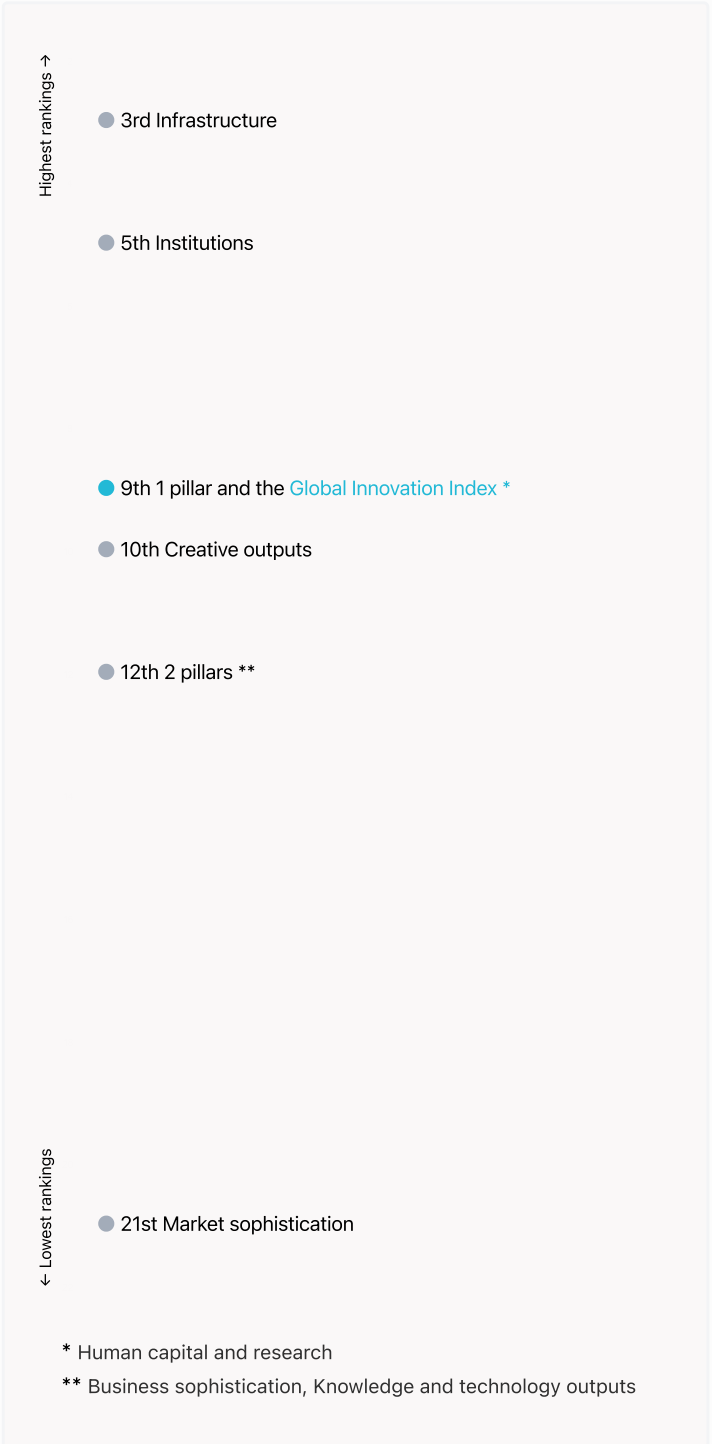


Global Innovation Index 2023



→ 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

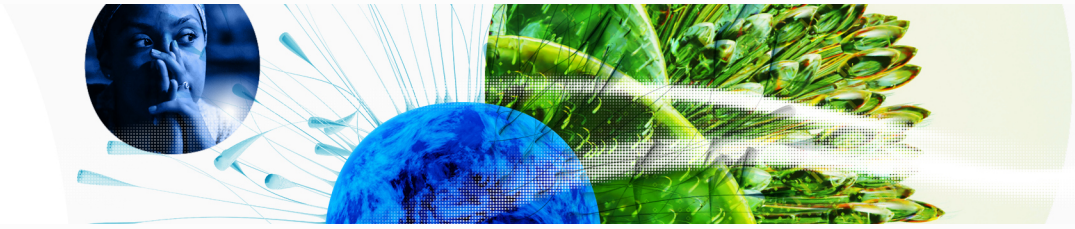
Denmark ranks highest in Infrastructure (3rd), Institutions (5th) and Human capital and research (9th).

> 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.

Global Innovation Index 2023



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

The charts shows 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

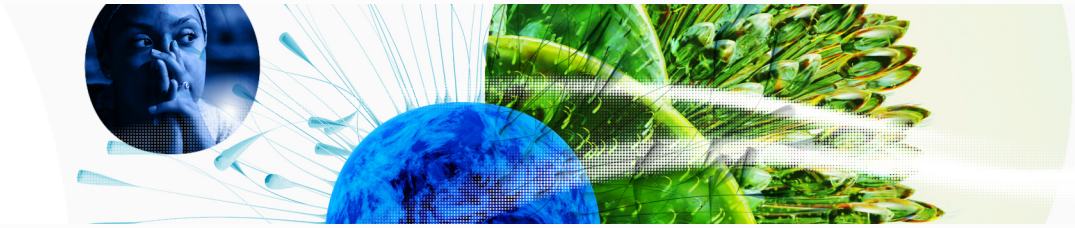
Infrastructure

- 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

Global Innovation Index 2023



→ 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).

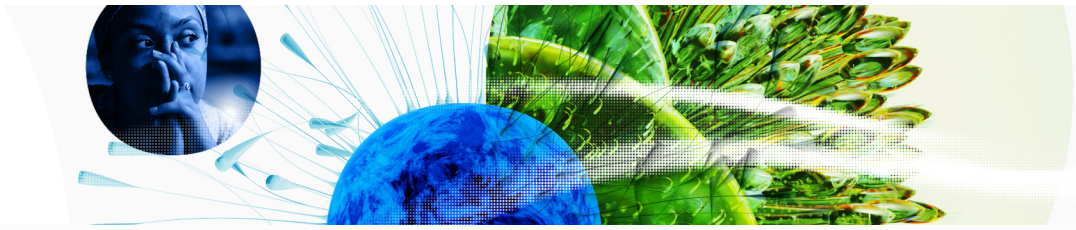
Strengths

Rank	Code	Indicator name
1	7.3.2	Country-code TLDs/th pop. 15-69
1	3.3.2	Environmental performance
2	3.1.2	ICT use
2	6.1.4	Scientific and technical articles/bn PPP$ GDP
3	7.1.1	Intangible asset intensity, top 15, %
3	7.2.3	Entertainment and media market/th pop. 15-69
3	1.1.2	Government effectiveness
3	3.2.2	Logistics performance
3	1.2.2	Rule of law
4	3.1.3	Government's online service
4	2.3.1	Researchers, FTE/mn pop.
5	1.2.1	Regulatory quality

Weaknesses

Rank	Code	Indicator name
100	5.3.2	High-tech imports, % total trade
97	5.3.4	FDI net inflows, % GDP
83	6.2.1	Labor productivity growth, %
81	1.2.3	Cost of redundancy dismissal
75	7.1.2	Trademarks by origin/bn PPP$ GDP
63	3.2.3	Gross capital formation, % GDP
55	2.2.2	Graduates in science and engineering, %
50	4.3.2	Domestic industry diversification
49	5.3.1	Intellectual property payments, % total trade
42	6.1.3	Utility models by origin/bn PPP$ GDP

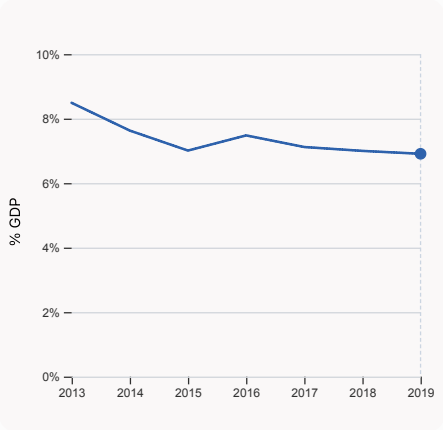
Global Innovation Index 2023



→ Denmark's innovation system

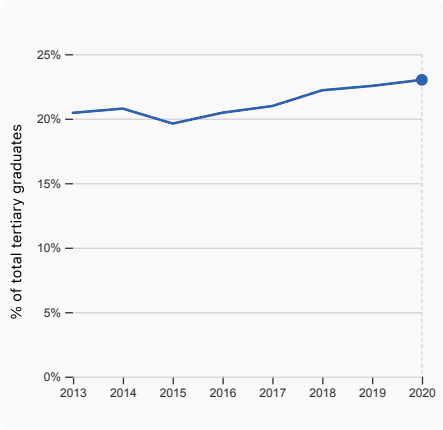
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Denmark



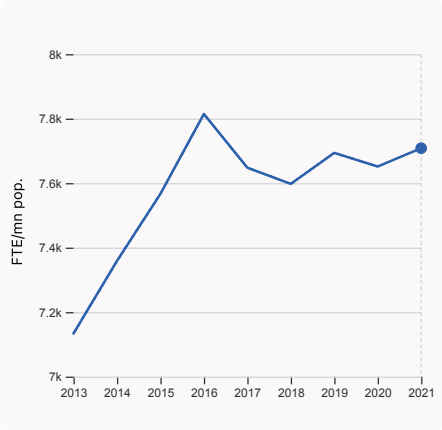
2.1.1 Expenditure on education, % GDP

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.



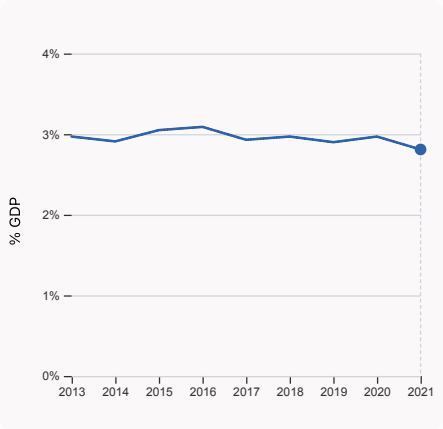
2.2.2 Graduates in science and engineering, %

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.



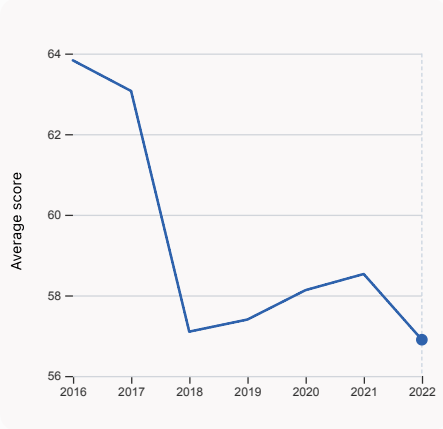
2.3.1 Researchers, FTE/mn pop.

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.



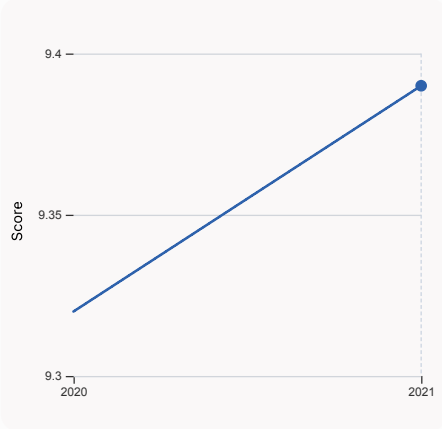
2.3.2 Gross expenditure on R&D, % GDP

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

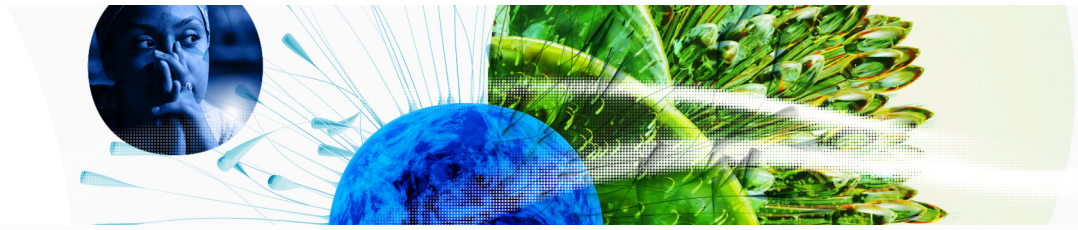
was equal to an average score of 56.9 for the top 3 universities in 2022, down by 2.78% from the year prior – and equivalent to an indicator rank of 16.

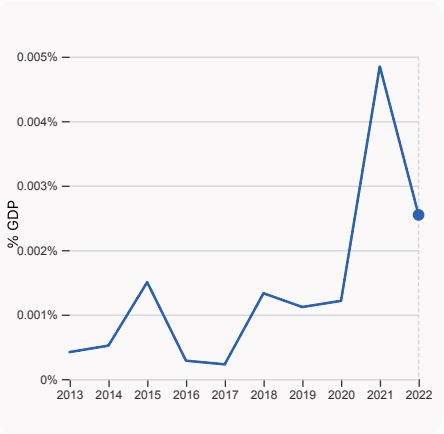


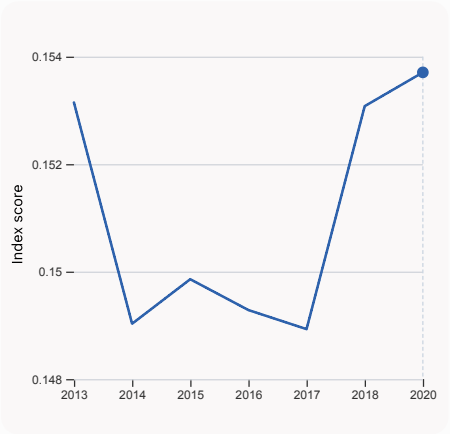
3.1.1 ICT access

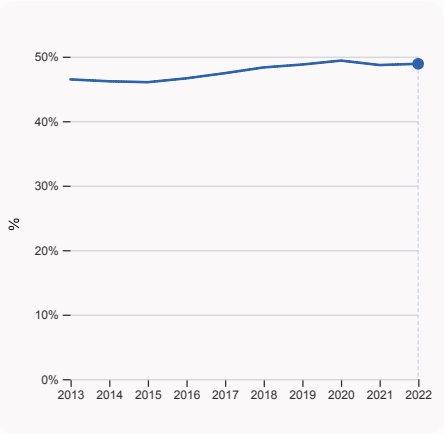
was equal to a score of 9.39 in 2021, up by 0.75% from the year prior – and equivalent to an indicator rank of 20.

Global Innovation Index 2023









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.

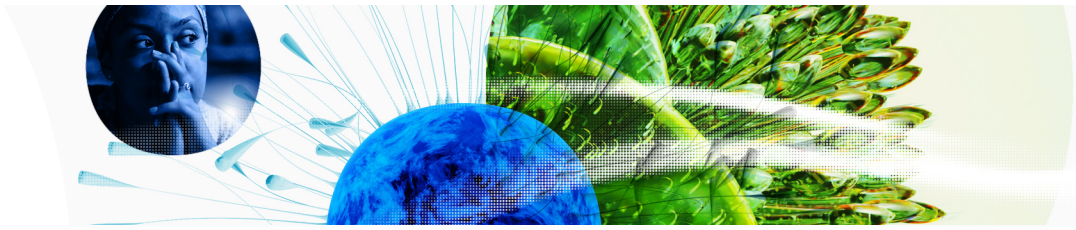
4.3.2 Domestic industry diversification

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.

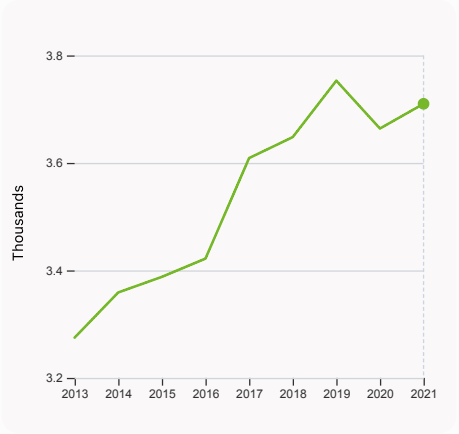
5.1.1 Knowledge-intensive employment, %

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.

Global Innovation Index 2023

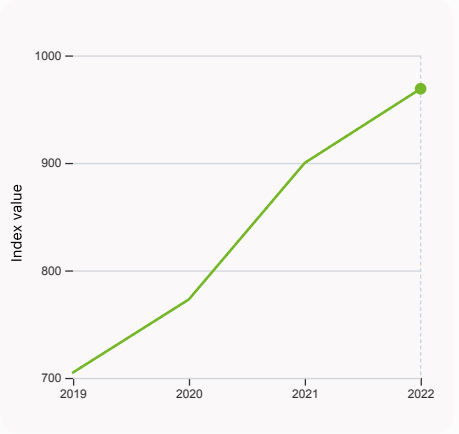


> Innovation outputs in Denmark



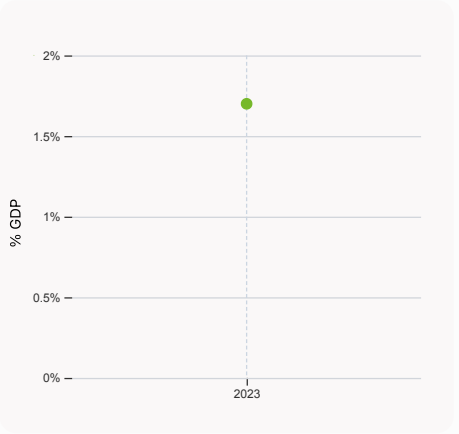
6.1.1 Patents by origin

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



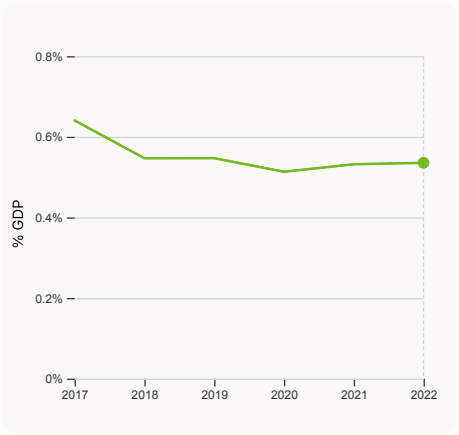
6.1.5 Citable documents H-index

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.



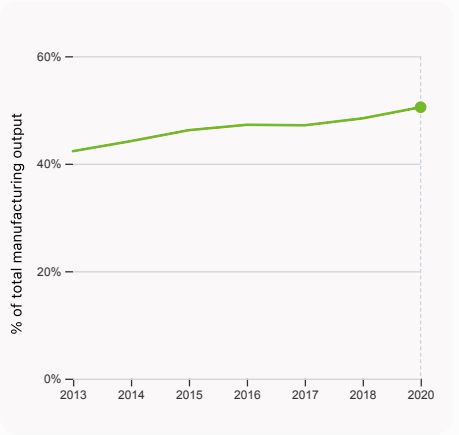
6.2.2 Unicorn valuation, % GDP

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



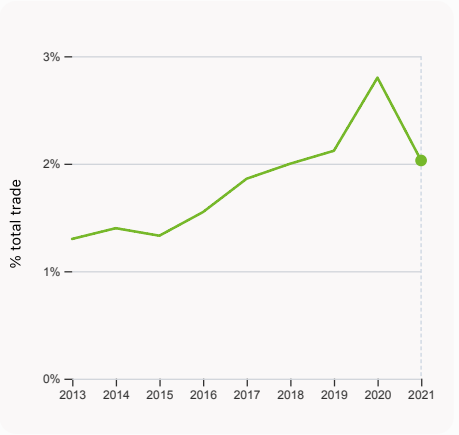
6.2.3 Software spending, % GDP

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, %

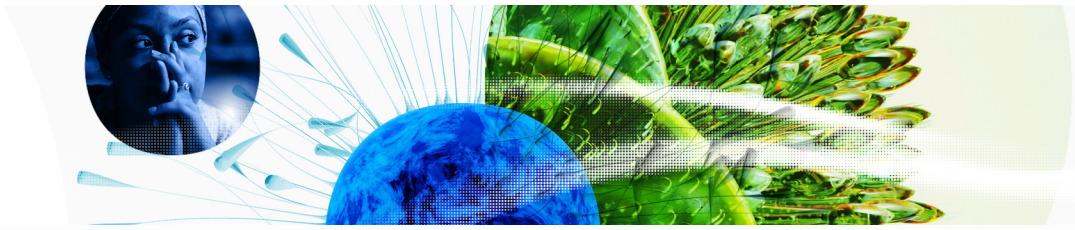
was equal to 50.51% of total manufacturing output in 2020, up by 2.07 percentage points from the year prior – and equivalent to an indicator rank of 10.



6.3.1 Intellectual property receipts, % total trade

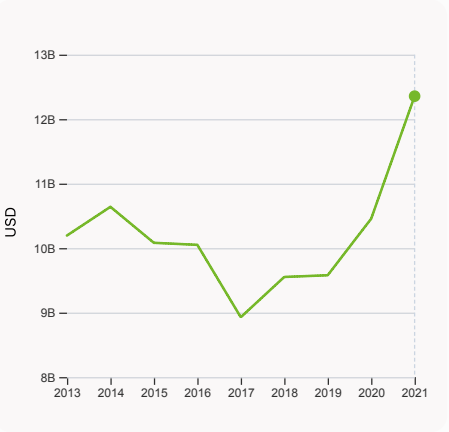
was equal to 2.03% total trade in 2021, down by 0.77 percentage points from the year prior – and equivalent to an indicator rank of 13.

Global Innovation Index 2023



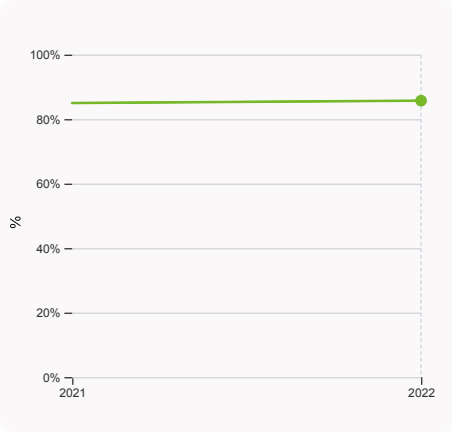
6.3.2 Production and export complexity

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.



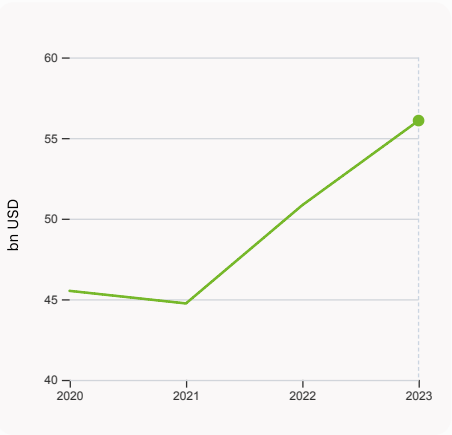
6.3.3 High-tech exports

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.



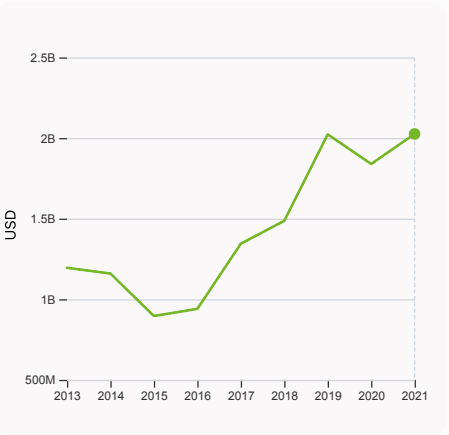
7.1.1 Intangible asset intensity, top 15, %

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.



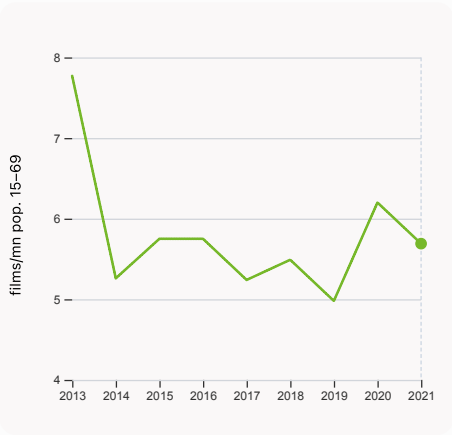
7.1.3 Global brand value, top 5,000

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

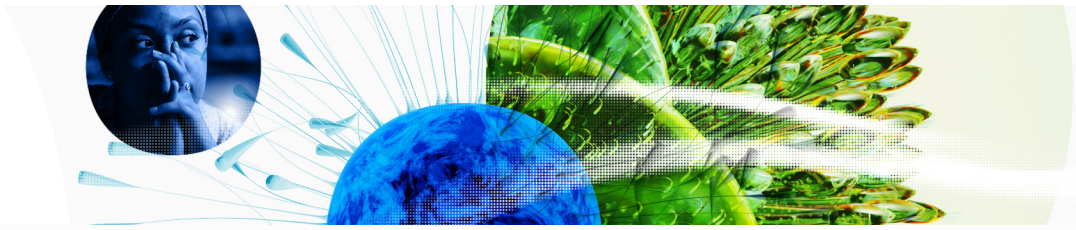
was equal to 2,025,262,000 USD in 2021, up by 10.11% from the year prior – and equivalent to an indicator rank of 34.

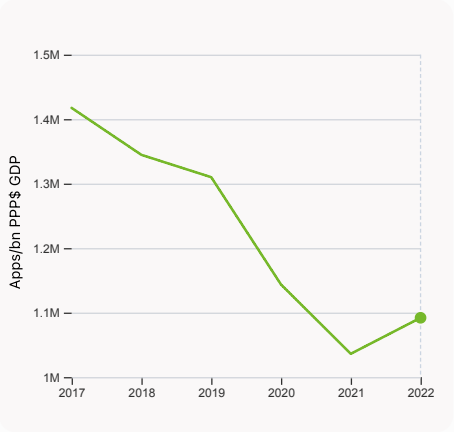


7.2.2 National feature films/mn pop. 15-69

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.

Global Innovation Index 2023

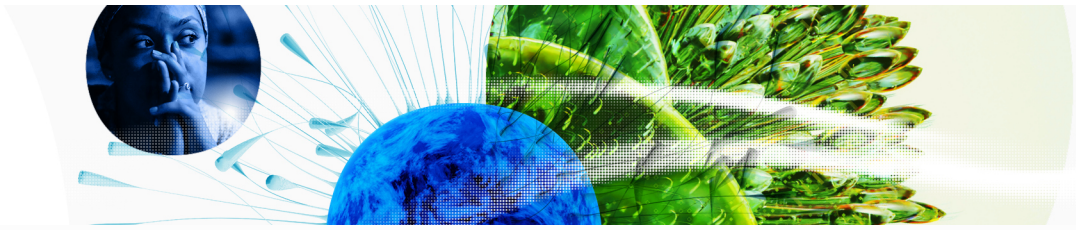




7.3.4 Mobile app creation/bn PPP$ GDP

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.

Global Innovation Index 2023



→ 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

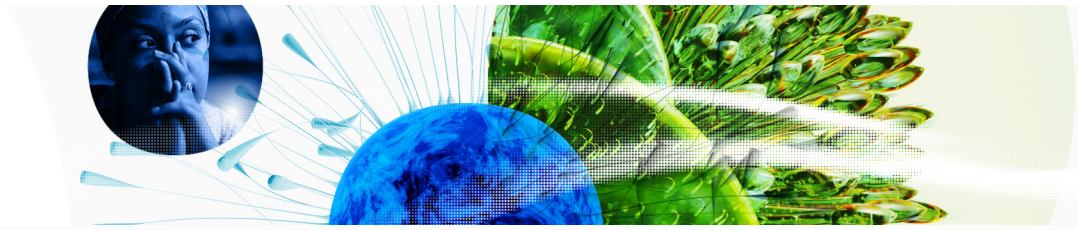
Rank	University	Score
82	UNIVERSITY OF COPENHAGEN	64.10
104	TECHNICAL UNIVERSITY OF DENMARK	58.00
161	AARHUS UNIVERSITY	48.60

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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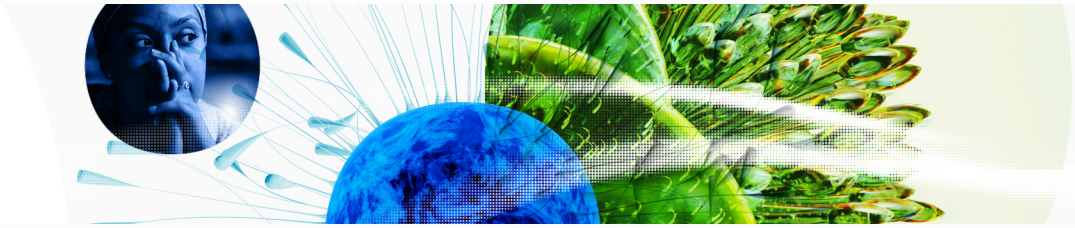

Denmark

GII 2023 rank **9**

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
Institutions	**83.9**	**5**
1.1 Institutional environment	**88.7**	**2**
1.1.1 Operational stability for businesses*	85.4	6
1.1.2 Government effectiveness*	92.1	3 ●
1.2 Regulatory environment	**85.7**	**17**
1.2.1 Regulatory quality*	89.0	5 ●
1.2.2 Rule of law*	96.4	3 ●
1.2.3 Cost of redundancy dismissal	18.8	81 ○
1.3 Business environment	**77.2**	**12**
1.3.1 Policies for doing business†	77.2	14
1.3.2 Entrepreneurship policies and culture†	n/a	n/a
Human capital and research	**58.1**	**9**
2.1 Education	**69.2**	**7**
2.1.1 Expenditure on education, % GDP	6.9	7
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.4	37
2.1.3 School life expectancy, years	18.7	10
2.1.4 PISA scales in reading, maths and science	501.1	17
2.1.5 Pupil-teacher ratio, secondary	10.1	32
2.2 Tertiary education	**40.4**	**34**
2.2.1 Tertiary enrolment, % gross	82.8	20
2.2.2 Graduates in science and engineering, %	23.0	55 ○
2.2.3 Tertiary inbound mobility, %	10.2	26
2.3 Research and development (R&D)	**64.5**	**10**
2.3.1 Researchers, FTE/mn pop.	7,708.3	4 ●
2.3.2 Gross expenditure on R&D, % GDP	2.8	12
2.3.3 Global corporate R&D investors, top 3, mn US$	70.1	14
2.3.4 QS university ranking, top 3*	57.6	16
Infrastructure	**65.6**	**3**
3.1 Information and communication technologies (ICTs)	**94.2**	**7**
3.1.1 ICT access*	90.9	20
3.1.2 ICT use*	99.6	2 ●
3.1.3 Government's online service*	97.8	4 ●
3.1.4 E-participation*	88.4	12
3.2 General infrastructure	**46.6**	**25**
3.2.1 Electricity output, GWh/mn pop.	5,644.0	36
3.2.2 Logistics performance*	90.9	3 ●
3.2.3 Gross capital formation, % GDP	24.2	63 ○
3.3 Ecological sustainability	**56.2**	**10**
3.3.1 GDP/unit of energy use	18.6	10
3.3.2 Environmental performance*	100.0	1 ●
3.3.3 ISO 14001 environment/bn PPP$ GDP	2.6	35
Market sophistication	**52.8**	**21**
4.1 Credit	**62.5**	**15**
4.1.1 Finance for startups and scaleups†	n/a	n/a
4.1.2 Domestic credit to private sector, % GDP	163.7	8
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a
4.2 Investment	**33.0**	**21**
4.2.1 Market capitalization, % GDP	n/a	n/a
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.4	14
4.2.3 VC recipients, deals/bn PPP$ GDP	0.2	14
4.2.4 VC received, value, % GDP	0.0	26
4.3 Trade, diversification, and market scale	**63.0**	**44**
4.3.1 Applied tariff rate, weighted avg., %	1.5	20
4.3.2 Domestic industry diversification	89.7	50 ○
4.3.3 Domestic market scale, bn PPP$	411.0	51

	Score / Value	Rank
Business sophistication	**59.0**	**12**
5.1 Knowledge workers	**63.1**	**17**
5.1.1 Knowledge-intensive employment, %	48.9	13
5.1.2 Firms offering formal training, %	40.6	32
5.1.3 GERD performed by business, % GDP	1.7	14
5.1.4 GERD financed by business, %	59.6	15
5.1.5 Females employed w/advanced degrees, %	25.3	18
5.2 Innovation linkages	**64.0**	**8**
5.2.1 University-industry R&D collaboration†	81.5	13
5.2.2 State of cluster development†	69.0	25
5.2.3 GERD financed by abroad, % GDP	0.2	27
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.1	15
5.2.5 Patent families/bn PPP$ GDP	4.9	8
5.3 Knowledge absorption	**49.8**	**21**
5.3.1 Intellectual property payments, % total trade	0.8	49 ○
5.3.2 High-tech imports, % total trade	6.5	100 ○
5.3.3 ICT services imports, % total trade	4.1	7
5.3.4 FDI net inflows, % GDP	1.0	97 ○
5.3.5 Research talent, % in businesses	56.2	18
Knowledge and technology outputs	**51.3**	**12**
6.1 Knowledge creation	**59.6**	**11**
6.1.1 Patents by origin/bn PPP$ GDP	9.9	9
6.1.2 PCT patents by origin/bn PPP$ GDP	3.6	7
6.1.3 Utility models by origin/bn PPP$ GDP	0.2	42 ○
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a
6.1.5 Citable documents H-index	51.5	15
6.2 Knowledge impact	**48.1**	**20**
6.2.1 Labor productivity growth, %	0.4	83 ○
6.2.2 Unicorn valuation, % GDP	1.7	25
6.2.3 Software spending, % GDP	0.5	22
6.2.4 High-tech manufacturing, %	50.5	10
6.3 Knowledge diffusion	**46.2**	**22**
6.3.1 Intellectual property receipts, % total trade	2.3	13
6.3.2 Production and export complexity	76.0	23
6.3.3 High-tech exports, % total trade	5.5	34
6.3.4 ICT services exports, % total trade	3.5	34
6.3.5 ISO 9001 quality/bn PPP$ GDP	6.0	48
Creative outputs	**55.9**	**10**
7.1 Intangible assets	**55.6**	**15**
7.1.1 Intangible asset intensity, top 15, %	85.7	3 ●
7.1.2 Trademarks by origin/bn PPP$ GDP	31.3	75 ○
7.1.3 Global brand value, top 5,000	14.2	9
7.1.4 Industrial designs by origin/bn PPP$ GDP	5.8	18
7.2 Creative goods and services	**37.9**	**16**
7.2.1 Cultural and creative services exports, % total trade	0.9	34
7.2.2 National feature films/mn pop. 15-69	5.7	20
7.2.3 Entertainment and media market/th pop. 15-69	77.8	3 ●
7.2.4 Creative goods exports, % total trade	1.6	32
7.3 Online creativity	**74.5**	**4**
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	56.8	14
7.3.2 Country-code TLDs/th pop. 15-69	100.0	1 ●
7.3.3 GitHub commits/mn pop. 15-69	64.7	9
7.3.4 Mobile app creation/bn PPP$ GDP	76.4	16

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

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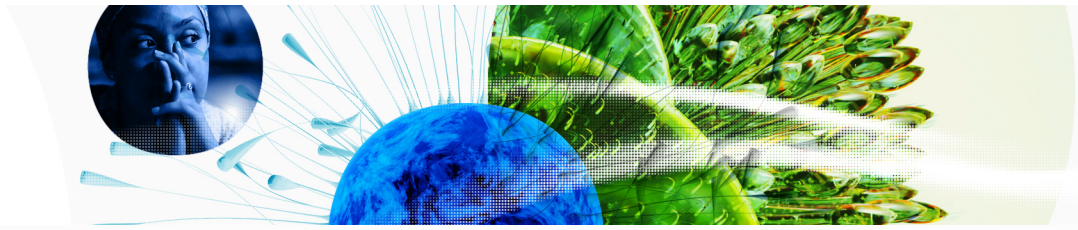

→ Data availability

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

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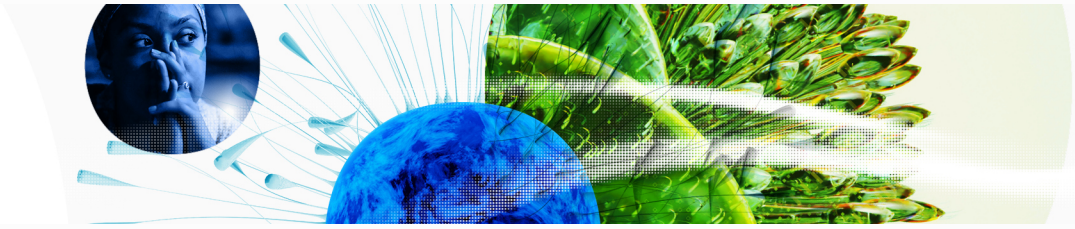

About the Global Innovation Index

- The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.
- Recognizing that innovation is a key driver of economic development, the GII aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a "tool for action" for economies that incorporate the GII into their innovation agendas.

Source: Global Innovation Index Database, WIPO, 2023.

The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs.

The GII has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each consisting of three sub-pillars.