European Innovation Scoreboard **2024** Country Profile **Denmark**

European Innovation Scoreboard 2024 – Country profile Denmark

European Commission
Directorate-General for Research and Innovation
Directorate G – Common Policy Centre
Unit G.1 – Common R&I Strategy & Foresight Service
Contact Alexandr Hobza, Chief Economist and Head of Unit G.1
Athina Karvounaraki
Alexis Stevenson
Email RTD-STATISTICS@ec.europa.eu
RTD-PUBLICATIONS@ec.europa.eu
Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
Directorate A – Strategy and Economic Analysis
Unit A.1 – Chief Economist
Contact Román Arjona, Chief Economist and Head of Unit A.1
Xosé-Luís Varela-Irimia
Email GROW-A1@ec.europa.eu
European Commission
B-1049 Brussels

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Directorate-General for Research and Innovation
2024 Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs EN

DENMARK

Innovation Leader

Summary innovation index (relative to EU in 2017): **149.3**
Rank: **2**

Change vs 2023: ▲ 0.5 Change vs 2017: ▲ 14.2

Denmark is an Innovation Leader with performance at 135.7% of the EU average in 2024. Performance is above the average of the Innovation Leaders (132.1%). Performance is increasing more than the EU (+10%).

Indicator	Performance relative to the EU in 2024	Performance change 2017-2024	Performance change 2023-2024
SUMMARY INNOVATION INDEX	**135.7**	**14.2**	**0.5**
Human resources	**158.9**	**-5.1**	**-4.9**
New doctorate graduates	126.2	-46.3	-11.6
Population with tertiary education	132.0	-0.6	0.0
Population involved in lifelong learning	227.8	56.1	0.0
Attractive research systems	**183.9**	**14.8**	**1.8**
International scientific co-publications	288.6	82.9	0.0
Scientific publications among the top 10% most cited	133.3	-21.9	0.8
Foreign doctorate students as a % of all doctorate students	168.3	32.7	5.9
Digitalisation	**147.5**	**12.1**	**4.6**
Broadband penetration	144.4	14.9	0.0
Individuals with above basic overall digital skills	151.7	8.9	8.9
Finance and support	**131.4**	**52.0**	**6.4**
R&D expenditure in the public sector	159.0	0.0	9.8
Venture capital expenditures	150.6	116.8	7.6
Direct and indirect government support of business R&D	75.3	52.6	0.0
Firm investments	**115.6**	**25.4**	**0.5**
R&D expenditure in the business sector	120.8	-12.1	4.5
Non-R&D innovation expenditures	102.8	46.0	24.7
Innovation expenditures per person employed	122.0	44.7	-29.6
Use of information technologies	**147.4**	**12.6**	**9.7**
Enterprises providing ICT training	162.7	25.5	19.8
Employed ICT specialists	132.4	0.0	0.0
Innovators	**121.3**	**44.6**	**0.0**
SMEs introducing product innovations	130.0	41.6	0.0
SMEs introducing business process innovations	114.1	47.4	0.0
Linkages	**214.2**	**4.7**	**0.0**
Innovative SMEs collaborating with others	118.9	19.7	0.0
Public-private co-publications	489.0	42.7	0.0
Job-to-job mobility of HRST	181.2	-26.5	0.0
Intellectual assets	**135.8**	**-16.0**	**-13.6**
PCT patent applications	140.5	2.6	4.5
Trademark applications	110.8	-0.6	-9.1
Design applications	155.7	-52.0	-40.5
Employment impacts	**106.6**	**6.1**	**-4.7**
Employment in knowledge-intensive activities	118.0	0.0	0.0
Employment in innovative enterprises	97.0	11.7	-9.1
Sales impacts	**92.1**	**18.9**	**6.2**
Exports of medium and high technology products	73.5	0.1	0.2
Knowledge-intensive services exports	96.3	6.8	-8.8
Sales of new-to-market and new-to-firm innovations	115.8	65.2	36.2
Environmental sustainability	**122.7**	**5.5**	**1.9**
Resource productivity	72.1	18.3	7.7
Air emissions by fine particulates	120.3	2.1	0.0
Environment-related technologies	171.9	0.0	0.0

Emerging Innovators Moderate Innovators Strong Innovators Innovation Leaders

Relative strengths

- Public-private co-publications
- International scientific co-publications
- Population involved in lifelong learning

Relative weaknesses

- Resource productivity
- Exports of medium and high technology products
- Direct and indirect government support of business R&D

Strong increases since 2017

- Venture capital expenditures
- International scientific co-publications
- Sales of new-to-market and new-to-firm innovations

Strong decreases since 2017

- Design applications
- New doctorate graduates
- Job-to-job mobility of HRST

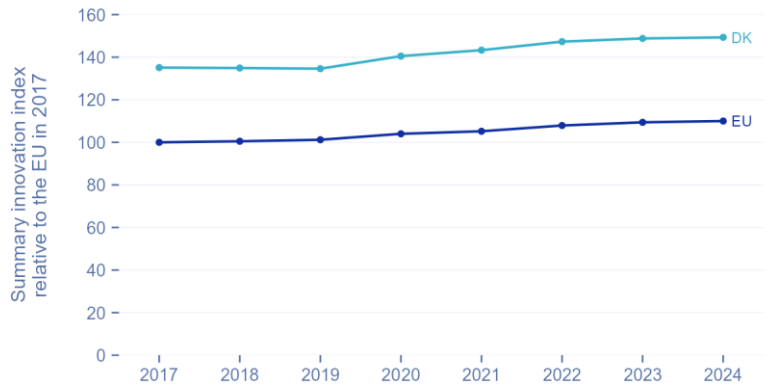
Strong increases since 2023

- Sales of new-to-market and new-to-firm innovations
- Non-R&D innovation expenditures
- Enterprises providing ICT training

Strong decreases since 2023

- Design applications
- Innovation expenditures per person employed
- New doctorate graduates

Footnote: *The first data column shows scores relative to the EU in 2024, with colour codes indicating performance levels. The subsequent columns show performance changes over time, with scores relative to the EU in 2017, coloured in purple for positive change and red for negative change. As reference years differ between the first column (2024) and the last two columns (2017), scores cannot be directly compared or subtracted across these columns.*



Summary innovation index

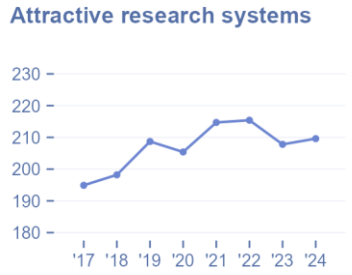
The line chart shows the evolution of the innovation performance of Denmark over time, relative to the performance of the EU in 2017.

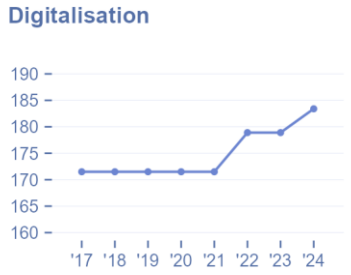
Footnote: *All performance scores (SII and dimensions below) are relative to that of the EU in 2017.*

Framework conditions

Denmark's framework conditions are among the best in the European Union, driven by a highly performing research system with strong international collaboration. The country attracts more and more foreign doctorate students (126.2% of the EU average in 2024) and is very active in co-publications with research partners from abroad, scoring second in the EU in terms of highest number of international scientific co-publications (288.6% of the EU average in 2024).

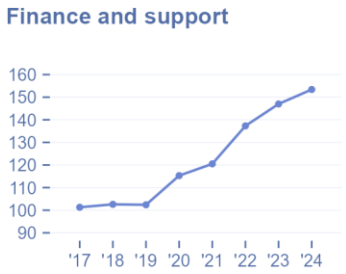
On top of that, Denmark is highly digitalised and keeps improving the share of enterprises with access to high-quality broadband connection (144.4% of the EU average in 2024), and the share of individuals with above basic digital skills (151.7%). Similarly, the population involved in lifelong learning is very high, over twice the EU average in 2024 at 227.8%, and has strongly increased in recent years (+56.1%-points). Regarding tertiary education, the population with tertiary diplomas has stabilised at around half of the population (132% of the EU average in 2024), but the number of doctorate graduates in STEM has strongly decreased over the years (-46.3%-points) despite the development of digital technologies.

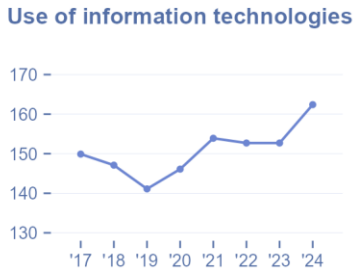




Investments

Denmark's financing capacity for R&D is strong due to the combined R&D effort of the Danish public sector, businesses, and private financing actors (venture capital). The government plays a key role in funding public research, with high and stable R&D expenditures in the public sector (159.0% of the EU average in 2024), but government direct and indirect support towards business R&D is under the EU average (75.3%) despite a strong improvement over the years. In recent years, the Danish government has implemented indirect support to R&D through tax deductions and tax credits for R&D investments (OECD, 2024). Venture capital investment rose strongly in the recent years (+116.8%-points) and offers an alternative source of financing to support innovation in businesses. Overall, innovation expenditures in firms have increased over the years, especially driven by non-R&D innovation (+46.0%-points). Firms also tend to invest strongly in their staff, as they provide over 1.5 times (162.7%) as much ICT training as the EU average in 2024.

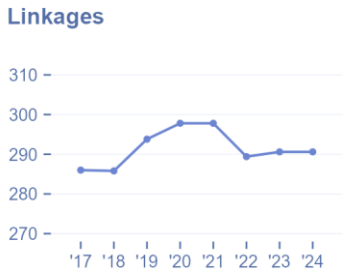


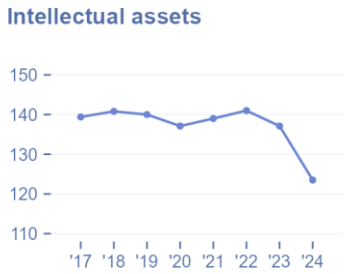


Innovation activities

Innovation activity in Denmark is particularly developed compared to the EU average and driven by the strong research ecosystem that stimulates links between innovation actors. More and more innovative SMEs tend to collaborate with each other (+19.7%-points). Collaboration between public and private actors in research activities through co-publications is almost five times higher than the EU average in 2024 at 489.0%, and high job-to-job mobility of staff in Science & Technology performs at 181.2% of the EU average in 2024 (despite a downward trend). Innovation activities are facilitated by the strong collaboration culture between research stakeholders, including between the public and the private sector.

Regarding intellectual property, Denmark's lead over the EU average has been slightly reduced in recent years due to an observed drop in design applications (-52.0%-points between 2017 and 2024) and to a lesser extent in trademarks (-0.6%-points), but the country remains in a good position in the production of intellectual assets, especially in PCT patent applications (140.5% of the EU average).

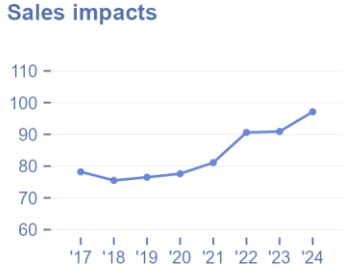


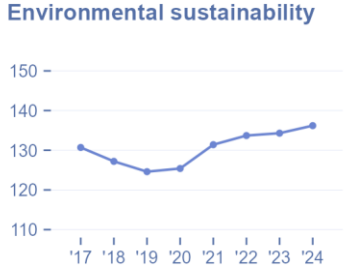


Impacts

Despite excellent framework conditions, high investment, and strong innovation activity, the impact on employment (106.6%), sales (92.1%), and environmental sustainability (122.7%) is mixed in comparison to the EU average in 2024. Employment in innovative enterprises has been affected since 2023 (-9.1%-points), while employment in knowledge-intensive activities has remained stable.

Denmark lags slightly in terms of exports of medium and high-technology products (73.5% of the EU average in 2024) and resource productivity despite a notable increase in the latter (+18.3%-points). However, Denmark has a strong focus on environment-related technologies, strongly outperforming the EU average in 2024 at 171.9%, and a more recent focus on sales of innovations (both new-to-market and new-to-firms) that have significantly increased in recent years.





Structural differences

Performance and structure of the economy

Denmark has one of the highest GDP per capita of the EU, benefitting from a slightly faster GDP growth rate (2.3%). The economy's structure is oriented towards knowledge-intensive and high-tech activities, with employment in knowledge-intensive services (33%) and high and medium-high-tech (45%) significantly above the EU average. On the other hand, employment in non-technical sectors is below the EU average, especially for manufacturing (11.3% of total employment) and, to a lesser extent, for services (38.1% of total employment).

Compared to the rest of the EU, Danish SMEs play a bigger role in the economy, capturing a larger share of total turnover (15.2%), although they are still far behind large enterprises (43.3% of total turnover).

Business and entrepreneurship

Despite the importance of SMEs in the Danish economy and the active entrepreneurial ecosystem, including several industry clusters, enterprise creation is not Denmark's strongest asset. The birth rate of enterprises with 10+ employees is significantly lower than the EU average.

When established, Danish enterprises tend to have a very strong focus on R&D, with almost half (45%) being top R&D spenders, the second-highest share in the EU. On top of that, Danish enterprises also attract significant FDI thanks to the country's friendly business environment, low bureaucracy, and excellent infrastructure, including digital.

Innovation profiles

Data regarding innovation activities is not available for Denmark.

Governance and policy framework

Denmark's governance takes place within the framework of a constitutional monarchy and a parliamentary representative democracy. Denmark showcases exemplary levels of corruption and rule of law displaying the best score of the EU on the Corruption Perceptions Index (90/100).

Government plays a role in promoting innovation, with a notable share of innovation procurements in total public procurement, and when it comes to procurement of advanced technology products, the Danish government is close to the EU average.

Climate change

Thanks to its exemplary energy mix constituted mostly of renewable energy (wind, bioenergy and solar), Denmark mitigates its greenhouse gas emissions from energy consumption efficiently, and has the lowest emissions intensity per energy consumption of the EU. This excellent performance in resource efficiency has also driven upward the Eco-Innovation Index in which Denmark performs very well and ranks 3rd.

However, Denmark lags behind in circularity, with a circular material use rate significantly below the EU average. More efforts are needed to promote innovative circular practices in Denmark, as recommended by the Action Plan for Circular Economy published by the Danish Ministry of Environment (Ministry for Environment Denmark, 2021).

Demography

Denmark has a population of 5.9 million inhabitants, growing at a 0.8% rate, significantly faster than the EU average. Denmark is slightly more densely populated than the EU.

Structural indicators

The table below presents some structural differences between Denmark and the EU.

	DK	EU
Performance and structure of the economy		
GDP per capita	132.7	100
Average annual GDP growth (2021-2023 average)	2.3	1.9
Employment share Manufacturing	11.3	15.8
Employment share High and Medium high-tech	45	37.9
Employment share Services	38.1	39.8
Employment share Knowledge-intensive services	32.7	28.6
Turnover share SMEs	15.2	12.6
Turnover share large enterprises	43.3	49.6
Foreign-controlled enterprises – share of value added	14.1	13.3
Business and entrepreneurship		
Enterprise births	0.5	0.8
FDI net inflows	4.3	1.9
Top R&D spending enterprises	45	8.4
Buyer sophistication	3.7	3.6
Governance and policy frameworks		
Corruption Perceptions Index	89.3	64
Government procurement of advanced technology products	3.5	3.4
Rule of law	1.9	1
Innovation procurement as a share of total public procurement	13.5	9.2
Climate change		
Circular material use rate	7.7	11.5
Greenhouse gas emissions intensity of energy consumption	64.3	82.8
Eco-Innovation Index	167.5	121.5
Demography		
Population size (in millions)	5.9	447
Average annual population growth (2021-2023 average)	0.8	0.3
Population density	139.3	109

References

The country's relative strengths and weaknesses for each indicator, compared to other EU Member States and neighbouring countries, can be found in Annex B.

Ministry for Environment Denmark, Action Plan for Circular Economy, 2021, Accessed July 4, https://ddrn.dk/wp-content/uploads/2024/01/alle-faktaark-1.pdf

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This report provides the Country profile from the 2024 European Innovation Scoreboard for Denmark

Studies and reports