

Innovation Ecosystem and cluster development in Denmark

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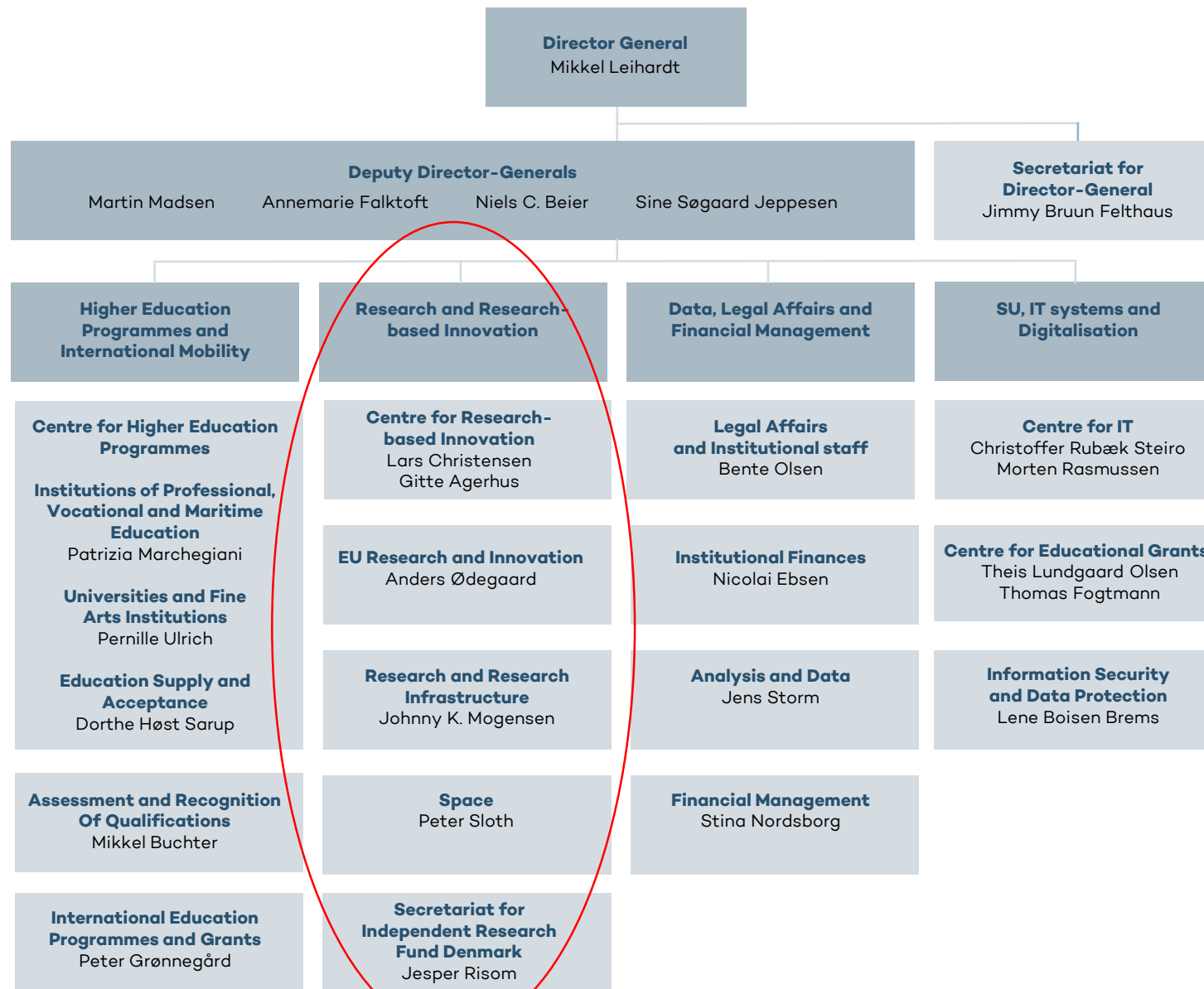
Agenda

1. The Ministry of Higher Education and Science
– main activity areas & organization
2. Performance of the Science and Knowledge-based Innovation Ecosystem
3. Innovation Intermediaries
4. Joint cluster programme



1. The Ministry of Higher Education and Science – main activity areas & organization

The Ministry and the Danish Agency for Higher Education and Science (staff of app. 500 people)



Ministry of Higher Education and Science

Research and academic education	Bachelor education	Business oriented higher education	National Innovation Infrastructure	Public Research & Innovation Funding	Internationalisation
<p>8 Universities</p> <p>3 Architecture and Art Institutions</p>	<p>7 University Colleges</p>	<p>8 Academies of Higher Education</p> <p>5 Maritime Educational Institutions</p>	<p>13 Business & Innovation Cluster network</p> <p>7 Approved Technological Service Institutes (RTO)</p> <p>University tech trans units/ incubators</p>	<p>Danish National Research Foundation</p> <p>Independent Research Fund Denmark</p> <p>Innovation Fund Denmark</p>	<p>7 Innovation Centers (US, Germany, Korea, India, China, Israel)</p> <p>Horizon Europe</p> <p>Research Infrastructure such as European Spallation Source</p>

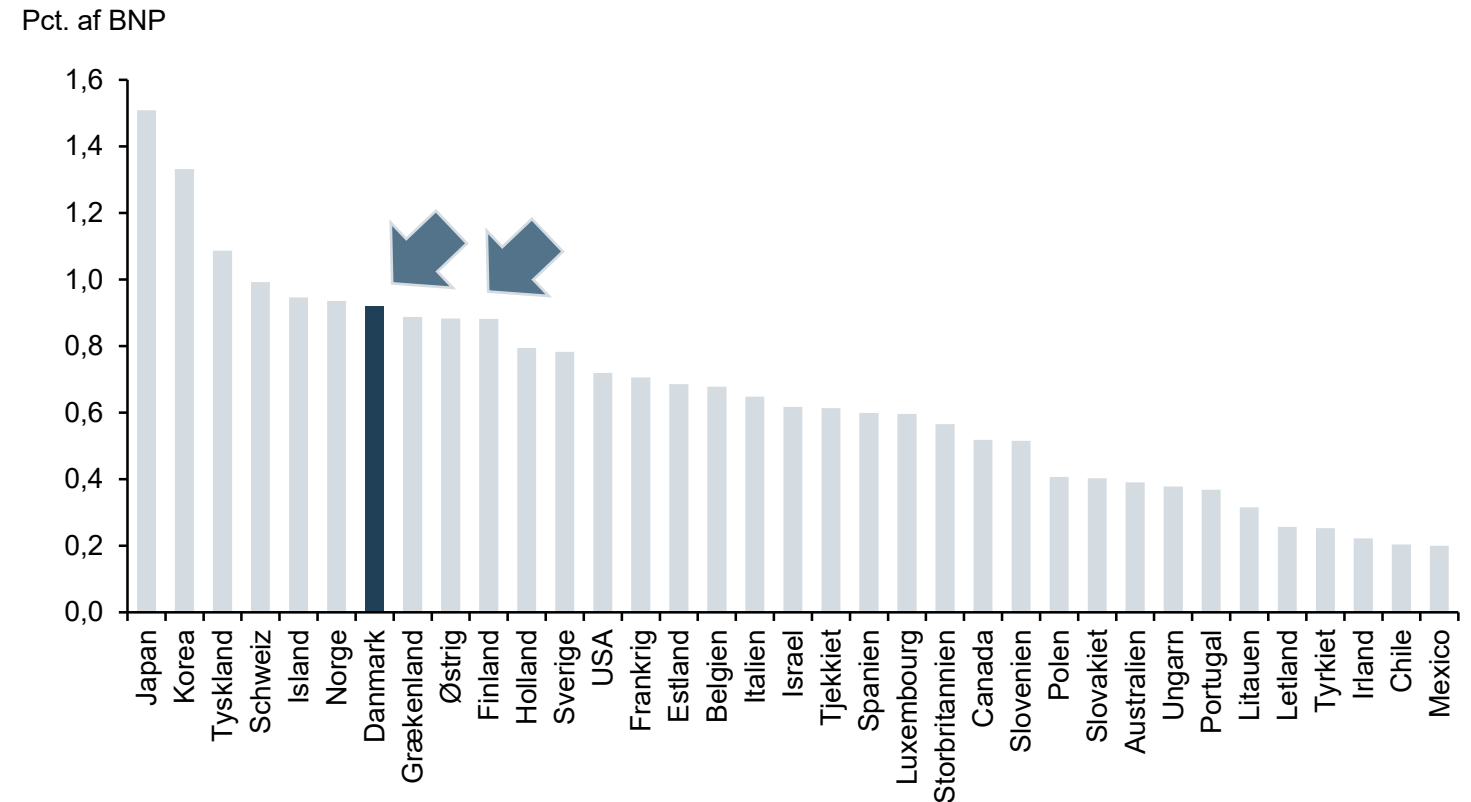
2. Performance of the Science and Knowledge-based Innovation Ecosystem



The target of 1 % of GDP as public investment in R&D

- R&D financed by the public sector was in 2022 approximately DKK 27 billion (3,6 billion Euro)
- This corresponds to 1 % of GDP.
- Since the 2000s there has been political consensus on the 1 % target by changing governments.
- The share of the private sector is approx. 2 % of GDP
- The public sector includes funding from the Central Government, the Danish Regions and Municipalities as well as from international organizations and programmes like the EU Horizon Europe programme.

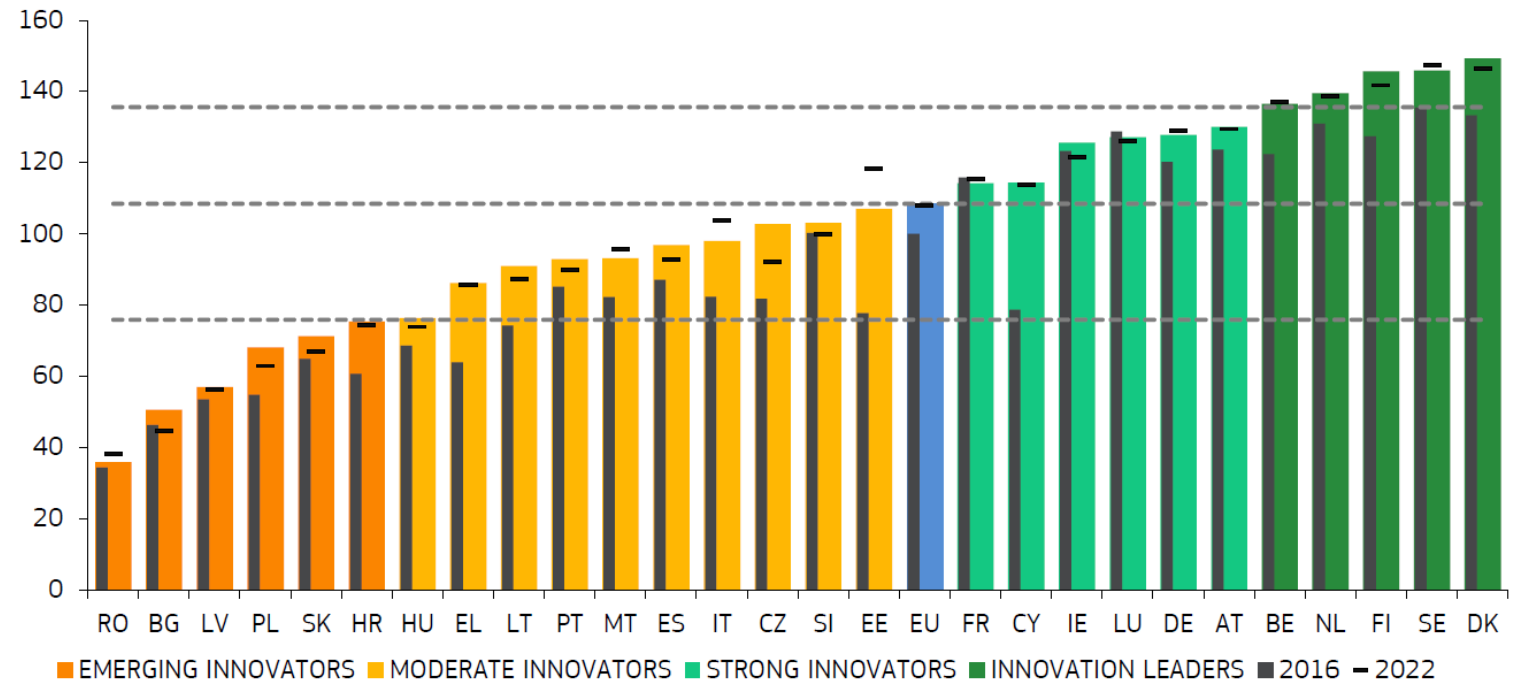
Gross Domestic Expenditures on R&D financed by government/public sector, % of GDP, 2021



Denmark as "innovation leader" in Europe

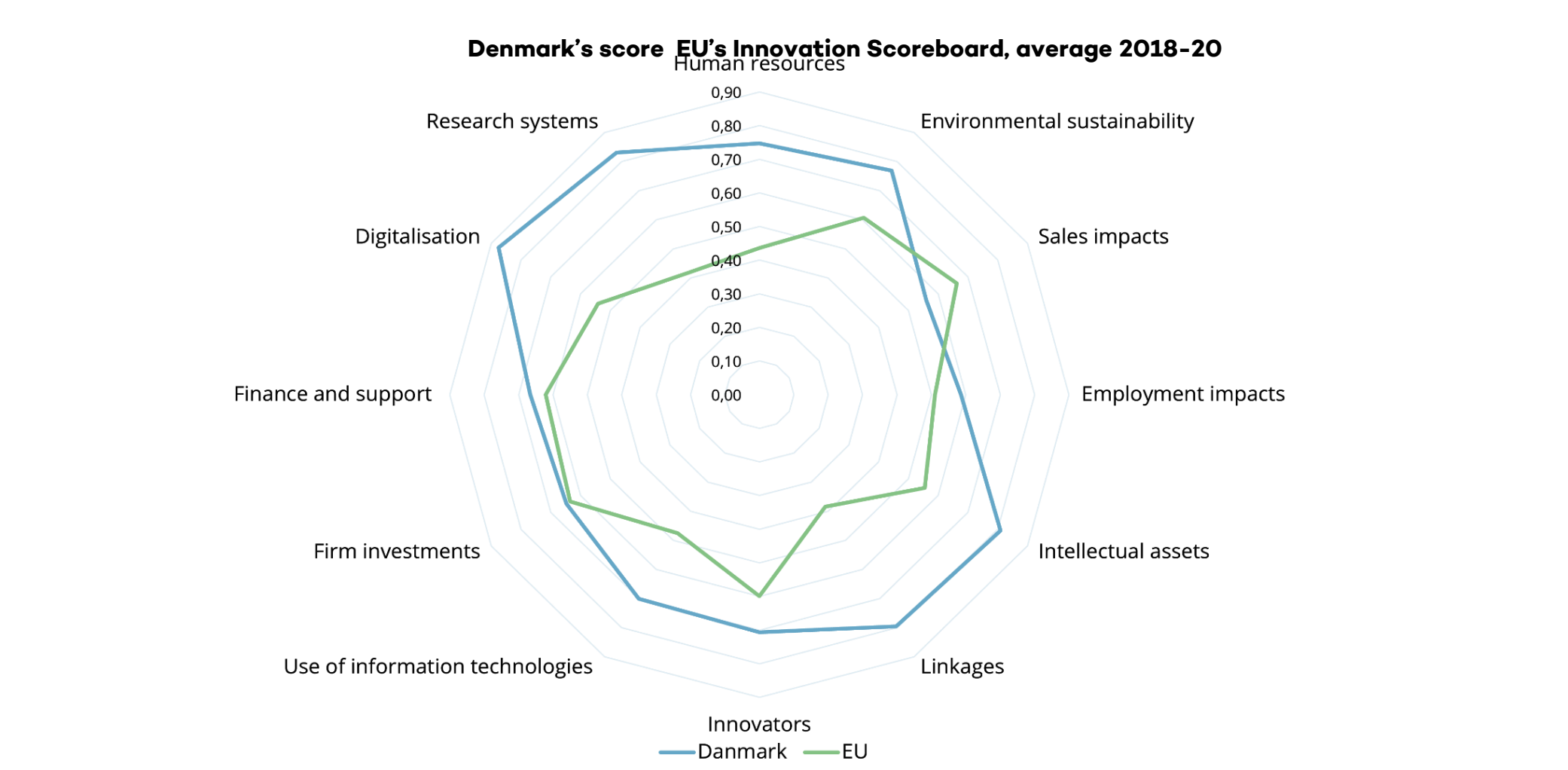
- 2023: Denmark is at the top of the EU Innovation Scoreboard together with Sweden, Finland, the Netherlands and Belgium.
- Denmark has a high level of public and private R&D investments
- Peer review of the Danish R&I system (2019) by international experts under the EU-Commissions Policy Support Facility.

Figure 1: Performance of EU Member States' innovation systems

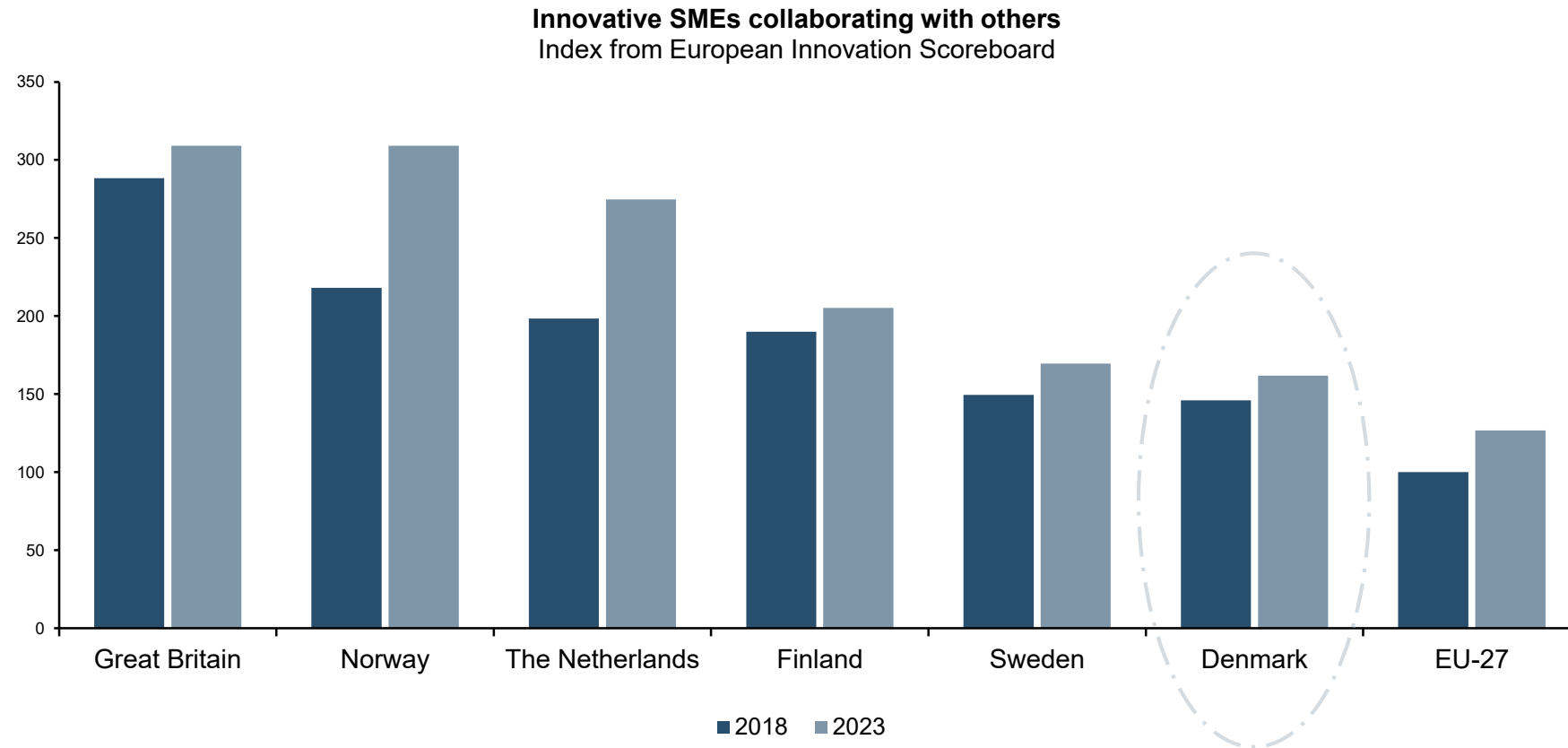


Source: Europa-Kommissionen, European Innovation Scoreboard 2023

The overall picture: Denmark has strong prerequisites for knowledge-based innovation, but performs less well in some key areas.



Comparison with other countries



Source: European Commission – European Innovation Scoreboard 2023

3. Innovation Intermediaries



MHES' Innovation intermediaries and steering mechanisms

7 Research and Technology Organizations (private non-profit organizations)
(app. 40 mio. euro per year)

- The minister approves the RTO every 4th year. (A kind of pre-qualification).
- Approval gives access to apply for public funds for R&D and knowledge dissemination
- Performance contracts include particular action areas with specific objectives and indicators.
- Performance contract funds make up just under 10 per cent. of the turnover of the individual RTOs (can vary)

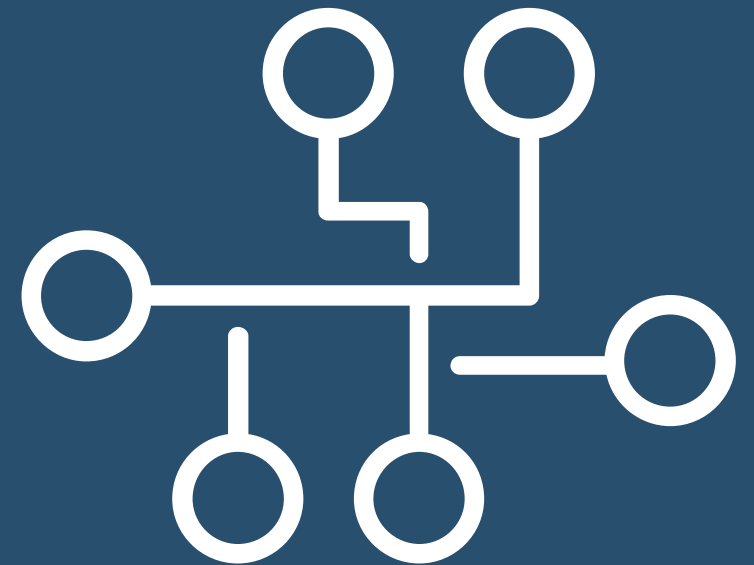
13 National Cluster Organizations
(app. 21.5 mio. euro per year)

- The clusters are appointed by MHES within the Denmark's business and knowledge strongholds as defined in the strategy for business promotion of the Danish Board of Business Development.
- The clusters apply for 4 years of funding via the cluster program "Innovation power: Danish clusters for knowledge and business", which MHES and the Ministry of Business, Industry and Financial Affairs co-finance with app. 11 ME each.
- The applications include specific objectives and indicators. These are evaluated and discussed by the two ministries with the clusters on an annual basis.

7 Innovation Centre Denmark (ICDK)
(app. 5 mio. euro per year)

- The ICDK are in different locations around the world at the Embassies and General Consulates of the Danish Ministry of Foreign Affairs.
- ICDK is operated directly by the joint ICDK HQ in the MHES and the Ministry of Foreign Affairs (MFA). MHES funds the centres and international collaboration programs
- Performance contracts are made annually and objectives are made in dialogue between the two ministries and the management of each Innovation Centre.

3. Joint cluster programme



Reformed cluster structure (2019-)

Problem drivers: Too many clusters (40-60 regional clusters/innovation networks), overlapping, small organizations => confusion for companies and stakeholders in general

Solution:

- Business Promotion Act (2019)
- Creation of The Danish Board of Business Development (responsible for EU funding (ERDF + Social Fund) - the board took over the responsibility from the 5 Regional Growth fora
- Top-down strategy: *Business Promotion in Denmark 2020-2023* (selection of strongholds appr. 10-12)– new strategy to be launched soon
- One publicly financed cluster per stronghold = > Consolidation of the cluster landscape
- Danish Agency for Higher Education and Science and Danish Business Authority (secretariat for the Board) are creating and cofinancing a common programme

The Danish Cluster program 2021-24

- The clusters organizations are appointed by the minister of higher education and science within Danish business and technology strongholds defined in the Danish Board for Business Development's strategy on business development
- The Ministry for Higher Education and Science and the Danish Board of Business Development co-finance the Danish national cluster program for 2021-2024 with around 21.505.000 euro per year
- New cluster programme in the making (2025-'28) – expected call in spring 2024

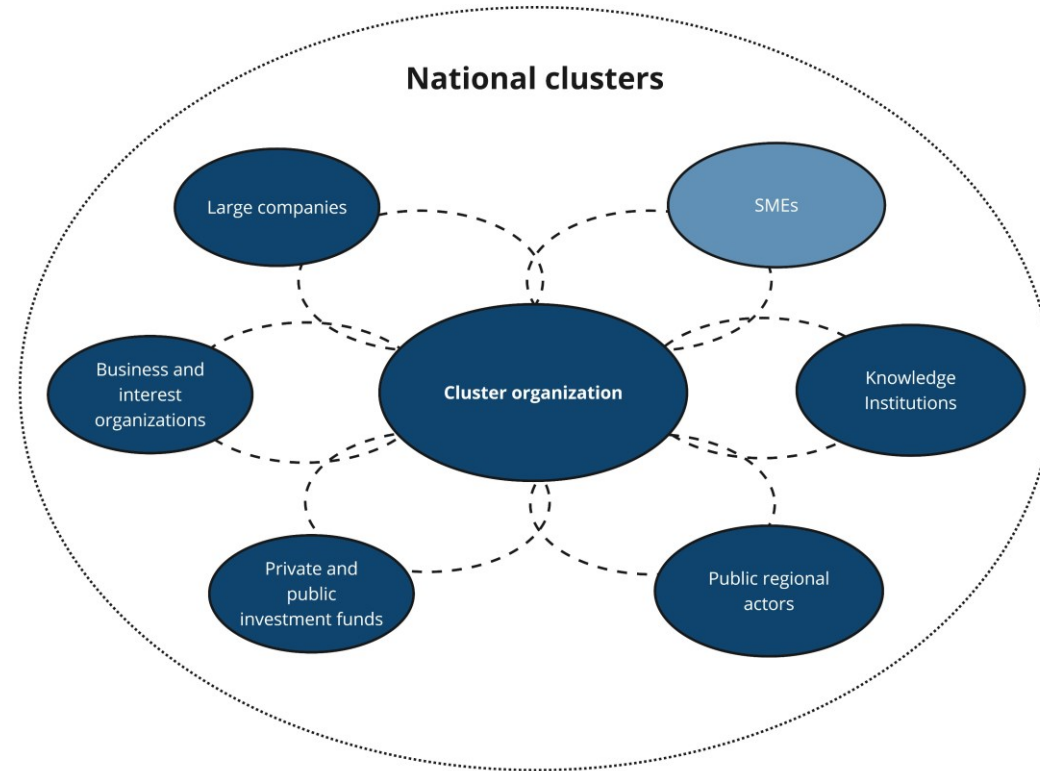


The Danish cluster program - Innovationskraft



The national cluster system in Denmark

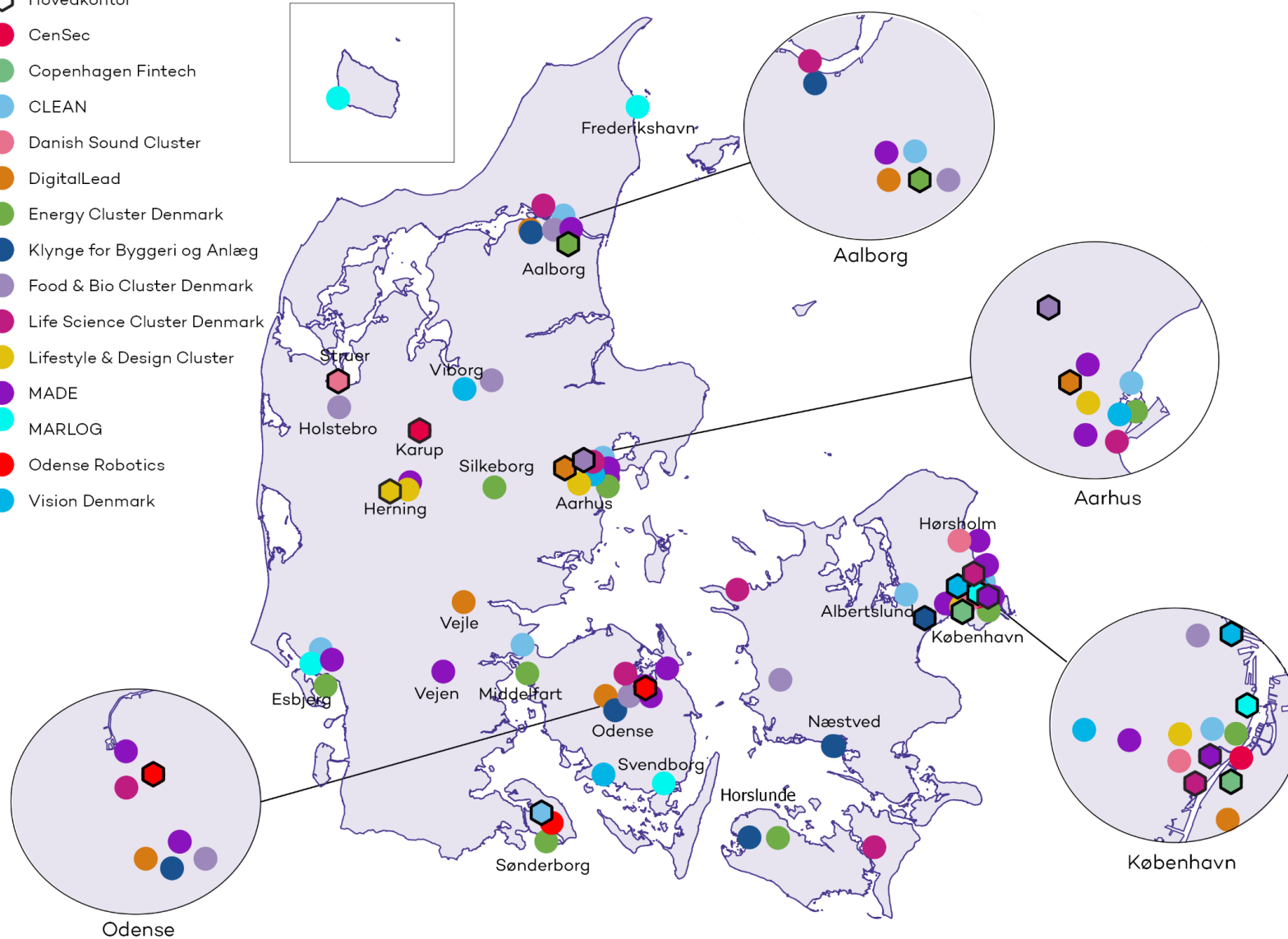
- The clusters' core assignment is to strengthen companies (especially SMEs) productivity and competitiveness through collaborative innovation activities and knowledge transfer between companies and knowledge institutions
- The clusters are neutral collaboration platforms which are available to all types of relevant companies and entrepreneurs in all of Denmark creating an ecosystem
- Cluster organizations are private, non-profit and are often associations with paying members, which provides different activities to promote knowledge transfer and collaboration around innovation
- Boards with leading figures from both industry and academia
- Gold label according to European Cluster Excellence Initiative (ECEI)



Geographical locations

Klynger

-  Hovedkontor
-  CenSec
-  Copenhagen Fintech
-  CLEAN
-  Danish Sound Cluster
-  DigitalLead
-  Energy Cluster Denmark
-  Klynge for Byggeri og Anlæg
-  Food & Bio Cluster Denmark
-  Life Science Cluster Denmark
-  Lifestyle & Design Cluster
-  MADE
-  MARLOG
-  Odense Robotics
-  Vision Denmark



What is financed under the grant?

The Ministry for Higher Education's and The Danish Board of Business Development's grants are used by the clusters organizations to finance knowledge based and business focused activities

Activities financed under the Ministry for Higher Education's grant:

- Knowledge-sharing and matchmaking
- Collaboration projects between companies and knowledge-institutions
- Internationalization
- Support of R&D applications for other programs

Activities financed under the Board:

- Collaborative projects
- Knowledge dissemination and matchmaking
- Internationalization

Target groups:

- SME's that are already active in innovation
- SME's that are not yet active, but has an innovation potential
- Entrepreneurs/incubators/accelerators

Lessons learned

Consolidation

- Takes time
- Needs facilitation

SME awareness

- Takes even more time
- Local authorities and business hubs can help

Scope

- Clearly define role of clusters: innovation
- National clusters attract attention from many different kinds of actors

