



EUROPEAN CLUSTER
COLLABORATION PLATFORM

Country factsheet

Denmark

An initiative of the European Union





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01

Introduction and economic policy context



EUROPEAN CLUSTER
COLLABORATION PLATFORM

Strengthening the European economy through collaboration



1. Introduction and economic policy context



This document presents an overview of the cluster policy in Denmark. Given the importance to contextualise the cluster policies (and related) analysed in the factsheets, a comprehensive outlook of the country in socioeconomic terms can be consulted in the [European Semester Country Report for Denmark](#).



The European Semester is an instrument introduced to coordinate the EU Member States economic policies and address the economic challenges faced by the EU. Its goals are “to ensure sound public finances, to prevent excessive macroeconomic imbalances in the EU, to support structural reforms to create more jobs and growth, and to boost investment”. Thus, it focuses on the following areas: business environment; financial and fiscal stability; green economy; public administration; labour market and skills; and, social protection and cohesion. Chapter 4.2 provides an overview on how Denmark’s cluster policy can help to tackle the economic policy challenges identified in the European Semester country recommendations.

As a consequence of the COVID-19 pandemic, European as well as global economies have been subject to severe output losses. In response, policymakers at EU and national level have acted decisively and made very significant financial resources available to tackle the threat of a prolonged downturn. This was carried out through the Recovery and Resilience Facility, [National recovery and resilience plans](#) have been drafted in each Member State to ensure a recovery that addresses the challenges identified in the European Semester. In Denmark, cluster organisations are not directly mentioned in the National recovery and resilience plan¹.

In addition to the COVID-19 pandemic, the ongoing Russia military aggression on Ukraine has also taken its toll on EU companies and industrial ecosystems, highlighting the significance of policy efforts in supporting SMEs and clusters.

The [ERDF Partnership Agreement 2021-2027](#) in Denmark makes a clear reference to clusters. Based on the agreement, clusters are regarded as channels for the participation of SMEs and entrepreneurs in international value chain collaborations, which can contribute to green and digital transformation. Cluster development aims to international cluster-to-cluster cooperation and to create synergies with the Eurocluster initiative. The [Danish ERDF OP 2021-2027](#) mentions cluster organisations as a strength of Denmark and in the context of the smart specialisation strategy.

In the following, a succinct overview of the cluster policy in Denmark will be provided. The structure of this factsheet generally encompasses:

- 1) an overview of the industrial ecosystems and cluster landscape in Denmark
- 2) an overview of the national cluster policy,
- 3) assessment of the state of Danish cluster policy and its role in broader economic policy challenges mentioned in the European Semester Reports.

¹ Denmark’s Recovery and Resilience Plan: https://fm.dk/media/18771/denmarks-recovery-and-resilience-plan-accelerating-the-green-transition_web.pdf (last access 12.01.2024).

The background features a large, dark blue hexagon with a white outline. Inside this hexagon, there is a smaller, slightly offset white hexagon. The bottom-left corner of the image is a solid blue triangle. The text is positioned on this blue triangle.

02

Industrial ecosystems and cluster landscape



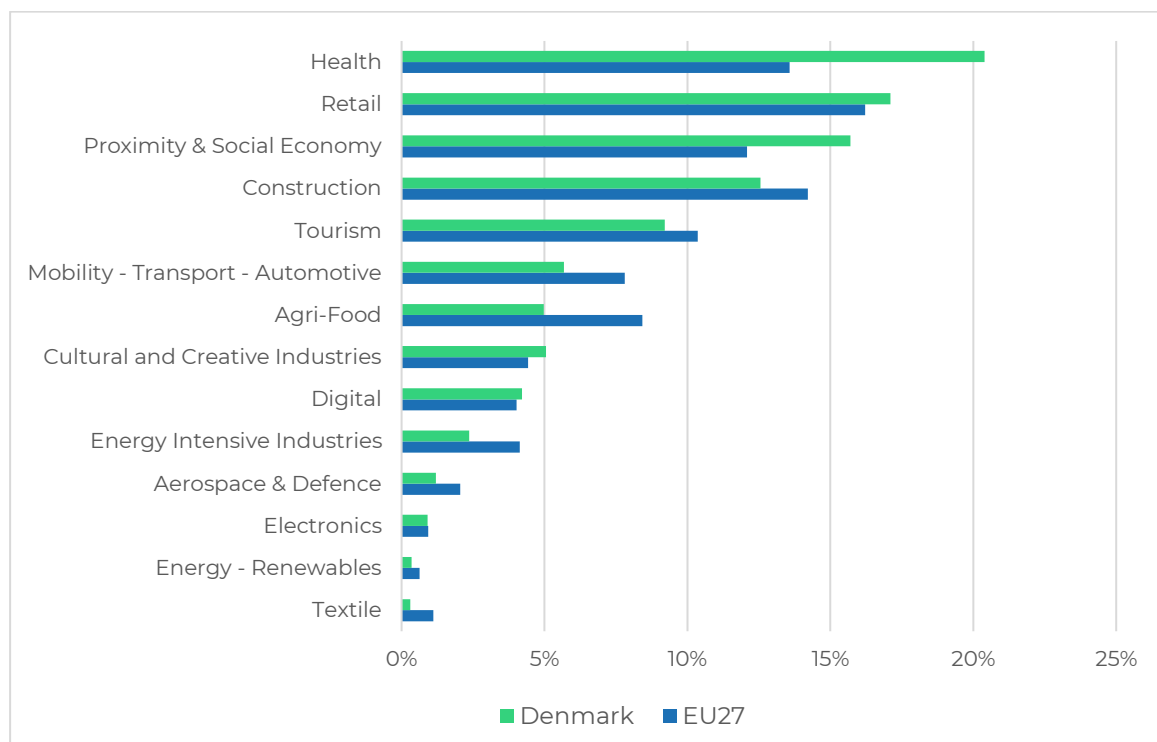
2. Industrial ecosystems and cluster landscape

2.1 Employment in the 14 industrial ecosystems

As part of its Industrial Strategy (March 2020), the European Commission has identified 14 industrial ecosystems that encompass all players operating in a value chain.² The classification of the 14 industrial ecosystems have been calculated by aggregating NACE 2 -digit activities, following the methodology established in the European Commission.³ This means that the data provided below can differ from other publications by the European Commission that do not consider the industrial ecosystem classification

In the following figure, the employment share of the country and the EU27 in each industrial ecosystem is shown relative to the number of employed persons in the 14 industrial ecosystems. It shows the proportion of the country's employment accounted for by each ecosystem, as well as the equivalent figure for the EU27 on average. The ecosystems are ordered, from top to bottom, according to the amount of employment in the country. When the bar for the country is higher than that of the EU27, it indicates that the country is more specialised in that ecosystem. The top three industrial ecosystems by employment for Denmark are "Health", "Retail" and "Proximity & Social Economy".

Figure 1: Employment across the industrial ecosystems



Source: ECCP (2023), own elaboration based on data from Eurostat.

² see here for more information <https://clustercollaboration.eu/in-focus/industrial-ecosystems> (last access 09.01.2023).

³ see European Commission (2022): Annual Single Market Report, SWD(2022).



2.2 Regional agglomerations

Economic activity is not equally distributed across regions in the EU but tends to agglomerate in certain places. In this context, an Agglomeration is defined as the concentration of a certain industry, sector or ecosystem in a certain geographical area. The following section provides an analysis of, first, the sectoral agglomerations and, second, the ecosystem agglomerations in the regions. Agglomerations are operationalised through the employment-based Location Quotients (LQ), measuring the relative specialisation of one region compared to the EU level, as well as the employment size.

If the LQ for a given activity-region combination is above 1.5, it is considered an agglomeration and if the activity accounts for at least 1 % of total employment in the region, it is considered regionally relevant.⁴ The following tables show the total number of regionally relevant agglomerations in each region in the country and identifies the top five most specialised of these agglomerations. The first table focuses on the 88 NACE 2-digit activities or sectors, totalling 25 in the country, while the second table is based on the 14 ecosystems, which total four in the country.

Table 1 Number of regionally relevant sectoral agglomerations and Top 5 agglomerations by region (NACE)

Region	# of agglomerations	Agglomerations 1	Agglomerations 2	Agglomerations 3	Agglomerations 4	Agglomerations 5
DK01: Capital (region)	12	H50 - Water Transport	C21 - Manuf. of pharmaceuticals	J58 - Publishing activities	Q88 - Social work without accommodation	Q87 - Residential care
DK02: Zealand	3	C21 - Manuf. of pharmaceuticals	Q88 - Social work without accommodation	Q87 - Residential care		
DK03: South Denmark	3	Q88 - Social work without accommodation	Q87 - Residential care	C28 - Manuf. of machinery & equipment		
DK04: Central Jutland	3	Q88 - Social work without accommodation	C28 - Manuf. of machinery & equipment	Q87 - Residential care		
DK05: North Jutland	4	Q88 - Social work without accommodation	Q87 - Residential care	C16 - Manuf. of wood & of products of wood & cork	C28 - Manuf. of machinery & equipment	

Source: ECCP (2023), own elaboration based on data from Eurostat.

As mentioned at the beginning of this Chapter, the NACE 2-digit activities have been aggregated to the 14 EU industrial ecosystems following the methodology established by the European Commission. Table 2 provides an overview of the regional distribution of industrial ecosystem agglomerations. Overall, there are fewer numbers of ecosystem agglomerations compared to the regionally relevant sectoral agglomerations by NACE sectors. This more concentrated agglomeration can at least partially be linked to the methodology of measurement of the 14 industrial ecosystems.

The Danish employment strength in the ecosystems “Health” and “Proximity & Social Economy” (see also Figure 1) is also reflected in both the regionally relevant sectoral agglomerations and regionally relevant ecosystem agglomerations of the different Danish regions. All Danish regions have relevant sectoral agglomerations in sectors such as social work (Q88) and residential care (Q87). This is also reflected in the regionally relevant ecosystem agglomeration “Health” of the Danish Capital region (DK01) and Zealand (DK02).

⁴ for more information on the methodology please see the methodology note: <https://clustercollaboration.eu/in-focus/policy-acceleration/country-factsheets-on-cluster-policies-and-programmes> (last access 09.01.2023).



Table 2: Regionally relevant ecosystem agglomerations

Region	Number of ecosystem agglomerations	Agglomeration 1	Agglomeration 2	Agglomeration 3
DK01: Capital (region)	3	Health	Digital	Cultural & Creative Industries
DK02: Zealand	1	Health		-
DK03: South Denmark	0	-	-	-
DK04: Central Jutland	0	-	-	-
DK05: North Jutland	0	-	-	-

Source: ECCP (2023), own elaboration based on data from Eurostat.

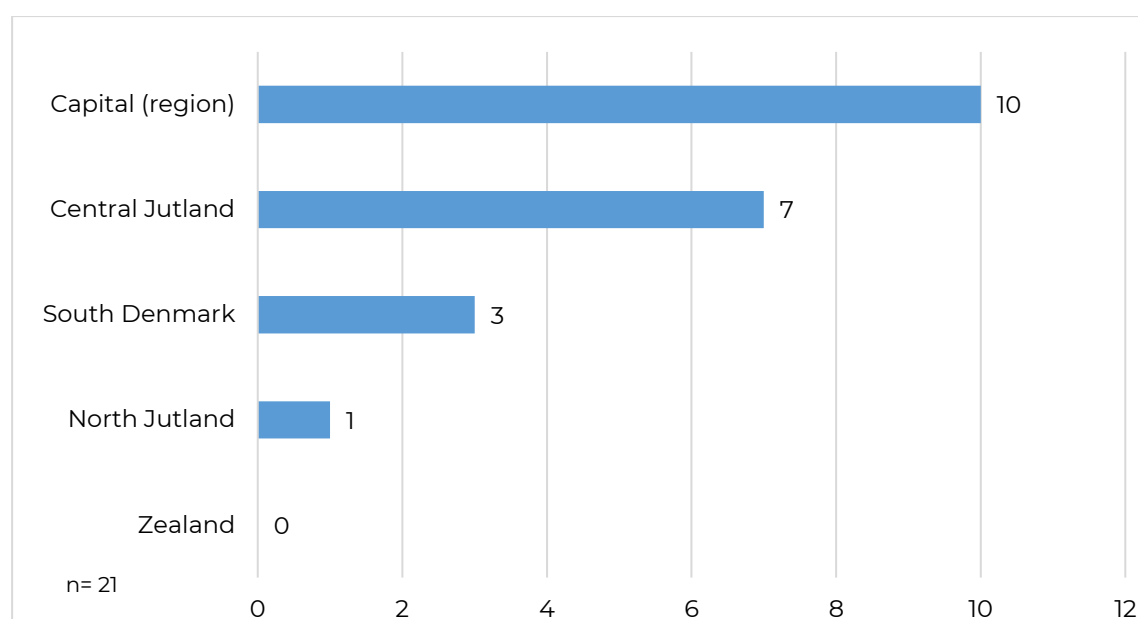


2.3 Cluster organisations & interregional cooperation

Cluster organisations in the regions

There are 21 cluster organisations registered on the ECCP. The following figure shows the presence of cluster organisations in the different regions. Almost half of the registered cluster organisations are located in the Capital. Seven cluster organisations with profiles on the ECCP are based in Central Jutland, followed by South Denmark with three profiled organisations. One cluster organisation with a profile on the ECCP is located in North Jutland. In Zealand there is no cluster organisation with a profile on the ECCP.

Figure 2: Cluster organisations profiled on the ECCP



Source: ECCP (2023). Note: the data for the analysis was extracted on 21/12/2023.

SMEs (84%, EU: 83%) followed by large enterprises (12%, EU: 9%) and research organisations (4%, EU: 7%) constitute the majority of member organisations of Danish cluster organisations with profiles on the ECCP. From a thematic perspective, these Danish cluster organisations are operating in the following industrial ecosystems. Since cluster organisations on the ECCP can be allocated to multiple industrial ecosystems, the number of cluster organisations with by industrial ecosystem can be higher than the overall number of cluster organisations in the country. The following list also partially reflects the Danish strengths in terms of employment (e.g., in “Digital”) that were outlined before.

- Digital (3 cluster organisations)
- Renewable Energy (2 cluster organisation)
- Construction (2 cluster organisation)
- Aerospace & Defence (1 cluster organisation)
- Electronics (1 cluster organisation)
- Agri-food (1 cluster organisation)
- Mobility-Transport-Automotive (1 cluster organisation)
- Energy Intensive Industries (1 cluster organisation)
- Health (1 cluster organisation)



- Electronics (1 cluster organisation)

Interregional cooperation

In the 2014-2020 funding period⁵, the European Cluster Partnerships and the INNOSUP-1 initiative have been launched by the European Commission to encourage clusters from Europe to intensify collaboration across regions and sectors. Danish cluster organisations have been involved in 23 consortia of the European Strategic Cluster Partnerships out of which 17 partnerships were focusing on internationalisation (ESCP-4i) and six partnerships were on cluster management excellence (ESCP-4x). 13 Danish cluster organisations participated in the INNOSUP-1 initiative.

In the 2021-2027 funding period, the Single Market Programme supports clusters as part of the Joint Cluster Initiatives (Euroclusters) for Europe's recovery. From Denmark, two cluster organisations are part of two Euroclusters with partners from nine countries (BE, DE, DK, ES, FR, NO, PL, PT, SE). These Euroclusters are ELBE Eurocluster and POLREC. Collectively they cover eight out of the fourteen industrial ecosystems with ELBE Eurocluster being active in the "Renewable Energy" ecosystem, while POLREC covers eight industrial ecosystems including "Electronics", "Agri-food" and "Construction".

⁵ Many of the programmes of the 2014-2020 funding period have been terminated by December 2023. However, the collaborative projects that were funded may continue to operate.



03

National cluster policy, programmes and initiatives



3. National cluster policy, programmes and initiatives

In this section we provide an overview of the existing Danish cluster policies on a national level.




The breakdown is presented in the form of a table, with the first column showcasing information on the aspects which constitute the policy (beginning with 'Policy Objectives', following with 'Policy Focus', etc.). The second column represents the case of the Danish national cluster policy.

Within the table the text presented in bold (black) depicts standardised categories across country factsheets (56 in total for 2023), which are applied for comparative purposes. This is followed by a complementary descriptive text to provide more insights about the cluster policy in Denmark.

Table 3: Overview of Danish cluster policy

Policy type:	National cluster programme
Policy name:	<u>Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)</u>
POLICY OBJECTIVES 	Strengthening cooperation between companies or industry and RTDI actors Increasing competitiveness and boosting scale up of SMEs Supporting internationalisation activities Enhancing the visibility of clusters Fostering R&D activities, technology development and implementation Fostering innovation and strengthening innovation ecosystems Supporting cluster excellence and professionalisation of cluster management Supporting the consolidation of existing cluster organisations Strengthening the network of cluster organisations/cross-clustering



Policy type:	National cluster programme
Policy name:	<u>Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)</u>
	The overall ambition of this policy intervention is to achieve a simple and clear cluster effort, based on consolidated and professional cluster organisations working nationwide and bringing together the ecosystem in their respective business and technology area. It is a distinct ambition that the effort contributes to the shift towards greener and more climate-friendly production. The aim of the cluster programme is to strengthen the productivity and competitiveness of enterprises - and in particular SMEs - through cooperation on innovation and knowledge transfer between enterprises and knowledge institutions, including government-approved Research and Technology Organisations (RTOs), and other actors in the relevant business and technology areas.
POLICY FOCUS 	Cross-sectoral <p>The Danish Board of Business Development has designated 12 economic areas of business and technology, whereas 10 are characterised as strongholds and two as emerging industries: Environmental technology, Energy technology, Food and bio resources, Maritime industry & logistics, Life science and welfare, Construction & building, Design, fashion and furniture, Advanced production, Digital technologies, Finances and financial technology (Fintech), Robot and drone technology, Animation, games and film.</p> <p>The Minister for Higher Education & Science has moreover designated two emerging areas: Defence, space and security and Sound technology.</p>
RESPONSIBLE AUTHORITIES 	Provides funding <p>Ministry of Higher Education and Science and the Danish Board of Business Development. (Uddannelses- og Forskningsministeriet (UFM) og Danmarks Erhvervsfremmebestyrelse (DEB)). The European Regional Development Fund.</p>
BENEFICIARIES 	SMEs Cluster organisations Research organisations



Policy type:	National cluster programme								
Policy name:	<u>Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)</u>								
	<p>Academic institutions</p> <p>Start-ups</p> <p>Technology centres</p> <p>The cluster organisations must have an international outlook and promote cooperation on innovation across national borders. Among other things, this must strengthen access to international cooperation on innovation and to new international knowledge on testing, demonstration, technology and business opportunities. As part of this, the cluster organisations can support the ecosystem's access to foreign financing of innovation activities, including through private investors, foreign funds, EU programs and the cluster organisation's participation in, for example, InterReg projects.</p> <p>The cluster organisations must be strong, dedicated and professional actors in the business promotion and innovation system. The cluster organisation itself must be an independent, private organisation with its own CVR number, operating on a non-profit basis, and as a neutral platform focus on facilitating collaboration by embracing and reaching out to a broad and active circle of partners of companies, knowledge institutions and relevant actors in the business and technology area. Effective cluster organisations collaborate with each other on cross-cutting innovation challenges and potentials. In addition, they must have knowledge of, collaborate with and refer to other actors and schemes within the business promotion and innovation system, when relevant,</p> <p>On 1 October 2020, the Minister of Higher Education and Science appointed the clusters that will create collaboration between researchers and companies from 2021-2024 and thus bring more innovation into society.</p> <table border="1"> <thead> <tr> <th>Strongholds & emerging industries</th><th>Cluster organisation</th></tr> </thead> <tbody> <tr> <td>Environmental technology</td><td>CLEAN - Denmark's cleantech cluster</td></tr> <tr> <td>Energy technology</td><td>Energy Cluster Denmark</td></tr> <tr> <td>Food and bio resources</td><td>Food & Bio Cluster Denmark</td></tr> </tbody> </table>	Strongholds & emerging industries	Cluster organisation	Environmental technology	CLEAN - Denmark's cleantech cluster	Energy technology	Energy Cluster Denmark	Food and bio resources	Food & Bio Cluster Denmark
Strongholds & emerging industries	Cluster organisation								
Environmental technology	CLEAN - Denmark's cleantech cluster								
Energy technology	Energy Cluster Denmark								
Food and bio resources	Food & Bio Cluster Denmark								



Policy type:	National cluster programme	
Policy name:	<u>Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)</u>	
	Maritime industry & logistics	pending ⁶
	Life science and welfare technology	Danish Life Science Cluster
	Construction & Building	WE BUILD DENMARK
	Design, fashion and furniture	Lifestyle & Design Cluster
	Advanced production	MADE - Manufacturing Academy of Denmark
	Digital technologies	DigitalLead
	Finances and financial technology (Fintech)	Copenhagen FinTech
	Emerging: Robot and drone technology	Odense Robotics
	Emerging: Animation, games and films	Vision Denmark
	Emerging: Sound technology	Danish Sound Cluster
	Emerging: Defense, space and security	CenSec - Center for Defence, Space & Security
	Financial	Funding collaboration initiatives

⁶ The cluster MARLOG which previously was relevant in this context went out of business in April 2022.



Policy type:		National cluster programme
Policy name:		<u>Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)</u>
INSTRUMENTS 		Support to R&D projects, SMEs becoming cluster members, etc. Financing networking events
	Technical Assistance	Support for hard skill development: knowledge transfer, intellectual property , entrepreneurship, Support for soft skills development: coaching, management training, Support for networking and partnership building (at national and/or international level) Marketing activities: communication, events, fairs, and so on
	Explanation	The funding from UFM and DEB is aimed at the cluster organisations' core task of promoting innovation. The funds are thus not operating support, but can to a limited extent finance necessary supporting activities such as administration, organisation, etc. It is expected that the cluster organisations will be able to provide additional funding for innovation-promoting activities from other sources.
HISTORY 	Period	Limited
	Ending year (for policies with limited period)	2024
	Starting year	2021
	Explanation	The Innovation power: Danish clusters for knowledge and business is designed for the period 2021- 2024
	Overall	A total of approx. DKK 640 million (EUR 86.07 million) ⁷

⁷ Information available at: <https://erhvervsfremmebestyrelsen.dk/sites/default/files/2020-12/Innovationskraft%20-%20danske%20klynger%20for%20viden%20og%20erhverv%202021-2024.pdf> (last access 12.12.2022).



Policy type:		National cluster programme
Policy name:		<u>Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)</u>
BUDGET 	Annual	The selection of national cluster organisations has taken place for the years 2021-2024. UFM and DEB intend to set aside each approx. 80 mio. DKK annually during the period (EUR 10.76 million)
	Source of funding	DEB and UFM each provide funding for the selected cluster organisations. Allocation of funds from UFM and DEB is coordinated and is expected to be announced together. The DEB decided in 2022 to increase funding for the business-oriented cluster effort in 2023-2024, allocating 175 million DKK
POLICY EVALUATION	Availability	in-itinere
	Results	The call is an extension of the fact that DEB in its strategy Business Promotion in Denmark 2020-2023 has identified 12 economic areas of business and technology (ten strongholds and two emerging industries), as the future focus of the publicly funded cluster organisations. Thus, there will be only one publicly funded cluster within each selected industry. In addition, two more emerging industries have been identified in connection with Innovationskraft: Danske klynger for viden og erhverv 2021-2024 resulting in the appointment of further two cluster organisations within the areas sound technology and defence, space and security. On 1 October 2020, the Minister for Higher Education and Science appointed the national clusters organisations whose goal is to create collaboration on innovation between companies, research institutions, public actors and investor from 2021-2024 thus bringing more innovation into society ⁸ . For the evaluation of the policy Innovationskraft 2021-2024 a joint framework has been published. This framework builds on a variety of measures such as surveys and econometric impact assessments.
POLICY ALIGNMENT WITH THE EU PRIORITIES 		Green economy Digitalisation

⁸ Presentation of the 14 clusters Overview of the clusters' locations Map of business clusters : <https://ufm.dk/aktuelt/pressemeddelelser/2020/filer/oversigt-over-placeringer.pdf> (last access 25.01.2023).



04

State of cluster policy and its role in broader economic policy challenges



4. State of cluster policy and its role in broader economic policy challenges

4.1 The state of cluster policy

This section presents an overview on the state of play of Danish cluster policy in the form of a qualitative assessment across four categories of analysis – policy scope, continuity of cluster policies, evidence of performance, and the range of cluster support instruments. Please refer to the **Annex** for the detailed overview of the categories and the scoring system. The table below presents an overview of the **state of play of Danish cluster policy** for 2023.

Table 4: State of play

Denmark	State of play
POLICY SCOPE	Absence of cluster policy
	Broad policy
	Sectoral policy
	National and/or regional cluster policy
CONTINUITY	No cluster policy available
	Cluster policy established recently
	Cluster policy established between over 2 and 10 years
	Cluster policy established over 10 years ago
EVIDENCE OF PERFORMANCE	No evaluation and / or monitoring available
	Existence of evaluations of past policies
	Existence of monitoring or an ongoing / interim evaluation
	Existence of monitoring and ex-ante or ongoing / interim evaluation
CLUSTER SUPPORT INSTRUMENTS	No instruments for cluster development
	Financial support for cluster development in the broader and / or sectoral policy
	Financial or technical support for cluster development in dedicated cluster policy
	Financial and technical support for cluster development in dedicated cluster policy

Source: ECCP (2023).

The text below provides a **qualitative description** of the state of play of the cluster policy in Denmark.

Policy scope

In terms of policy scope and approach the cluster policy in Denmark is characterised by its national approach. As such, the programme can be classified a dedicated national cluster policy. The Strategy Business Promotion in Denmark 2020-2023 is an agreement between the Minister for Industry, Business and Financial Affairs and the Danish Board of Business Development representing a joint course for business promotion, including the future focus of the publicly funded cluster organisations.



In future, there will only be one publicly funded cluster within each selected industry. The rationale for the reformed cluster structure has been problem drivers such as too many clusters and overlaps – which have been confusing and ineffective for the Danish companies. By gathering the efforts across the country, the new cluster structure will be more simple, efficient and easy to understand for companies.

The selection of cluster organisations is made in close cooperation between the Danish Board of Business Development and the Minister for Higher Education and Science. On 1 October 2020, the Minister of Education and Research officially appointed 14 new clusters. Operation period 2021-2024 with total funding approx. DKK 640 million (EUR 86 million).

Continuity

The first steps towards a cluster policy were taken by the then Danish government in the 1990's, where the government co-financed cooperation activities between the research sector and the private sector. For instance, in 1996, the then government established a working group that provided recommendations on bringing together capital and competencies in a business promotion network consisting of entrepreneurs and scientists who focused on innovation. However, a study revealed that many enterprises and research institutions found the public grant system confusing and rigid. In 1998, the government fully established the policy which primarily focussed on the entrepreneurs, matching them with researchers who wished to commercialise their research and made government financial support and expert advice available to them.

At the regional level, Denmark has historically developed and facilitated for cluster networks and innovation. Under previous government strategies, the Danish regions gathered representatives and experts from the private sector, academia, research institutions, labour unions, and local and regional authorities as members of a network called Vækstforum. The six regional Vækstforum networks had since their establishment in 2006 formulated and implemented several political strategies which promotes internationalisation and improved competition. For instance, the Region Midtjylland Vækstforum successfully collaborated in several cluster initiatives in the Baltic Sea region. The six Vækstforum networks were terminated in 2019 as a result of the political agreement on "[Simplifying the business promotion system](#)" which reduced the number of politically responsible levels from three to two, one municipal and one governmental, thus cutting off the regions from carrying out their own business promotion efforts

As of 2020, Denmark has a new strategy "Business Promotion in Denmark 2020-2023". This is the result of an agreement between the Minister for Industry, Business and Financial Affairs and the Danish Board of Business Development which have charted a joint course for the initiatives of the next few years. The initiatives especially focus on small and medium-sized enterprises which need to be strengthened in their green and digital development as well as their access to qualified labour. The strategy paper and the agreement also strengthen entrepreneurship and increase the promotion of innovation and internationalisation in Danish companies. The strategy also identifies the economic leading industries and emerging industries in Denmark, which are the main focus of the cluster initiatives of the future. With the strategy Business Promotion in Denmark 2020-2023, the Danish Board of Business Development have selected ten leading and two emerging industries in Denmark.

Evidence of performance

For the evaluation of the policy Innovationskraft 2021-2024 a [joint framework](#) has been published. This framework builds on a variety of measures such as surveys and econometric impact assessments. Additionally, [an Impact Study](#) from 2011 assessed the impacts of cluster policy in Denmark on behaviour and economical effects of Innovation Network Denmark and in 2018 a [performance report](#) for the Danish cluster landscape has been published.

Cluster support instruments





The Danish Cluster policy approach is centred around policy support for the activities of cluster organisations & Broad-based framework policies to support cooperation effectiveness. Thereby both financial and technical support for cluster development is included in the dedicated cluster policy

4.2 Cluster policy's potential impact on challenges identified in the European Semester Report

Cluster policy can provide important support to broader economic policy efforts. This section shows how Danish cluster policy can play a role in addressing the challenges identified in the European Semester Report for the country. To this end, the European Semester 2023 country report for Denmark⁹ has been analysed across policy areas relevant to cluster policy. The results point to a series of issues where cluster policy can play an important role in tackling the country's economic challenges.

Table 5: Contribution of Danish cluster policy to the challenges identified in the European Semester Reports

Policy area	Challenges	Cluster policy
INNOVATION 	<ul style="list-style-type: none"> • Increase R&D investment • Involve more enterprises in research activities. 	<p>The Danish cluster policy "Power of innovation-Danish clusters for knowledge and business 2021- 2024" has the overall aim of strengthening the productivity and competitiveness of enterprises - and in particular SMEs - through cooperation on innovation and knowledge transfer between enterprises and knowledge institutions. In this regard, the Danish cluster policy also includes financial support for R&D projects.</p> <p>Studies point out that the presence of clusters is positively linked to higher expenditures for research and development both in the public and especially the private sector.¹⁰ Moreover, important contributions are usually also made by clusters to technology transfer in the innovation ecosystem.¹¹</p>
SKILLS 	<ul style="list-style-type: none"> • Invest in re- and upskilling the labour force • Increasing participation in vocational education and training 	<p>The Danish national cluster programme "Innovationskraft" includes technical support for the development of hard and soft skills. Research underlines the role of clusters in developing the skills of the workforce and attracting skilled workers to a region.¹²</p> <p>Moreover, as cluster organisations act as intermediaries between companies and research & educational institutions, they can also be seen as part of the training and educational infrastructure in the innovation</p>

⁹ https://economy-finance.ec.europa.eu/system/files/2023-05/DK_SWD_2023_604_en.pdf (last access 12.01.2024).



¹⁰ ECCP (2022): Summary report on cluster policies and programmes across Europe and priority third countries. Available online:

https://clustercollaboration.eu/sites/default/files/sites/default/files/editor/ECCP_Summary%20report%20cluster%20policies_2022_finalv2.pdf (last access 21.12.2023).

¹¹ Fioravanti, V.; Stocker, F.; Macau, F. (2023): Knowledge transfer in technological innovation clusters. Innovation & Management Review 20:1. Available online: <https://www.emerald.com/insight/content/doi/10.1108/INMR-12-2020-0176/full/html> (last access 10.01.2024).

¹² Hsu, M.-S et al. (2014).



Policy area	Challenges	Cluster policy
		ecosystem. ¹³
GREEN  TRANSITION	<ul style="list-style-type: none"> • Improve the circular economy and waste management, in particular on the prevention, recycling and lower incineration of (municipal) waste, • Reducing greenhouse gas emissions from agriculture • Further decarbonising the economy by accelerating the deployment of renewable energy 	<p>One of the ambitions of the Danish national cluster programme is that it contributes to a greener & more climate-friendly production and focuses its funding also on this objective. Here, the assessment criteria for funding mention contributions to the green.¹⁴</p> <p>A number of Danish clusters are addressing the challenges mentioned in the ESR, for instance, through the deployment of renewable energy.¹⁵ Studies show that clusters can play a vital role in the green transition of the economy.¹⁶</p>
DIGITAL  TRANSITION	<ul style="list-style-type: none"> • Digital transition needs to be accelerated by helping SMEs to invest in digital technologies 	<p>A key objective of the Danish cluster policy at hand is also that it should lead to increased digitalisation in Denmark. Moreover, the assessment criteria for funding mention contributions to the digital transition.</p> <p>The Danish national cluster organisations are addressing the challenges mentioned in the European Semester Reports through the implementation of various projects (e.g., in the context of the Industry 4.0).¹⁷</p> <p>In general, actors organised in clusters then tend to show a higher digital maturity than those outside.¹⁸</p>

Source: ECCP (2023)

¹³ European Expert Group on Clusters (2020).

¹⁴ <https://ufm.dk/forskning-og-innovation/tilskud-til-forskning-og-innovation/opslag/2020/Innovationskraft.pdf> (last access 23.01.2024).

¹⁵ see for instance: <https://www.energycluster.dk/projekter/?type=innovationsprojekter> (last access 07.03.2024)

¹⁶ Lis, A. & Mackiewicz, M. (2023); ECCP (2021).

¹⁷ see <https://digitallead.dk/innovation/projekter/> (last access 07.03.2024)

¹⁸ Ławicka (2022).



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Annex

Table 6: Analytical framework for the state of cluster policy

Criterion	Description	Categorical variables
Policy scope	assessment whether the country has a dedicated cluster policy, or cluster creation and/or development is targeted through broader policies, e.g. foreign trade policies, labour and social policies or specific sectoral policies, e.g. industrial policy tourism policies, agriculture policies	absence of cluster policy existence of broader policies existence of specific sectoral policies existence of targeted cluster policies
Continuity of cluster policies	assessment of the duration and experience of the country in carrying out cluster policies. This criterion assesses only existence of targeted cluster policies and not broader policies or sectoral policies	absence of policies supporting cluster development cluster policy established recently (within the last 2 years) cluster policy established between over 2 and 10 years cluster policy established over 10 years ago
Evidence of performance	assessment whether there are evaluations of past and ongoing policies and a monitoring system in place. The existence of monitoring and evaluation mechanisms determines the degree of policy development in the country	no evaluation and / or monitoring available existence of evaluations of past policies, e.g. ex-ante existence of monitoring or an ongoing / interim evaluation existence of monitoring and ex-ante or ongoing / interim evaluation
Cluster Support Instruments	assessment whether the policies provide any instruments to support the policy implementation, being these financial and/or technical support	no instruments for cluster development financial support for cluster development in the broader and / or sectoral policy financial or technical support for cluster development in dedicated cluster policy financial and technical support for cluster development in dedicated cluster policy

Source: ECCP (2023).