European Cluster Collaboration Platform
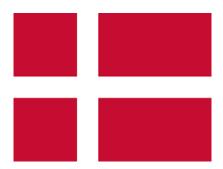
Country factsheet

Denmark

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Introduction

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.

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 plan[1]. 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.

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) an assessment of the state of play of the national cluster policy.

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[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 25.01.2023).

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EUROPEAN CLUSTER COLLABORATION PLATFORM

01

Industrial ecosystems and cluster landscape

Strengthening the European economy through collaboration

1. Industrial ecosystems and cluster landscape

Employment in the 14 ecosystems in the country

As part of its Industrial Strategy (March 2020), the European Commission has selected 14 industrial ecosystems that are particularly relevant in Europe and 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]

In the following figure, the employment share of the region 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 & Civil Security". Moreover, Denmark also exhibits a higher employment share in these ecosystems compared to the EU27 average which outlines the strength of Denmark in these ecosystems.
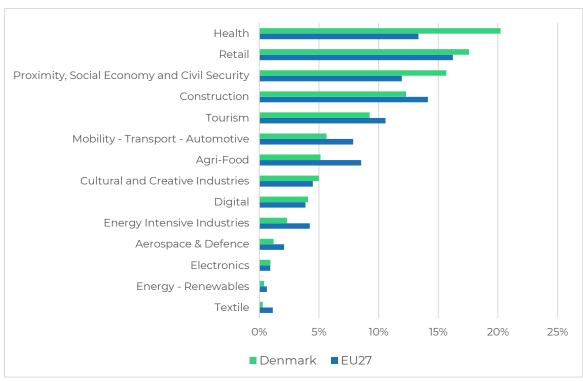
Figure 1: Employment in the ecosystems

Source: ECCP (2022), own elaboration based on data from Eurostat.

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[2] see here for more information https://clustercollaboration.eu/in-focus/industrial-ecosystems (last access 09.01.2023).
[3] see European Commission (2021): Annual Single Market Report, SWD(2021)351.

Regionally relevant nodes (agglomerations)

Economic activity, and therefore employment, is not equally distributed in all regions. Specialisation can be measured through Location Quotients (LQ) that reflect the relative specialisation of an activity in a region compared to the EU average. If the LQ for a given activity-region combination is above 1.5, it is considered a specialisation node and if the activity accounts for at least 1 % of total employment in the region, it is considered regionally relevant.[4] The following tables shows the total number of regionally relevant specialisation nodes (agglomerations) in each region in the country and identifies the top five most specialised of these nodes. The first table focuses on the 88 NACE 2-digit activities or sectors, totalling 27 in the country, while the second table is based on the 14 ecosystems, which total three in the country.

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

Region	# of nodes	Node 1	Node 2	Node 3	Node 4	Node 5
DK01: Capital (region)	12	C21 - Manuf. of pharmaceuticals	J58 - Publishing activities	Q88 - Social work without accommodation	K65 – Insurance & pension funding	R93 - Sports, amusement, recreation
DK02: Zealand	4	C21 - Manuf. of pharmaceuticals	Q88 - Social work without accommodation	Q87 - Residential care	R93 - Sports, amusement, recreation.	
DK03: South Denmark	4	Q88 - Social work without accommodation	Q87 - Residential care	C28 - Manuf. of machinery & equipment	H53 - Postal & courier activities	
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	C28 - Manuf. of machinery & equipment	F43 - Specialised construction act.	

Source: ECCP (2022), own elaboration based on data from Eurostat.

Overall, there are fewer numbers of ecosystem nodes compared to the regionally relevant sectoral nodes 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 and Civil Security" (see also Figure 1) is also reflected in both the regionally relevant sectoral nodes and regionally relevant ecosystem nodes of the different Danish regions. All Danish regions have relevant sectoral nodes in sectors such as social work (Q88) and residential care (Q87). This is also reflected in the regionally relevant ecosystem node "Health" of the Danish Capital region (DK01) and Zealand (DK02).

Table 2: Regionally relevant ecosystem nodes

Region	Number of ecosystem nodes	Node 1	Node 2	Node 3
DK01: Capital (region)	2	Health	Digital	
DK02: Zealand	1	Health		-
DK03: South Denmark	0	-	-	-
DK04: Central Jutland	0	-	-	-
DK05: North Jutland	0	-	-	-

Source: ECCP (2022), own elaboration based on data from Eurostat.

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[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).

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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.
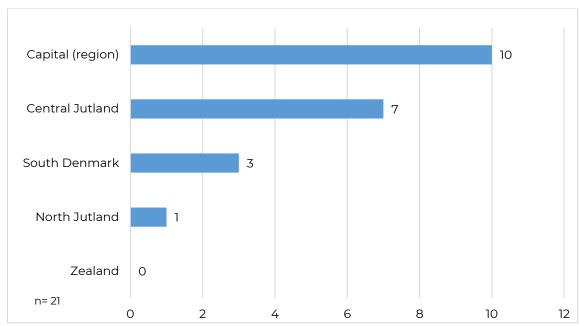
Figure 2: Cluster organisations profiled on the ECCP

Source: ECCP (2022). Note: the data for the analysis was extracted on 14/10/2022.

SMEs (84%, EU: 84%) 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 not all cluster organisations on the ECCP provided this information, the number of cluster organisations with an allocated industrial ecosystem is lower than the overall number of cluster organisations in the country.

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

02

National cluster policy, programmes and initiatives

EUROPEAN CLUSTER
COLLABORATION PLATFORM

Strengthening the European economy through collaboration

2. 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 2022), which are applied for comparative purposes. This is followed by a complementary descriptive text to provide more insights about the cluster policy in Denmark.

Policy type:	National cluster programme
Policy name:	Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)
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** 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

Policy type:	National cluster programme
Policy name:	Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)
	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**
	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.
	The Minister for Higher Education & Science has moreover designated two emerging areas: Defence, space and security and Sound technology.
RESPONSIBLE AUTHORITIES	**Provides funding**
	Ministry of Higher Education and Science and the Danish Board of Business Development. (Uddannelses- og Forskningsministeriet (UFM) og Danmarks Erhvervsfremmebestyrelse (DEB).
BENEFICIARIES	**SMEs**
	Cluster organisations
	Research organisations
	Academic institutions
	Start-ups

Policy type:	National cluster programme
Policy name:	Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)

Technology centres

The cluster organizations 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 organizations can support the ecosystem's access to foreign financing of innovation activities, including through private investors, foreign funds, EU programs and the cluster organization's participation in, for example, InterReg projects.

The cluster organizations must be strong, dedicated and professional actors in the business promotion and innovation system. The cluster organization itself must be an independent, private organization 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 organizations 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,

On 1 October 2020, the Minister of Education and Research appointed the clusters that will create collaboration between researchers and companies from 2021-2024 and thus bring more innovation into society.

Strongholds & emerging industries	Cluster organization
Environmental technology	CLEAN - Denmark's cleantech cluster
Energy technology	Energy Cluster Denmark
Food and bio resources	Food & Bio Cluster Denmark
Maritime industry & logistics	pending[5]

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

Policy type:	National cluster programme	
Policy name:	Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)	
	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

INSTRUMENTS	Financial	**Funding collaboration initiatives**
		Support to R&D projects, SMEs becoming cluster members, etc.
		Financing networking events

Policy type:		National cluster programme
Policy name:		Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)
	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 organizations' 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, organization, etc. It is expected that the cluster organizations 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
BUDGET	Overall	A total of approx. DKK 640 million (EUR 86.07 million)[6]
	Annual	The selection of national cluster organizations 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)

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[6] 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).

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Policy type:		National cluster programme
Policy name:		Innovationskraft: Danske klynger for viden og erhverv 2021-2024 (Power of innovation-Danish clusters for knowledge and business 2021- 2024)
POLICY **EVALUATION**	Source of funding	DEB and UFM each provide funding for the selected cluster organizations. Allocation of funds from UFM and DEB is coordinated and is expected to be announced together. By 2022 at the latest, DEB will decide how the business-oriented cluster effort in 2023-2024 will be financed and implemented.
	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 organizations. 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 organizations 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 organizations 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[7]. 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**

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[7] 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).

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03

State of play of cluster policy

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3. State of play of cluster policy

This section presents an overview on the state of play of Danish cluster policy in the form of a quantitative and qualitative assessment. The data below illustrates how the country ranks in terms of **maturity of cluster policy at the national level.** The maturity assessment is based on a combination of factors presented in Chapter 2, which receive a score based on the existence or absence of a given element in the cluster policy. The regional cluster policy example is not included in this assessment.

Note: the maturity assessment does not reflect the performance of a country, but only the degree of development of their national cluster policy at the moment of data collection (Q3 2022). The assessment illustrates how the country scores for each of the four criteria (policy scope, continuity of cluster policies, evidence of performance, cluster support instruments) compared to the maximum score that they can reach. Please refer to the **Annex** for the detailed overview of the categories and the scoring system.

The table below presents an overview of the **maturity assessment for Denmark** for 2022. The total score of Denmark is 7 points out of 8.

Denmark	MATURITY ASSESSMENT	Max score	Actual score
POLICY SCOPE	Absence of cluster policy	0	
	Broad policy	0,5	
	Sectoral policy	1	
	National and/or regional cluster policy	2	**2**
CONTINUITY	No cluster policy available	0	
	Cluster policy established recently	0,5	
	Cluster policy established between over 2 and 10 years	1	
	Cluster policy established over 10 years ago	2	**2**
EVIDENCE OF PERFORMANCE	No evaluation and / or monitoring available	0	
	Existence of evaluations of past policies	0,5	
	Existence of monitoring or an ongoing / interim evaluation	1	**1**
	Existence of monitoring and ex-ante or ongoing / interim evaluation	2	
CLUSTER SUPPORT INSTRUMENTS	No instruments for cluster development	0	
	Financial support for cluster development in the broader and / or sectoral policy	0,5	
	Financial or technical support for cluster development in dedicated cluster policy	1	
	Financial and technical support for cluster development in dedicated cluster policy	2	**2**
TOTAL (8)			**7**

Source: ECCP (2022)

Drawing from the table above that showcases the scored points in Denmark's cluster policy, the Figure below portrays the **degree of maturity** across four categories related to the national level cluster policy.

Figure 3: Maturity of cluster policy - Denmark

Source: ECCP (2022)

The text below provides a **qualitative description** of the state of play of the cluster policy in Denmark, which is complementary to the maturity assessment presented above.

Policy scope

In terms of policy scope and approach the cluster policy in Denmark is characterised by its national approach. 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 organizations 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 internationalization 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.
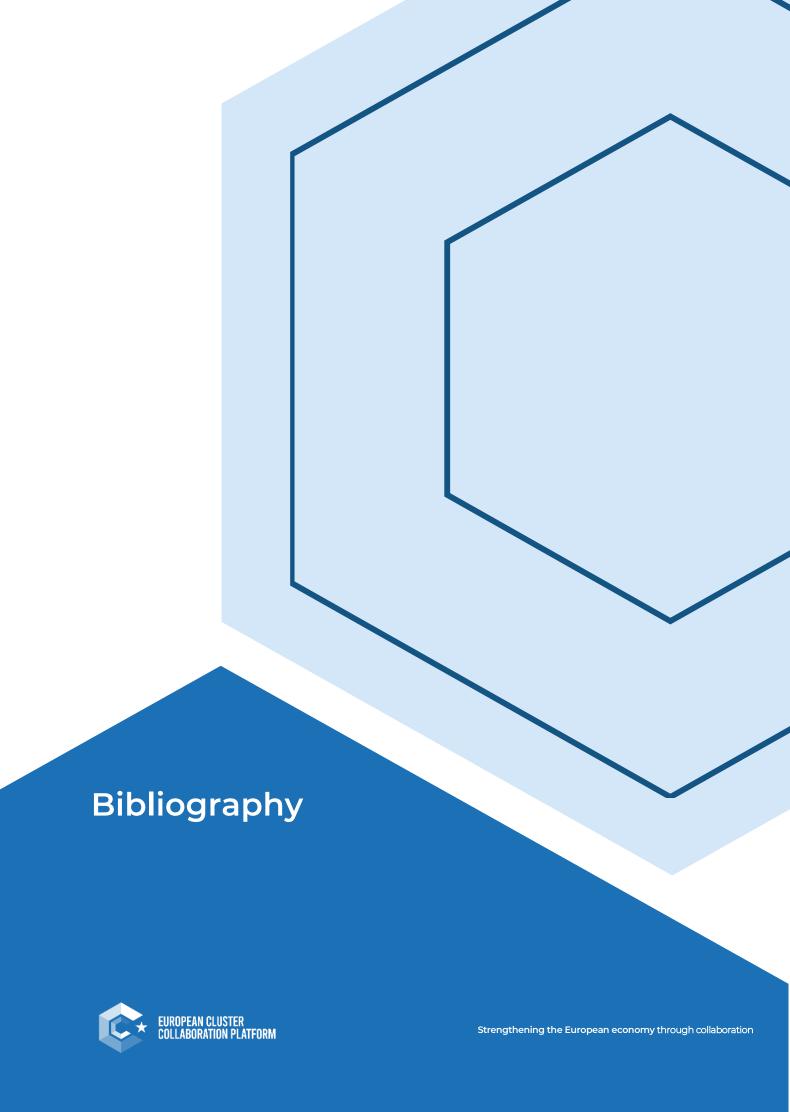
Cluster support instruments

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

Cross-regional / international cooperation

In the 2014-2020 funding period, 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 organizations 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 organizations 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 industrial ecosystems with ELBE Eurocluster being active in the "Renewable Energy" ecosystems. POLREC covers eight industrial ecosystems such as "Electronics", "Agri-food" and "Construction".

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Annex

Criterion of maturity assessment	Description	Scoring (points between 0 and 2)
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 = 0** **existence of broader policies = 0,5** **existence of specific sectoral policies = 1** **existence of targeted cluster policies = 2**
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 = 0** **cluster policy established recently (within the last 2 years) = 0,5** **cluster policy established between over 2 and 10 years = 1** **cluster policy established over 10 years ago = 2**
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 = 0** **existence of evaluations of past policies, e.g. ex-ante = 0,5** **existence of monitoring or an ongoing / interim evaluation =1** **existence of monitoring and ex-ante or ongoing / interim evaluation =2**
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 =0** **financial support for cluster development in the broader and / or sectoral policy = 0,5** **financial or technical support for cluster development in dedicated cluster policy = 1** **financial and technical support for cluster development in dedicated cluster policy = 2**

Source: ECCP (2022)

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